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Unemployment Dynamics in Latin America: Gender Gaps, Socioeconomic Factors, and Macroeconomic Influences

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Keywords:

Unemployment; Labour;
Gender; Social Exclusion;
Latin America.

Abstract: This study investigates unemployment trends in ten Latin American nations during the period 2010-2020, assessing their links with macroeconomic indicators and social conditions. Drawing upon statistical data provided by the Economic Commission for Latin America and the Caribbean (ECLAC), the analysis examines unemployment patterns differentiated by sex, age cohort, level of education, income bracket, and residential location. The comparison of unemployment outcomes across these categories is undertaken through mean difference testing, while correlation techniques are applied to explore associations between unemployment and a range of economic and social variables. The results point to enduring disparities between men and women, with female workers persistently recording higher joblessness, most notably in Colombia, Brazil, and Uruguay. The evidence further suggests that education and vocational preparation exert a stronger influence on women's employment prospects than on those of men. Considerable obstacles are also identified for young individuals, rural dwellers, and members of the lowest income quintiles. Moreover, unemployment rates are found to display an inverse association with factors such as consumer price inflation, public tax receipts, and expenditure on health services. Taken together, these findings highlight the urgency of implementing labour market strategies that incorporate gender perspectives, address informality, and expand educational and training opportunities. The research recommends that governments and policy actors integrate gender-sensitive approaches into frameworks of equality and equity, while also strengthening programmes designed to improve employment conditions and promote the dignity of work. Greater commitment to investment in education, skills development, and social protection is deemed essential, alongside the formulation of measures that foster fair and sustainable job opportunities for all segments of the population.

Introduction

Unemployment constitutes a multifaceted and enduring problem worldwide, yet its effects are especially acute in Latin America, where structural, institutional, and social inequalities converge to destabilise labour markets. Defined as the inability of individuals actively seeking employment to secure work, unemployment extends beyond an indicator of weak economic performance; it mirrors profound disparities in educational attainment, access to opportunities, macroeconomic governance, and social protection systems (*Organización Internacional del Trabajo, 2020*). The region's employment landscape has historically been marked by high levels of informality, limited innovation in technology, and insufficient state investment in human capital, each of which restricts the capacity for sustainable job creation (*Berniell et al., 2023; The Economic Commission for Latin America and the Caribbean, 2023*).

Throughout the past decade, Latin America has encountered successive macroeconomic and social shocks that have deepened unemployment pressures. The collapse of international commodity prices in the mid-2010s, combined with extended periods of economic stagnation, suppressed labour demand in resource-dependent economies (*De Domingo Soler et al., 2020*). The COVID-19 pandemic further disrupted labour markets, striking hardest among informal workers, women, and younger cohorts already disadvantaged by structural segmentation and the weight of unpaid care responsibilities (*Bluedorn et al., 2021*). By 2022, despite a global decline in unemployment to 5.8%, women in Brazil, Colombia, and Uruguay still faced disproportionately high levels of joblessness relative to men, reaffirming entrenched gendered exclusion from labour markets (*The Economic Commission for Latin America and the Caribbean, 2023*).

Several theoretical frameworks have been utilised to interpret persistent labour market inequalities in the region. Segmented labour market theory (*Fad'oš & Bohdalová, 2019*) contends that workers are divided between a primary sector offering stability and higher wages, and a secondary sector characterised by insecurity and low pay, not on the basis of choice but through structural constraint. Within Latin America, women, rural residents, and young workers are frequently overrepresented in the secondary sector (*ILO, 2021*). Human capital theory (*Becker & Ferrara, 2019*) suggests that investment in education and skills enhances employment outcomes; however, in this context, even women with advanced qualifications continue to experience heightened unemployment risks due to occupational segregation and systemic gender bias (*Programa de las Naciones Unidas para el Desarrollo, 2019*). Complementing these approaches, feminist economic perspectives highlight how traditional labour analyses systematically neglect unpaid domestic and care work, thereby obscuring a key factor that limits women's capacity for full labour force participation (*Bluedorn et al., 2021*).

Technological transformation has further complicated labour market dynamics. The expansion of automation, artificial intelligence (AI), and digital platforms has displaced routine forms of work while simultaneously generating demand for digitally skilled labour (*Rubio & Tulcanaza-Prieto, 2025; The Economic Commission for Latin America and the Caribbean, 2023; Tulcanaza-Prieto et al., 2025*). Yet the region has invested inadequately in digital infrastructure and workforce upskilling, with public

expenditure on education averaging just 4.3% of Gross Domestic Product (GDP), notably lower than the Organisation for Economic Co-operation and Development (OECD) mean of 5.5% (*World Bank, 2023*). This shortfall reinforces structural inequalities, leaving substantial segments of the workforce—particularly young people and rural populations—ill-prepared for digital transitions (*The Economic Commission for Latin America and the Caribbean, 2023*).

Despite the breadth of existing scholarship, most research on unemployment in Latin America has been confined to country-specific analyses or has isolated single explanatory variables. There is, therefore, a clear need for comparative, region-wide approaches that consider how demographic characteristics and macroeconomic conditions interact in shaping unemployment outcomes. This article contributes to filling that gap by examining unemployment across ten Latin American countries between 2010 and 2020, employing disaggregated data by gender, age, educational attainment, income, and location, together with macroeconomic indicators such as inflation, tax revenues, and public spending on education and health. This study extends beyond earlier work by employing mean-difference tests to identify disparities across demographic groups and Pearson correlations to examine links between unemployment and macro-social variables. While causal inference is not pursued, this approach reveals structural patterns useful for policymaking. Panel regression was excluded due to dataset limitations (ten countries), risks of multicollinearity, and potential non-stationarity of macroeconomic series (*Bell, Fairbrother, & Jones, 2019; Pindyck & Rubinfeld, 2001*).

Crucially, the findings provide empirical evidence in support of gender-inclusive labour policies and broader structural reforms. Results confirm persistent gender gaps in unemployment, heightened vulnerability among youth and rural residents, and the disproportionate effect of educational attainment on women's employment outcomes. The study also documents negative correlations between unemployment and indicators such as inflation, tax collection, and health expenditure, pointing to broader macroeconomic linkages requiring further exploration. These insights carry significant implications for policymakers, multilateral organisations, and academic communities alike, informing strategies to design equitable labour markets, encourage investment in gender-responsive education and training, and strengthen institutional frameworks to reduce fragmentation. As countries in the region strive to recover in the aftermath of the pandemic, emphasis must be placed on tackling informality, promoting inclusive digital transitions, and reinforcing social protection systems. In sum, while unemployment in Latin America is shaped by a complex interplay of demographic, structural, and policy factors, an intersectional and evidence-based approach is indispensable to devising more effective responses. This work thus represents a timely and practical contribution to labour market scholarship, emphasising the urgency of inclusive and forward-looking reforms.

A key contribution of this study lies in its focus on gender as a central analytical lens rather than as a subsidiary variable. Employing disaggregated data, the analysis uncovers how structural inequalities, including occupational segregation and the disproportionate burden of unpaid care work, continue to constrain women's access to formal employment, even among those with higher levels of education. By merging micro-level demographic insights with macroeconomic indicators, the study deepens

the understanding of the interconnections between gender and labour market exclusion. In doing so, it extends empirical knowledge, enhances analytical precision, and strengthens its originality within the field of labour economics and development studies, while simultaneously reinforcing the policy imperative for gender-responsive labour reforms.

Confronting the entrenched issues of unemployment, informality, and inequality in Latin America requires a comprehensive reform agenda. Governments must expand inclusive educational systems and vocational programmes aligned with digital-era skill requirements to improve the employability of young people, women, and rural communities. Broader access to affordable childcare and stronger enforcement of anti-discrimination legislation would mitigate gender-related barriers to formal work. Institutional frameworks must also be reinforced to regulate informal labour, ensure equitable remuneration, and extend social security coverage to precarious workers. At the macroeconomic level, strategies that diversify production, foster innovation, and increase public investment in infrastructure are essential for sustainable job creation. Moreover, the integration of regional labour market data systems would allow for more responsive, evidence-based policymaking. Ultimately, tackling these challenges demands coordinated efforts across governments, civil society, and international actors to build labour markets that are more inclusive, resilient, and equitable.

The structure of the article is organised as follows: Section 2 provides a review of relevant literature on unemployment and its connections to macroeconomic and social variables. Section 3 details the methodological framework. Section 4 sets out the empirical results. Section 5 engages with a critical discussion of the findings. Section 6 concludes, highlighting central insights and outlining directions for further inquiry.

Literature Review

A substantial body of scholarship has interrogated gender asymmetries in unemployment, consistently highlighting enduring gaps largely attributable to entrenched social norms. Such norms conventionally ascribe to men the position of primary economic providers whilst relegating women to caregiving roles. Global estimates indicate that the unemployment rate reached 5.8% in 2022, lower than in preceding years; nonetheless, pronounced gender disparities endure. Within Latin America, these inequalities are intensified by structural imbalances, pervasive informality in labour markets, and fragile systems of social protection, disproportionately disadvantaging young and less-skilled women (Berniell et al., 2023). Despite these insights, much of the extant research tends to homogenise gendered experiences, neglecting how intersecting dimensions—such as racial identity, household composition, or spatial location (urban versus rural)—mediate such outcomes. For example, evidence suggests that when men lose employment, women's participation in the labour force frequently rises, not necessarily as a form of empowerment but rather as a response to economic pressures within the household (Bluedorn et al., 2021).

Moreover, the COVID-19 crisis accentuated gender-specific vulnerabilities, disproportionately affecting women given their concentration in sectors such as hospitality and entertainment. This so-called “she-cession” stands in contrast to the “man-cession” of the 2008 global financial

crisis (Hoynes, Miller, & Schaller, 2012), underscoring the cyclical, sectoral, and context-specific nature of gendered labour market shocks. Structural determinants—including women's early withdrawal from the workforce following marriage, their disproportionate caregiving obligations, and their greater prevalence in temporary or part-time employment—further entrench insecurity in labour markets. These gendered experiences necessitate that unemployment analyses explicitly consider occupational segregation and caregiving responsibilities as structural determinants.

Age also constitutes a salient dimension in shaping unemployment outcomes, particularly among youth. Despite rising educational attainment, young people—especially recent graduates—continue to experience disproportionately elevated unemployment rates (Organización Internacional del Trabajo, 2020). Across numerous Latin American economies, the rate of youth unemployment significantly exceeds that of older cohorts. This disparity is frequently linked to mismatches between the output of educational systems and the requirements of labour markets, inflexible recruitment mechanisms, and demographic pressures (Tulcanaza-Prieto, Báez Salazar, & Aguilar-Rodríguez, 2023). Young workers are further disadvantaged by macroeconomic volatility, rigid labour structures, and inadequate policy frameworks, resulting in high turnover, underemployment, and in some cases, social exclusion. Conversely, older workers, particularly those aged 45 and above, encounter barriers stemming from age discrimination, rapid technological transformations, and evolving retirement expectations (Arranz & García-Serrano, 2023). These observations collectively underscore the necessity of policy measures that are sensitive to the specific challenges faced by distinct age groups.

Education emerges as a further critical determinant of labour market outcomes. Generally, higher levels of schooling correlate positively with employment opportunities, especially among women. Notably, female participation in secondary and tertiary education has increased considerably, with women in several Latin American countries surpassing men in both enrolment and completion rates (Programa de las Naciones Unidas para el Desarrollo, 2019). For instance, in 2020, 27.3% of women aged 25–29 had attained at least 13 years of schooling, compared with 23.3% of men in the same cohort—a significant rise from 2000, when the respective rates were 15.4% and 16.1% (Comisión Económica para América Latina y el Caribe, 2022). Yet, despite these advances, persistent gender biases influence educational choices, steering men and women into fields of study that reinforce existing labour market segregation (UNESCO - UNICEF, 2021). Thus, while education constitutes a pivotal mechanism for labour market inclusion, it remains insufficient in itself to eradicate entrenched gender inequalities in employment. High unemployment has also been linked to structural rigidities, including statutory minimum wages, inflexible social protection schemes, and restrictive labour regulations, all of which constrain job creation. Such rigidities are tightly bound to patterns of income inequality, reflecting a trade-off between the share of wages in personal income (a key indicator of income inequality) and unemployment rates. Empirical analyses have identified a U-shaped relationship between income inequality and unemployment, suggesting minimal short-term impacts but substantial long-term implications (Yumna et al., 2015). Similarly, Lin et al. (2009) demonstrated that inequality undermines economic growth by suppressing aggregate demand, heightening

social tensions, and exacerbating unemployment. Hence, the nexus between inequality and unemployment is complex, multifaceted, and heavily contingent upon broader structural contexts. Spatial factors, particularly the distinction between urban and rural residence, further shape unemployment dynamics. Regional disparities frequently incentivise migration from rural to urban areas as individuals seek enhanced economic opportunities. Yet, such migration often aggravates unemployment in urban centres, particularly where infrastructural capacity and labour absorption are insufficient. Migrants from rural areas are frequently confined to informal employment or prolonged unemployment, thereby reinforcing pre-existing regional inequalities (Lyu et al., 2019). This underscores the necessity of addressing spatial imbalances alongside labour market interventions.

Macroeconomic factors such as GDP growth and inflation are central to understanding unemployment. Okun's Law (Okun, 1962) highlights their inverse link, yet frictional and structural factors prevent unemployment from reaching zero. Empirical studies confirm this negative growth-unemployment relationship, attributing it to labour mismatches, weak policies, and limited public investment (Hjazeen, Seraj, & Ozdeser, 2021; Noor, Nor, & Ghani, 2007; Xesibe & Nyasha, 2020). GDP per capita also shows a negative association with unemployment (Dayoğlu & Aydın, 2020; Guarnizo & Jumbo, 2020; Meidani & Zabihi, 2011). Inflation, often examined through the Phillips Curve, similarly exhibits an inverse relationship with unemployment, as evidenced in the G6, Gambia, and Indonesia (Kasseh, 2018; Korkmaz & Abdullazade, 2020; Sasongko, Huruta, & Gultom, 2019). However, inflation-control policies can reduce aggregate demand and labour absorption, leaving policymakers with the challenge of addressing both unemployment and inflation simultaneously. Taxation also represents a frequently overlooked determinant of unemployment. Elevated corporate taxation may discourage private investment, diminish labour demand, and shift economic activity towards informality. Comparative studies demonstrate a positive association between labour taxes and unemployment, though this relationship is mediated by the efficiency of governance and the societal perception of welfare benefits (Doménech & García, 2008; Zirgulis & Šarapovas, 2017). By contrast, Clausing (2007) identified a negative association, contending that reductions in corporate income erode tax revenues, thereby lowering labour demand and heightening unemployment. Inequality—frequently operationalised through the Gini coefficient—has similarly been found to correlate with higher unemployment levels (Burdett & Mortensen, 1998; Shahpari & Davoudi, 2014; Tareh, Sari, & Purwono, 2021). This linkage is especially apparent in contexts characterised by entrenched disparities in income and education, as exemplified by South Africa (Castells-Quintana & Royuela, 2012).

Social investments, particularly in health and education, are also integral to understanding unemployment trajectories. Enhanced public health expenditure elevates quality of life, boosts productivity, and strengthens economic performance, with healthier workers displaying lower absenteeism and greater capacity to engage in the labour market. Empirical evidence highlights a negative association between healthcare spending and unemployment, implying that improved access to healthcare increases labour supply and mitigates joblessness (Raghupathi & Raghupathi, 2020). Similarly, public expenditure on education plays a pivotal role in shaping a skilled workforce, aligning competencies with

labour market demands, and thereby reducing unemployment (Núñez & Livanos, 2010; Singh & Shastri, 2020). At the same time, the interrelation between unemployment and poverty remains intricate, with joblessness precipitating income loss, curtailing consumption, and deepening poverty traps. Numerous studies confirm strong associations between unemployment and poverty, albeit with regional variations (Blank & Blinder, 1986; Egunjobi, 2014), emphasising the centrality of employment creation within poverty alleviation strategies.

From a methodological standpoint, prior investigations have utilised a broad spectrum of analytical instruments to examine the determinants and consequences of unemployment. Regression modelling remains the dominant technique for analysing socio-economic drivers (Berniell et al., 2023; Doménech & García, 2008; Hoynes et al., 2012; Lin et al., 2009). More sophisticated approaches encompass panel data methods (Yumna et al., 2015), mixed proportional hazard models (Arranz & García-Serrano, 2023), and quartile analyses (Bluedorn et al., 2021). Additional techniques include the Cobb-Douglas production function (Lyu et al., 2019), Granger causality testing (Xesibe & Nyasha, 2020), ARDL modelling (Meidani & Zabihi, 2011), panel causality frameworks (Korkmaz & Abdullazade, 2020), GMM estimators (Zirgulis & Šarapovas, 2017), and visual analytics (Raghupathi & Raghupathi, 2020). Time-series econometric tools—such as the Augmented Dickey-Fuller test, Johansen cointegration, and Vector Error Correction models—have also been widely applied (Tareh et al., 2021). By contrast, the present study adopts t-tests for mean comparisons alongside correlation analyses to examine disparities in unemployment across gender and other socio-demographic categories. Although more parsimonious, this approach remains statistically rigorous and capable of identifying empirical patterns often hypothesised within more complex frameworks.

Regarding data sources, prior studies have drawn upon a heterogeneous range of datasets with diverse geographic and temporal scopes. For instance, Berniell et al. (2023) utilised household survey data from 15 Latin American countries spanning 2001–2017. Bluedorn et al. (2021) drew on OECD and Eurostat labour market statistics from 38 advanced and emerging economies. Numerous inquiries have employed single-country data, including studies of Ecuador (Tulcanaza-Prieto et al., 2023), Israel (Axelrad, Malul, & Luski, 2018), and Indonesia (Yumna et al., 2015). Others adopted cross-national macroeconomic datasets, such as Lin et al. (2009), who analysed data from 135 countries between 1990 and 2020. Subnational data have also been deployed, particularly in analyses of regional and sectoral labour dynamics (Guarnizo & Jumbo, 2020; Lyu et al., 2019), illuminating the spatial dimensions of unemployment.

In conclusion, the literature demonstrates unequivocally that unemployment is influenced by an intricate interplay of gender, age, education, income distribution, and spatial location, as well as broader macroeconomic and institutional conditions. Yet, much of the existing research examines these dimensions in isolation or restricts analysis to single-country cases, thereby constraining the development of holistic policy responses. By undertaking a comparative and cross-national approach encompassing ten Latin American economies, this study seeks to address that gap. It provides novel empirical evidence on the interrelations among socio-economic determinants of unemployment, thereby informing the design of more equitable and contextually appropriate labour market policies across the region.

Research Model

Data Collection and Data Processing

This study investigates variations in unemployment across several sociodemographic dimensions, namely gender, age, level of educational attainment, income distribution, and spatial location of residence. The empirical analysis draws on publicly accessible datasets published by [The Economic Commission for Latin America and the Caribbean \(2023\)](#). These data were chosen on account of their completeness and internal coherence, as they contained no duplication, inconsistencies, or missing observations. All statistical procedures were carried out using R software (version 4.3.1), which provides a comprehensive suite of advanced statistical techniques particularly well-suited to the examination of socioeconomic phenomena. The initial database encompassed 26 Latin American and Caribbean countries and territories. For the purposes of this investigation, however, the scope was refined to ten countries—Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela—on the basis that only these cases offered valid and continuous data covering the years 2010–2020.

Within these countries, unemployment statistics were disaggregated into five analytical dimensions: (i) unemployment rates differentiated by gender, (ii) unemployment rates by gender in conjunction with age cohort, (iii) unemployment rates by gender and level of schooling completed, (iv) urban unemployment rates disaggregated by gender and income distribution, and (v) unemployment rates according to area of residence. Categories relating to age and educational attainment were established in line with thresholds defined by the ECLAC. Altogether, the unemployment analysis was based on a total of 14,704 individual observations. For the correlation analysis, a set of eight explanatory variables was included, comprising five macroeconomic indicators and three social indicators. The macroeconomic variables consisted of: GDP growth at constant prices, per capita GDP growth at constant prices, the annual consumer price index, tax revenue as a proportion of GDP, and the Gini concentration index. The social indicators were: current public expenditure on health as a share of GDP, total public expenditure on education as a share of GDP, and the percentage of the population living in conditions of poverty and extreme poverty disaggregated by geographic area. This segment of the analysis drew upon 4,593 observations. A detailed classification and coding scheme for these variables is presented in [Table 1](#) for reference purposes.

Table 1: Codification of Variables.

Codification	Name of Variable
Ind_1	Growth Rate of GDP at Constant Prices
Ind_2	Growth Rate of GDP Per Capita at Constant Prices
Ind_3	Annual Consumer Price Index
Ind_4	Tax Revenue as a Percentage of GDP
Ind_5	Gini Concentration Index
Ind_6	Total Current Expenditure on Health as a Percentage of GDP
Ind_7	Total Public Expenditure on Education as a Percentage of GDP
Ind_8	Percentage of Population Living in Extreme Poverty and Poverty by Geographic Area

Methodology

To determine whether the observed variations in unemployment rates across distinct socio-demographic categories were statistically significant, the study utilised the two-sample t-test for equality of means. This statistical procedure is particularly suitable for assessing differences between two independent groups ([Gujarati, 1988](#)), such as comparisons between male and female unemployment or between urban and rural labour market outcomes. The application of the t-test facilitates the examination of disparities in mean values across disaggregated unemployment indicators, thereby offering a more nuanced insight into structural inequalities in labour markets associated with gender, age cohort, educational attainment, income distribution, and residential location. The test formally evaluates the null hypothesis of equality between two population means against the alternative hypothesis that a statistically significant difference exists. A conventional significance threshold of 0.05 was adopted, such that results were deemed statistically meaningful when the computed t-statistic exceeded the corresponding critical value derived from the Student distribution ([Gujarati, 1988](#)). The expression employed to compute the t-statistic is given as follows:

$$t - score = \frac{\bar{Y}_1 - \bar{Y}_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}} \quad (1)$$

Where $\bar{Y}_1$ and $\bar{Y}_2$ represent the sample means, s_1^2 and s_2^2 are the sample variances, and N_1 and N_2 are the sample sizes of the two groups.

Alongside mean comparison techniques, the study undertook a bivariate correlation analysis to investigate the extent of linear associations between unemployment rates and selected macroeconomic and social indicators. For this purpose, Pearson's correlation coefficient was applied, as it represents the most widely recognised statistical measure of linear dependence between two continuous variables. This parametric approach assumes the underlying data to be normally distributed—an assumption satisfied in the present dataset, which exhibited neither extreme values nor influential outliers. The formal expression of Pearson's correlation coefficient is presented as follows ([Mukaka, 2012](#)).

$$r = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{[\sum_{i=1}^n (x_i - \bar{x})^2][\sum_{i=1}^n (y_i - \bar{y})^2]}} \quad (2)$$

Where x_i and y_i are the observed values of the variables x and y , and $\bar{x}$ and $\bar{y}$ are their respective means.

This investigation does not purport to ascertain causal linkages; rather, it concentrates on delineating the direction and magnitude of associations between unemployment and macro-social variables. This methodological stance is warranted by the study's objective of elucidating structural patterns of labour market inequality and situating them within the wider socioeconomic framework of Latin America. Collectively, the application of the t-test and correlation analysis provides a robust and methodologically rigorous analytical framework. Whereas the t-test facilitates the detection of statistically significant differences between groups—particularly in relation to gendered labour disparities—the correlation analysis illuminates broader macro-level patterns that may shape or underpin these disparities. This combined methodological strategy effectively addresses the research aims by integrating micro-level group comparisons with macro-level socioeconomic context. The study consciously refrains from employing panel data

regression models with fixed or random effects, a decision underpinned by both technical and methodological considerations. Primarily, the dataset comprises ten countries over an eleven-year period (2010-2020), representing a limited cross-sectional dimension. Fixed and random effects models typically perform sub-optimally when the number of cross-sectional units is small relative to the temporal span, as their capacity to control for unobserved heterogeneity across units is constrained (Bell et al., 2019; Karabyik, Palm, & Urbain, 2019). Under such circumstances, there is an elevated risk of overfitting and inefficiency, particularly when the entities under study exhibit comparable structural characteristics in labour market dynamics. In addition, multicollinearity among explanatory variables constitutes a significant limitation. Strong correlations between predictors can produce unstable and biased coefficient estimates, thereby undermining the reliability of panel regression outcomes.

Moreover, many macroeconomic variables incorporated in the analysis are likely non-stationary, displaying temporal trends. Conventional panel models assume stationarity, and the presence of trends or unit roots may generate spurious associations and erroneous inferences (Hill et al., 2020; Pindyck & Rubinfeld, 2001). In light of these constraints, and given the study's emphasis on cross-sectional comparisons and structural associations rather than within-country temporal dynamics, more parsimonious and interpretable statistical procedures, such as t-tests and correlation analyses, are deemed appropriate. These methods preserve analytical clarity while enabling a rigorous examination of gendered

disparities and broader socioeconomic inequalities in unemployment across Latin America.

Results

T-Test for Equality of Means

In recent years, substantial international initiatives have sought to enhance employment conditions and broaden labour market access for women. Nonetheless, as reported by the ILO, women continue to encounter greater obstacles in obtaining employment relative to men. This pattern is apparent within the Latin American countries included in the present analysis. Table 2 displays the outcomes of the t-test conducted to compare unemployment rates between male and female cohorts. The results indicate that women consistently experience higher levels of unemployment than men across all ten countries under consideration. The observed differences are statistically significant at the 5% threshold in every country except Bolivia and Peru. Among the sampled nations, Colombia and Brazil exhibit the most pronounced gender disparities, with female unemployment exceeding male rates by 4.9 and 3.5 percentage points, respectively. Conversely, Venezuela presents the smallest statistically significant difference, with a gender gap of merely 1.4 percentage points. On average, women in Latin America face an unemployment rate that is 2.4 percentage points higher than that of their male counterparts.

Table 2: T-Test for Equality of Means on Unemployment Rates Disaggregated by Gender.

Country	Men	Women	Difference	t	P-Value
Argentina	7.344	9.408	-2.064	-3.299***	0.004
Bolivia	3.200	4.263	-1.063	-1.359	0.191
Brazil	8.379	11.815	-3.436	-2.703**	0.015
Chile	6.661	8.186	-1.525	-2.642**	0.016
Colombia	7.725	12.671	-4.945	-5.662***	0.000
Ecuador	3.282	4.765	-1.483	-3.712***	0.002
Paraguay	4.867	7.368	-2.501	-5.916***	0.000
Peru	3.915	4.659	-0.744	-1.516	0.146
Uruguay	6.132	9.379	-3.247	-6.032***	0.000
Venezuela	6.957	8.365	-1.408	-4.540***	0.000
Total	6.429	8.795	-2.366	-5.566***	0.000

Note: *** and ** indicate statistical significance at the 1% and 5% levels, respectively.

Age constitutes a critical determinant in shaping unemployment patterns. As indicated by the ILO (*Organización Internacional del Trabajo*, 2020), the unemployment rate among young individuals is approximately threefold that observed within the adult population (Tulcanaza-Prieto et al., 2023). Table 3 reports the outcomes of the t-test comparing mean unemployment rates across age cohorts and by gender. Across the majority of age categories, women exhibit consistently higher unemployment rates than men, with the exception of individuals aged over 44 in Ecuador, Paraguay, Peru, and Venezuela, where male unemployment rates are marginally higher or comparable. The most pronounced gender disparities are observed among the 15-24 age cohort in nearly all countries examined. A similarly substantial gap is evident within the 25-34 age group. Although the gender differential diminishes in the 35-44 cohort, it continues to be statistically significant.

Educational attainment constitutes a fundamental determinant in shaping access to employment and influencing wage differentials (Fergusson & Yeates, 2021).

As indicated in Table 4, an analysis of the aggregated data across all ten countries reveals that the mean differences in unemployment rates between men and women are statistically significant across all educational categories, with the exception of individuals possessing between 0 and 5 years of formal schooling. The most substantial gender disparity, measuring 3.4 percentage points, occurs within the cohort with 10 to 12 years of schooling. This observation is consistent with the findings of the *Organización Internacional del Trabajo* (2019), which highlighted that higher levels of education do not necessarily correspond to lower unemployment rates. Individuals with higher education may still face unemployment due to limited experience or lack of practical training. Gender gaps are most evident in Argentina, Bolivia, Brazil, Colombia, Ecuador, Paraguay, and Peru among those with 10-12 years of schooling. In contrast, Uruguay shows that men with less than 10 years of education are more likely to be employed than women with the same level, underscoring persistent gender inequality even among the less educated.

Table 3: T-Test for Equality of Means on Unemployment Rates Disaggregated by Gender and Age Group.

Country	Age group	Men	Women	Difference	t	P-Value
Argentina	15-24 Years Old	18.160	25.060	-6.900	-3.702***	0.002
	25-34 Years Old	6.490	10.030	-3.540	-4.223***	0.001
	35-44 Years Old	3.840	5.830	-1.990	-4.981***	0.000
	More than 44 Years Old	4.440	4.740	-0.300	-0.537	0.598
Bolivia	15-24 Years Old	9.650	13.320	-3.670	-1.521	0.146
	25-34 Years Old	4.330	8.310	-3.980	-2.410**	0.031
	35-44 Years Old	1.970	4.440	-2.470	-2.865**	0.015
	More than 44 Years Old	2.070	2.700	-0.630	-0.842	0.411
Brazil	15-24 Years Old	20.360	27.580	-7.220	-2.653**	0.016
	25-34 Years Old	7.990	12.750	-4.760	-3.895***	0.001
	35-44 Years Old	5.380	8.920	-3.540	-3.630***	0.002
	More than 44 Years Old	4.660	5.680	-1.020	-1.136	0.271
Chile	15-24 Years Old	19.720	25.520	-5.800	-1.900*	0.099
	25-34 Years Old	8.760	10.160	-1.400	-1.059	0.320
	35-44 Years Old	5.240	7.460	-2.220	-1.857*	0.100
	More than 44 Years Old	4.980	6.220	-1.240	-0.755	0.472
Colombia	15-24 Years Old	19.009	27.427	-8.418	-6.080***	0.000
	25-34 Years Old	8.855	15.536	-6.682	-5.868***	0.000
	35-44 Years Old	6.255	10.845	-4.591	-4.755***	0.000
	More than 44 Years Old	7.036	7.473	-0.436	-0.555	0.585
Ecuador	15-24 Years Old	10.609	16.264	-5.655	-8.176***	0.000
	25-34 Years Old	4.291	7.945	-3.655	-6.160***	0.000
	35-44 Years Old	2.536	4.018	-1.482	-4.623***	0.000
	More than 44 Years Old	2.200	1.764	0.436	1.883*	0.077
Paraguay	15-24 Years Old	13.009	16.518	-3.509	-3.091***	0.007
	25-34 Years Old	3.891	8.382	-4.491	-5.800***	0.000
	35-44 Years Old	2.645	4.109	-1.464	-3.234***	0.006
	More than 44 Years Old	3.427	2.900	0.527	2.162**	0.043
Peru	15-24 Years Old	12.364	13.600	-1.236	-1.146	0.266
	25-34 Years Old	4.491	6.145	-1.655	-1.894*	0.073
	35-44 Years Old	2.218	3.682	-1.464	-2.439**	0.024
	More than 44 Years Old	2.355	2.245	0.109	0.304	0.764
Uruguay	15-24 Years Old	20.073	28.018	-7.945	-3.806***	0.001
	25-34 Years Old	5.582	9.818	-4.236	-6.430***	0.000
	35-44 Years Old	3.209	6.218	-3.009	-8.397***	0.000
	More than 44 Years Old	2.782	4.364	-1.582	-5.220***	0.000
Venezuela	15-24 Years Old	13.540	20.380	-6.840	-6.861***	0.000
	25-34 Years Old	6.960	10.900	-3.940	-10.902***	0.000
	35-44 Years Old	4.440	5.640	-1.200	-3.791***	0.007
	More than 44 Years Old	4.700	3.660	1.040	3.312**	0.011
Total	15-24 Years Old	14.999	20.214	-5.215	-4.478***	0.000
	25-34 Years Old	6.094	9.694	-3.600	-5.650***	0.000
	35-44 Years Old	3.778	5.665	-1.886	-4.092***	0.001
	More than 44 Years Old	3.744	3.493	0.251	0.616	0.545

Note: ***, **, and * Indicate Statistical Significance at the 1%, 5%, and 10% Levels, respectively.

Table 5 illustrates unemployment rates disaggregated by gender across five income quintiles. Consistent with findings from previous sections, female unemployment rates remain higher than those of males across almost all income groups. The sole exception occurs in quintile 1 in Peru, where women exhibit a marginally lower unemployment rate than men; however, this difference is not statistically significant. A discernible pattern emerges throughout the region: the gender disparity in unemployment is most pronounced within the lower income quintiles and progressively narrows as income

levels rise. This tendency is evident in the majority of countries analysed. Uruguay presents a particularly notable case, with the largest gender gap observed in quintile 1, where female unemployment exceeds that of males by 11.4 percentage points. Conversely, in Chile, gender-based differences in unemployment across income quintiles are not statistically significant, suggesting a comparatively more equitable labour market outcome within this specific dimension. Collectively, the evidence indicates that women in lower-income brackets are especially susceptible to unemployment, highlighting

the intersectional nature of income and gender inequalities in access to the labour market across Latin America.

Table 4: T-Test for Equality of Means on Unemployment Rates Disaggregated by Gender and Years of Schooling.

Country	Educational Level	Men	Women	Difference	t	P-Value
Argentina	0-5 Years	7.870	5.630	2.240	1.655	0.119
	6-9 Years	7.960	10.520	-2.560	-2.738**	0.014
	10-12 Years	7.980	12.310	-4.330	-4.932***	0.000
	More than 12 Years	4.150	5.930	-1.780	-5.013***	0.000
Bolivia	0-5 Years	2.000	2.760	-0.760	-1.391	0.181
	6-9 Years	2.910	6.120	-3.210	-3.127***	0.007
	10-12 Years	3.820	7.330	-3.510	-2.970***	0.010
	More than 12 Years	5.250	7.650	-2.400	-1.600	0.129
Brazil	0-5 Years	7.330	9.430	-2.100	-1.637	0.119
	6-9 Years	10.160	15.040	-4.880	-3.189***	0.005
	10-12 years	9.800	15.500	-5.700	-3.689***	0.002
	More than 12 Years	5.590	7.590	-2.000	-2.512**	0.022
Chile	0-5 Years	5.880	8.620	-2.740	-1.458	0.183
	6-9 Years	7.780	10.220	-2.440	-1.215	0.264
	10-12 Years	8.600	11.340	-2.740	-1.301	0.235
	More than 12 Years	7.040	8.120	-1.080	-1.211	0.261
Colombia	0-5 Years	7.382	10.109	-2.727	-3.137***	0.006
	6-9 Years	10.009	15.082	-5.073	-3.722***	0.002
	10-12 Years	10.700	17.073	-6.373	-5.799***	0.000
	More than 12 Years	9.436	12.709	-3.273	-3.988***	0.001
Ecuador	0-5 Years	2.227	2.109	0.118	0.328	0.746
	6-9 Years	2.764	3.609	-0.845	-2.017**	0.061
	10-12 Years	5.445	7.991	-2.545	-6.252***	0.000
	More than 12 Years	4.636	6.491	-1.855	-3.753***	0.002
Paraguay	0-5 Years	5.882	5.964	-0.082	-0.094	0.926
	6-9 Years	5.609	7.436	-1.827	-2.464**	0.025
	10-12 Years	7.009	11.045	-4.036	-4.354***	0.001
	More than 12 Years	3.909	6.073	-2.164	-4.167***	0.001
Peru	0-5 Years	2.318	1.955	0.364	1.390	0.180
	6-9 Years	5.164	4.964	0.200	0.417	0.681
	10-12 Years	4.700	6.327	-1.627	-2.694**	0.014
	More than 12 Years	4.991	6.382	-1.391	-1.786*	0.089
Uruguay	0-5 Years	5.491	10.845	-5.355	-4.036***	0.001
	6-9 Years	6.982	12.536	-5.555	-7.880***	0.000
	10-12 Years	6.555	9.655	-3.100	-4.225***	0.000
	More than 12 Years	4.445	5.136	-0.691	-2.098**	0.049
Venezuela	0-5 Years	5.940	6.880	-0.940	-1.488	0.211
	6-9 Years	6.640	6.920	-0.280	-0.556	0.594
	10-12 Years	7.540	9.580	-2.040	-3.725***	0.006
	More than 12 Years	6.820	9.520	-2.700	-6.775***	0.000
Total	0-5 Years	5.271	5.771	-0.499	-0.898	0.380
	6-9 Years	6.521	8.531	-2.010	-3.538***	0.003
	10-12 Years	7.289	10.692	-3.402	-5.346***	0.000
	More than 12 Years	5.426	7.180	-1.754	-4.106***	0.001

Note: ***, **, and * Indicate Statistical Significance at the 1%, 5%, and 10% Levels, respectively.

Table 6 displays unemployment rates disaggregated by gender and area of residence, distinguishing between rural and urban settings. Across all countries, with the exception of rural Peru, female unemployment exceeds that of males. On average, the gender differential in unemployment (3.3 percentage points) is more pronounced in rural areas than in urban contexts. This trend is evident in countries such as Chile, Colombia, Paraguay, and Uruguay. Notably, Colombia's rural regions

exhibit the largest statistical disparity, with male unemployment at 4.1% and female unemployment at 13.1%, producing a gender gap of 9.0 percentage points for the period 2010-2020. Within urban areas, the most substantial differences between men and women are observed in Brazil, Colombia, and Uruguay. It is important to acknowledge that Argentina reports data exclusively for urban unemployment, while Venezuela lacks detailed information stratified by area of residence.

Table 5: T-Test for Equality of Means on Urban Unemployment Rates Disaggregated by Gender and Income Distribution.

Country	Category	Men	Women	Difference	t	P-Value
Argentina	Quintile 1	18.620	23.190	-4.570	-2.160**	0.045
	Quintile 2	9.060	14.630	-5.570	-7.076***	0.000
	Quintile 3	6.490	9.780	-3.290	-5.803***	0.000
	Quintile 4	4.280	5.250	-0.970	-2.024*	0.059
	Quintile 5	1.860	2.100	-0.240	-1.032	0.316
Bolivia	Quintile 1	7.830	12.130	-4.300	-1.632	0.121
	Quintile 2	4.640	8.760	-4.120	-2.783**	0.014
	Quintile 3	3.750	6.520	-2.770	-2.440**	0.027
	Quintile 4	3.240	4.730	-1.490	-1.698	0.108
	Quintile 5	2.200	3.200	-1.000	-1.709	0.108
Brazil	Quintile 1	25.990	36.250	-10.260	-2.986***	0.008
	Quintile 2	12.190	19.050	-6.860	-3.495***	0.003
	Quintile 3	6.740	10.230	-3.490	-2.970***	0.009
	Quintile 4	3.900	5.680	-1.780	-3.092***	0.006
	Quintile 5	2.370	3.450	-1.080	-4.087***	0.001
Chile	Quintile 1	19.440	23.300	-3.860	-1.517	0.168
	Quintile 2	10.540	13.080	-2.540	-1.065	0.318
	Quintile 3	7.500	9.540	-2.040	-1.216	0.259
	Quintile 4	4.760	6.180	-1.420	-1.028	0.351
	Quintile 5	2.980	3.640	-0.660	-2.200*	0.070
Colombia	Quintile 1	19.709	29.200	-9.491	-3.955***	0.001
	Quintile 2	11.109	19.927	-8.818	-7.278***	0.000
	Quintile 3	9.300	13.945	-4.645	-4.406***	0.000
	Quintile 4	7.309	9.209	-1.900	-2.904***	0.009
	Quintile 5	4.809	5.555	-0.745	-2.418**	0.025
Ecuador	Quintile 1	8.827	12.945	-4.118	-3.960***	0.001
	Quintile 2	4.982	8.500	-3.518	-8.119***	0.000
	Quintile 3	3.873	5.955	-2.082	-5.963***	0.000
	Quintile 4	3.273	4.027	-0.755	-1.731*	0.099
	Quintile 5	2.027	2.509	-0.482	-1.822*	0.087
Paraguay	Quintile 1	14.182	18.436	-4.255	-3.192***	0.007
	Quintile 2	6.555	11.373	-4.818	-5.158***	0.000
	Quintile 3	5.318	8.245	-2.927	-4.043***	0.001
	Quintile 4	3.791	4.691	-0.900	-1.663	0.119
	Quintile 5	2.064	2.627	-0.564	-1.800*	0.087
Peru	Quintile 1	8.373	8.300	0.073	0.046	0.964
	Quintile 2	5.164	6.236	-1.073	-1.545	0.138
	Quintile 3	4.427	5.264	-0.836	-1.548	0.137
	Quintile 4	3.818	4.591	-0.773	-1.454	0.161
	Quintile 5	2.836	3.773	-0.936	-3.276***	0.004
Uruguay	Quintile 1	12.891	24.255	-11.364	-9.471***	0.000
	Quintile 2	8.282	13.291	-5.009	-5.593***	0.000
	Quintile 3	6.409	8.136	-1.727	-2.948***	0.008
	Quintile 4	4.164	4.936	-0.773	-3.070***	0.006
	Quintile 5	2.700	3.064	-0.364	-2.111**	0.048
Venezuela	Quintile 1	18.720	22.940	-4.220	-3.848***	0.005
	Quintile 2	8.580	12.760	-4.180	-7.762***	0.000
	Quintile 3	6.400	8.520	-2.120	-3.934***	0.006
	Quintile 4	4.520	5.840	-1.320	-2.930**	0.022
	Quintile 5	2.440	3.260	-0.820	-4.883***	0.001
Total	Quintile 1	14.640	19.814	-5.174	-3.856***	0.001
	Quintile 2	7.914	11.940	-4.026	-5.784***	0.000
	Quintile 3	5.945	8.138	-2.193	-4.220***	0.001
	Quintile 4	4.256	5.261	-1.005	-2.787**	0.012
	Quintile 5	2.635	3.070	-0.435	-2.601**	0.018

Note: ***, **, and * Indicate Statistical Significance at the 1%, 5%, and 10% levels, respectively.

Table 6: T-Test for Equality of Means on Unemployment Rate Disaggregated by Gender and Residence Area.

Country	Category	Men	Women	Difference	t	P-Value
Argentina	Rural	NI	NI			
	Urban	7.870	10.653	-2.783	-3.891***	0.001
Bolivia	Rural	0.863	1.165	-0.302	-1.293	0.212
	Urban	4.275	6.957	-2.682	-2.079*	0.054
Brazil	Rural	5.882	9.993	-4.112	-1.965*	0.067
	Urban	9.960	14.507	-4.547	-3.175***	0.005
Chile	Rural	7.140	12.167	-5.027	-2.733**	0.026
	Urban	8.833	10.913	-2.080	-1.341	0.217
Colombia	Rural	4.085	13.124	-9.039	-9.497***	0.000
	Urban	10.291	15.314	-5.023	-4.658***	0.000
Ecuador	Rural	1.514	2.655	-1.141	-3.528***	0.004
	Urban	4.527	6.632	-2.105	-5.688***	0.000
Paraguay	Rural	2.983	5.991	-3.008	-9.832***	0.000
	Urban	6.261	8.859	-2.598	-4.612***	0.000
Peru	Rural	0.824	0.789	0.035	0.456	0.654
	Urban	4.870	5.586	-0.717	-1.057	0.303
Uruguay	Rural	2.362	6.638	-4.276	-10.060***	0.000
	Urban	6.797	10.523	-3.726	-6.245***	0.000
Venezuela	Rural	NI	NI			
	Urban	NI	NI			
Total	Rural	3.653	6.916	-3.263	-7.979***	0.000
	Urban	6.951	9.423	-2.472	-4.188***	0.000

Note: ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. NI: No Information.

Correlation Analysis

Table 7: Pearson Correlation Coefficients Between Macroeconomic and Social Variables and Unemployment Rate.

Country	Ind_1	Ind_2	Ind_3	Ind_4	Ind_5	Ind_6	Ind_7	Ind_8
Panel A: Both Genders								
Argentina	-0.259	-0.264	-0.308	-0.329***	NI	-0.717***	0.283	NI
Bolivia	-0.745***	-0.747***	-0.715***	-0.633***	0.352	-0.402	0.112	0.262*
Brazil	-0.326	-0.296	0.491***	-0.059	0.078	0.870***	0.205	0.007
Chile	-0.105	-0.095	-0.781***	-0.448***	0.664***	-0.375	-0.031	0.244
Colombia	-0.225	-0.246	-0.851***	-0.388***	0.558**	-0.841***	-0.104	0.351**
Ecuador	-0.230	-0.237	-0.680***	-0.425***	0.673***	-0.659***	-0.861***	0.371**
Paraguay	-0.378*	-0.383*	-0.588**	-0.350***	0.374*	-0.442	0.261	0.233
Perú	-0.375	-0.363	-0.770***	-0.357***	0.267	-0.606**	0.185	0.248
Uruguay	-0.314	-0.290	-0.108	0.001	0.160	0.028	-0.467	0.090
Venezuela	0.328	0.300	-0.205	-0.445**	0.649**	0.574**	-0.206	0.361*
Panel B: Male								
Argentina	-0.349	-0.354	-0.270	-0.327***	NI	-0.643***	-0.608***	NI
Bolivia	-0.777***	-0.770***	-0.356	-0.521***	0.125	-0.053	0.321	0.117
Brazil	-0.421*	-0.390*	0.591***	-0.067	-0.003	0.905***	0.292	-0.027
Chile	-0.160	-0.153	-0.740***	-0.496***	0.638*	-0.260	-0.429**	0.215
Colombia	-0.244	-0.266	-0.852***	-0.391***	0.579**	-0.833***	-0.127	0.357**
Ecuador	-0.528**	-0.520**	-0.373	-0.140	-0.030	-0.315	-0.612**	0.095
Paraguay	-0.407*	-0.418*	-0.544**	-0.330***	0.396*	-0.362	0.367	0.221
Perú	-0.491**	-0.478**	-0.717***	-0.391***	0.232	-0.517**	0.254	0.221
Uruguay	-0.550**	-0.526**	0.247	0.080	-0.190	0.336	-0.269	-0.107
Venezuela	0.333	0.302	-0.204	-0.474***	0.661***	0.602***	-0.703	0.351*
Panel C: Female								
Argentina	-0.118	-0.125	-0.360	-0.321***	NI	-0.806***	-0.795***	NI
Bolivia	-0.707***	-0.706***	-0.593**	-0.516***	0.311	-0.267	0.199	0.226
Brazil	-0.205	-0.177	0.320	-0.048	0.186	0.778***	0.061	0.053
Chile	0.027	0.042	-0.812***	-0.305***	0.712**	-0.578***	-0.692***	0.306
Colombia	-0.190	-0.211	-0.869***	-0.385***	0.557**	-0.860***	-0.110	0.355**
Ecuador	-0.569**	-0.559**	-0.279	-0.129	0.011	-0.260	-0.688***	0.112
Paraguay	-0.322	-0.322	-0.611***	-0.359***	0.371*	-0.509**	0.165	0.246
Perú	-0.190	-0.179	-0.782***	-0.272**	0.318	-0.690***	0.058	0.278*
Uruguay	-0.130	-0.109	-0.352	-0.055	0.457*	-0.199	-0.603**	0.260
Venezuela	0.314	0.288	-0.200	-0.453**	0.685***	0.562***	-0.713	0.358*
Expected Sign	-	-	-	-	+	-	-	+

Note: NI: No Information. ***, **, and * indicates statistical significance at the 1%, 5% and 10% level, respectively.

Table 7 presents the correlation between unemployment rates and the macroeconomic and social indicators detailed in Table 1. The analysis demonstrates a significant negative association between unemployment and several

principal variables across the majority of Latin American countries, including inflation (Ind_3), tax revenues as a percentage of GDP (Ind_4), and total current health expenditure as a percentage of GDP (Ind_7). These results align with the Phillips curve framework, which posits an inverse relationship between inflation and unemployment. According to this theoretical construct, reductions in unemployment generally coincide with rising inflation, representing a trade-off that policymakers must consider. Similarly, extant literature corroborates the negative correlation between unemployment and tax revenues, indicating that higher corporate income taxation may incentivise the movement of human capital from the formal to the informal sector. Moreover, elevated taxation can result in increased wages within non-competitive labour markets, potentially exacerbating unemployment. Declines in corporate income consequently reduce tax revenue, thereby diminishing labour demand and contributing to higher unemployment levels. In addition, augmented public expenditure on health enhances population productivity, which in turn improves employment outcomes. Investment in health strengthens human capital, thereby lowering the probability of unemployment. Previous studies further suggest that the effects of unemployment on health differ by gender, with women generally being less impacted than men, reflecting social roles and health selection mechanisms. This analysis underscores the interdependence of unemployment with macroeconomic and social variables and emphasises the critical role of these factors in shaping labour market dynamics throughout Latin America.

Discussion

The Latin American labour market exhibits pronounced asymmetries in employment outcomes between women and men. As outlined in Section 4.1, although inter-country variations exist, female unemployment rates consistently exceed those of males across all ten countries included in this analysis. The t-test results indicate that, on average, women experience higher unemployment (mean = 8.795) relative to men (mean = 6.429) throughout the region. Gender disparities are particularly marked in Colombia, Brazil, and Uruguay. These observations are consistent with the extant literature on the “gender gap in the labour market,” which emphasises the role of socially constructed gender norms. Such norms frequently associate women with domestic responsibilities, childcare, and marital obligations, thereby constraining their access to full-time employment and increasing vulnerability to dismissal with lower severance (Mora, Garrido, & Bermudez, 2024; Rodriguez Castelan et al., 2016).

Research further demonstrates that women in the region are disproportionately employed in face-to-face service sectors, which are typically characterised by lower wages, high informality, discriminatory hiring practices, job insecurity, and limited opportunities for career progression (Mora et al., 2024; Rodriguez Castelan et al., 2016). Berniell et al. (2023) additionally note that these gendered labour market structures are reinforced by cultural constraints and disparities in educational attainment. The present study also identified a substantial association between educational level and income distribution, with female unemployment rates exceeding those of men across all income quintiles. The largest gender differential (5.2 percentage points) was observed within the lowest income quintile, whereas the smallest gap (0.4 percentage points) appeared in the highest quintile. These findings accord

with Rodriguez Castelan et al. (2016), who contend that individuals in lower-income brackets are more likely to encounter informal employment, precarious working conditions, and elevated unemployment due to restricted access to quality education, vocational training, and social protection mechanisms.

Analysis of unemployment by area of residence revealed that women experience higher unemployment than men in both rural (3.3 percentage points) and urban (2.5 percentage points) settings. Rural regions, in particular, are characterised by limited public and private investment, widespread informality, dependence on primary economic sectors, and inadequate social protection, all of which exacerbate adverse employment conditions. Finally, the correlation analysis of macroeconomic variables supports the arguments advanced by Rodriguez Castelan et al. (2016) and Taresh et al. (2021), who posit that economic instability and elevated inflation are commonly associated with higher unemployment. Consistent with this, the present findings indicate a negative correlation between unemployment rates and inflation, tax revenue, and public expenditure on health in the majority of countries examined.

Conclusion

This study examined unemployment patterns in ten Latin American countries from 2010 to 2020. Using t-tests, it compared unemployment rates by gender, age, education, income level, and area of residence, and applied correlation analysis to link unemployment with macroeconomic and social indicators. Results showed persistent gender disparities, with women facing higher unemployment than men, particularly influenced by education. Young people and rural residents also experienced greater employment challenges. Although correlations varied across countries, women's unemployment consistently remained higher. The findings highlight the need for policies promoting gender equity, fair wages, reduced informality, and broader female participation across economic sectors. Strengthening education, vocational training, innovation, and digital skills is crucial, supported by coordinated efforts across sectors. Labour and social protection measures should also expand social security, enforce wage laws, formalise contracts, and reinforce labour inspections. Future studies should explore long-term unemployment dynamics and gender roles at a more detailed level.

Funding: We extend our gratitude and acknowledgment to the Universidad de Las Américas, which financially supported this research (EDN.ATP.22.03).

References

- Arranz, J. M., & García-Serrano, C. (2023). Assistance benefits and unemployment outflows of the elderly unemployed: The impact of a law change. *The Journal of the Economics of Ageing*, 26, 100466. doi: <https://doi.org/10.1016/j.jeoa.2023.100466>
- Axelrad, H., Malul, M., & Luski, I. (2018). Unemployment among younger and older individuals: does conventional data about unemployment tell us the whole story? *Journal for Labour Market Research*, 52(1), 3. doi: <https://doi.org/10.1186/s12651-018-0237-9>
- Becker, S. O., & Ferrara, A. (2019). Consequences of forced migration: A survey of recent findings. *Labour*

- Economics*, 59, 1-16. doi: <https://doi.org/10.1016/j.labeco.2019.02.007>
- Bell, A., Fairbrother, M., & Jones, K. (2019). Fixed and random effects models: making an informed choice. *Quality & Quantity*, 53(2), 1051-1074. doi: <https://doi.org/10.1007/s11135-018-0802-x>
- Berniell, I., Gasparini, L., Marchionni, M., & Violaz, M. (2023). Lucky women in unlucky cohorts: Gender differences in the effects of initial labor market conditions in Latin America. *Journal of Development Economics*, 161, 103042. doi: <https://doi.org/10.1016/j.jdeveco.2022.103042>
- Blank, R. M., & Blinder, A. S. (1986). Macroeconomics, Income Distribution, and Poverty. In S. Danziger & D. Weinberg (Eds.), *Fighting Poverty* (pp. 180-208). Cambridge, MA: Harvard University Press.
- Bluedorn, J., Caselli, F. G., Hansen, N.-J. H., Shibata, I., & Tavares, M. M. (2021). *Gender and Employment in the COVID-19 Recession: Evidence on "She-Cessions"*. International Monetary Fund. Retrieved from <https://www.imf.org/-/media/Files/Publications/WP/2021/English/wpia2021095-print-pdf.ashx>
- Burdett, K., & Mortensen, D. T. (1998). Wage Differentials, Employer Size, and Unemployment. *International Economic Review*, 39(2), 257-273. doi: <https://doi.org/10.2307/2527292>
- Castells-Quintana, D., & Royuela, V. (2012). Unemployment and Long-Run Economic Growth: The Role of Income Inequality and Urbanisation. *Investigaciones Regionales-Journal of Regional Research*, (24), 153-173. Retrieved from <https://www.redalyc.org/pdf/289/28924660007.pdf>
- Clausing, K. A. (2007). Corporate tax revenues in OECD countries. *International Tax and Public Finance*, 14(2), 115-133. doi: <https://doi.org/10.1007/s10797-006-7983-2>
- Comisión Económica para América Latina y el Caribe. (2022). *Social Panorama of Latin America and the Caribbean: Transforming Education as a Basis for Sustainable Development*. ECLAC. Retrieved from <https://www.cepal.org/en/publications/48519-social-panorama-latin-america-and-caribbean-2022-transforming-education-basis>
- Dayıoğlu, T., & Aydın, Y. (2020). Relationship between Economic Growth, Unemployment, Inflation and Current Account Balance: Theory and Case of Turkey. In M. K. Terzioğlu & G. Djurovic (Eds.), *Linear and Non-Linear Financial Econometrics - Theory and Practice*. IntechOpen. doi: <https://doi.org/10.5772/intechopen.93833>
- De Domingo Soler, C., Jácome, M. N., Rodríguez Proaño, M. A., & Muñoz Pumagualle, M. G. (2020). Juventud, academia y empleo. Análisis de una desconexión. *Podium*, (37), 129-146. doi: <https://doi.org/10.31095/podium.2020.37.9>
- Doménech, R., & García, J. R. (2008). Unemployment, taxation and public expenditure in OECD economies. *European Journal of Political Economy*, 24(1), 202-217. doi: <https://doi.org/10.1016/j.ejpoleco.2007.05.003>
- Egunjobi, T. A. (2014). Poverty and Unemployment Paradox in Nigeria. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*, 19(5), 106-116. Retrieved from <https://ir.unilag.edu.ng:8080/xmlui/handle/123456789/3071>
- Fad'oš, M., & Bohdalová, M. (2019). Unemployment gender inequality: evidence from the 27 European Union countries. *Eurasian Economic Review*, 9(3), 349-371. doi: <https://doi.org/10.1007/s40822-018-0107-3>
- Fergusson, R., & Yeates, N. (2021). *Global Youth Unemployment: History, Governance and Policy*. Edward Elgar Publishing. doi: <https://doi.org/10.4337/9781789900422>
- Guarnizo, S., & Jumbo, F. (2020). Efecto del capital humano y crecimiento económico en el desempleo a nivel global y por grupos de países. *Revista Económica*, 6(1), 49-62. Retrieved from <https://revistas.unl.edu.ec/index.php/economic/article/view/790>
- Gujarati, D. (1988). *Basic Econometrics (Second)*. McGraw Hill.
- Hill, T. D., Davis, A. P., Roos, J. M., & French, M. T. (2020). Limitations of Fixed-Effects Models for Panel Data. *Sociological Perspectives*, 63(3), 357-369. doi: <https://doi.org/10.1177/0731121419863785>
- Hjazeen, H., Seraj, M., & Ozdeser, H. (2021). The nexus between the economic growth and unemployment in Jordan. *Future Business Journal*, 7(1), 42. doi: <https://doi.org/10.1186/s43093-021-00088-3>
- Hoynes, H., Miller, D. L., & Schaller, J. (2012). Who Suffers during Recessions? *Journal of Economic Perspectives*, 26(3), 27-48. doi: <https://doi.org/10.1257/jep.26.3.27>
- ILO. (2021). *Unemployment Rate*. Retrieved from https://www.ilo.org/shinyapps/bulkexplorer29/?lang=en&segment=indicator&id=UNE_2EAP_SEX_AGE_RT_A
- Karabiyik, H., Palm, F. C., & Urbain, J.-P. (2019). Econometric Analysis of Panel Data Models with Multifactor Error Structures. *Annual Review of Economics*, 11, 495-522. doi: <https://doi.org/10.1146/annurev-economics-063016-104338>
- Kasseh, P. A. (2018). The Relation Between Inflation and Unemployment in the Gambia: Analysis of the Philips Curve. *Journal of Global Economics*, 6(2), 6-12. doi: <https://doi.org/10.4172/2375-4389.1000294>
- Korkmaz, S., & Abdullazade, M. (2020). The Causal Relationship between Unemployment and Inflation in G6 Countries. *Advances in Economics and Business*, 8(5), 303-309. doi: <https://doi.org/10.13189/aeb.2020.080505>
- Lin, S.-C., Huang, H.-C., Kim, D.-H., & Yeh, C.-C. (2009). Nonlinearity Between Inequality and Growth. *Studies in Nonlinear Dynamics & Econometrics*, 13(2), 3. doi: <https://doi.org/10.2202/1558-3708.1635>
- Lyu, H., Dong, Z., Roobavannan, M., Kandasamy, J., & Pande, S. (2019). Rural unemployment pushes migrants to urban areas in Jiangsu Province, China. *Palgrave Communications*, 5(1), 92. doi: <https://doi.org/10.1057/s41599-019-0302-1>
- Meidani, A. A. N., & Zabihi, M. (2011). The Dynamic Effect of Unemployment Rate on Per Capita Real GDP in Iran. *International Journal of Economics and Finance*, 3(5), 170-177. doi: <https://doi.org/10.5539/ijef.v3n5p170>
- Mora, J. J., Garrido, L. E. S., & Bermudez, L. C. R. (2024). Spatial Relationship between Unemployment, Immigration, and Criminality. *Latin American Economic Review*, 33, 5. doi: <https://doi.org/10.60758/laer.v33.253>
- Mukaka, M. M. (2012). A Guide to Appropriate Use of Correlation Coefficient in Medical Research. *Malawi Medical Journal*, 24(3), 69-71. Retrieved from <https://www.ajol.info/index.php/mmj/article/view/81576>
- Noor, Z. M., Nor, N. M., & Ghani, J. A. (2007). The Relationship Between Output and Unemployment in Malaysia: Does Okun's Law Exist. *International Journal of Economics and Management*, 1(3), 337-344. Retrieved from <https://www.ijem.upm.edu.my/vol1no3/bab02.pdf>
- Núñez, I., & Livanos, I. (2010). Higher education and unemployment in Europe: an analysis of the academic subject and national effects. *Higher*

- Education, 59(4), 475-487. doi: <https://doi.org/10.1007/s10734-009-9260-7>
- Okun, A. M. (1962). Potential GNP: Its Measurement and Significance. In *Proceedings of Business and Economic Statistics Section* (pp. 98-103). American Statistical Association.
- Organización Internacional del Trabajo. (2019). *Panorama laboral América Latina y el Caribe 2019*. Organización Internacional del Trabajo. Retrieved from <https://www.ilo.org/es/publications/panorama-laboral-2019-america-latina-y-el-caribe>
- Organización Internacional del Trabajo. (2020). *Informe mundial sobre el empleo juvenil 2020*. Organización Internacional Del Trabajo. Retrieved from https://www.ilo.org/americas/sala-de-prensa/WCMS_738631/lang-es/index.htm
- Pindyck, R. S., & Rubinfeld, D. L. (2001). *Econometría: Modelos y Pronósticos (Fourth)*. McGraw Hill.
- Programa de las Naciones Unidas para el Desarrollo. (2019). *El mercado laboral femenino en América Latina: Análisis de sus características por estrato social y desafíos de política pública*. Retrieved from <https://www.undp.org/sites/g/files/zskgke326/files/migration/latinamerica/1a478be26f1405ab6c232f0576a2e83dfe3495c7e60fc74172eea962cfc6503b.pdf>
- Raghupathi, V., & Raghupathi, W. (2020). Healthcare Expenditure and Economic Performance: Insights From the United States Data. *Frontiers in Public Health*, 8, 156. doi: <https://doi.org/10.3389/fpubh.2020.00156>
- Rodriguez Castelan, C., Lopez-Calva, L.-F., Lustig, N., & Valderrama, D. (2016). *Understanding the Dynamics of Labor Income Inequality in Latin America* (World Bank Policy Research Working Paper No. 7795). The World Bank. doi: <https://doi.org/10.13140/RG.2.2.27342.25920>
- Rubio, J., & Tulcanaza-Prieto, A. B. (2025). Digital Payments Trust in Latin America and the Caribbean. *Economies*, 13(5), 140. doi: <https://doi.org/10.3390/economies13050140>
- Sasongko, G., Huruta, A. D., & Gultom, Y. N. V. (2019). Does the Phillips Curve Exist in Indonesia? A Panel Granger Causality Model. *Entrepreneurship and Sustainability Issues*, 6(3), 1428-1443. doi: [https://doi.org/10.9770/jesi.2019.6.3\(26\)](https://doi.org/10.9770/jesi.2019.6.3(26))
- Shahpari, G., & Davoudi, P. (2014). Studying Effects of Human Capital on Income Inequality in Iran. *Procedia - Social and Behavioral Sciences*, 109, 1386-1389. doi: <https://doi.org/10.1016/j.sbspro.2013.12.641>
- Singh, D., & Shastri, S. (2020). Public expenditure on education, educational attainment and unemployment nexus in India: an empirical investigation. *International Journal of Social Economics*, 47(5), 663-674. doi: <https://doi.org/10.1108/IJSE-06-2019-0396>
- Taresh, A. A., Sari, D. W., & Purwono, R. (2021). Analysis of the Relationship Between Income Inequality and Social Variables: Evidence from Indonesia. *Economics & Sociology*, 14(1), 103-119. doi: <https://doi.org/10.14254/2071-789X.2021/14-1/7>
- The Economic Commission for Latin America and the Caribbean. (2023). *Bases de datos y publicaciones estadísticas*. Estadísticas e Indicadores. Retrieved from <https://statistics.cepal.org/portal/cepalstat/dashboard.htm?lang=es>
- Tulcanaza-Prieto, A. B., Báez Salazar, P. A., & Aguilar-Rodríguez, I. E. (2023). Determinants of Youth Unemployment in Ecuador in 2019. *Economies*, 11(2), 59. doi: <https://doi.org/10.3390/economies11020059>
- Tulcanaza-Prieto, A. B., Cortez-Ordoñez, A., Rivera, J., & Lee, C. W. (2025). Is Digital Literacy a Moderator Variable in the Relationship Between Financial Literacy, Financial Inclusion, and Financial Well-Being in the Ecuadorian Context? *Sustainability*, 17(6), 2476. doi: <https://doi.org/10.3390/su17062476>
- UNESCO - UNICEF. (2021). *Los aprendizajes fundamentales en América Latina y el Caribe. Evaluación de logros de los estudiantes. Estudio Regional Comparativo y Explicativo (ERCE 2019)*. Retrieved from <https://hdl.handle.net/20.500.12365/18615>
- World Bank. (2023). *World Development Indicators. Military Expenditure*. Retrieved from <https://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS>
- Xesibe, Z., & Nyasha, S. (2020). Unemployment and economic growth in South Africa: a re-examination. *International Journal of Sustainable Economy*, 12(2), 101-116. doi: <https://doi.org/10.1504/IJSE.2020.110261>
- Yumna, A., Rakhmadi, M. F., Hidayat, M. F., Gultom, S. E., & Suryahadi, A. (2015). *Estimating the Impact of Inequality on Growth and Unemployment in Indonesia*. SMERU Research Institute Jakarta. Retrieved from https://smeru.or.id/sites/default/files/publication/in_equalityunemployment_eng.pdf
- Zirgulis, A., & Šarapovas, T. (2017). Impact of corporate taxation on unemployment. *Journal of Business Economics and Management*, 18(3), 412-426. doi: <https://doi.org/10.3846/16111699.2016.1278400>