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Gender Disparities in Kazakhstan's Labor Market: Evidence from the Quality Employment

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ABSTRACT

Gender disparities in the labor market have remained a critical area of economic research, particularly in understanding how men and women experience different employment conditions. This study aims to assess the quality of employment for men and women, focusing on the multidimensional quality of jobs, including formal and informal employment, unemployment, and access to highly qualified professions. The research employs a standardized approach using Z-scores to analyze deviations from average labor market indicators across genders, enabling a comparative evaluation of employment trends over the past decade. Data were drawn from national labor force statistics, covering a wide range of indicators such as labor force participation, employment rates, unemployment, and sectoral distribution. The results of the study show significant gender differences. The average level of the involvement of women in the labor force during the study period was 64.96%, while for men this figure reached 76.38%. The employment rate among women was 4.5% lower on average compared to men, and for women in informal employment, it was 20.16% versus 20.76% for men. Women also showed a higher unemployment rate: 5.71% versus 4.36% for men. The study also highlights the impact of external economic shocks, such as the COVID-19 pandemic, on labor market dynamics, exacerbating gender disparities. Future research should focus on developing policies that reduce informal employment and increase job stability for women. Further study of the long-term effects of global economic crises on gender differences in the quality of employment is also necessary to develop effective measures.

KEYWORDS: Gender, Gender Inequality, Gender Economy, Economic Shocks, Occupational Segregation, Quality Employment, Employment Trends

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1. INTRODUCTION

In recent decades, gender equality issues in the labor market have become one of the most critical topics in socio-economic research and public policy. The employment of women and men, their participation in economic activities, working conditions, and the quality of jobs play a crucial role in ensuring the sustainable development of society. The differences in employment rates between men and women point to structural and institutional problems that require in-depth analysis and the search for practical solutions to eliminate gender inequalities.

Gender differences in the labor market are not limited to issues of labor force participation. They include broader aspects such as access to stable employment, unemployment rates, working conditions, representation in various industries and professions, and the distribution of labor between the formal and informal sectors. All these factors determine the quality of employment and affect the overall level of well-being of people, as well as economic growth and social sustainability of society.

At the same time, although men have an advantage in the formal sector of the economy and higher positions, they face other challenges, such as a high share of employment in industries prone to economic downturns and restructuring. Economic crises or changes in the sectoral structure can increase men's unemployment, negatively affecting their employment. In addition, high employment levels in professions with excessive physical activity or long working hours can worsen the quality of employment for men and lead to a deterioration in their health and well-being.

Research on gender differences in the labor market is important in modern economic literature. Numerous papers address various aspects of women's and men's employment, such as labor force participation, unemployment, informal employment, wage differences, and access to highly skilled professions. These studies provide a deeper understanding of how gender inequalities in the labor market limit women's economic opportunities and contribute to the persistence of income and wealth gaps.

However, despite extensive research, essential aspects remain insufficiently studied. One of the key literary gaps is the insufficient analysis of the dynamics of changes in the quality of employment of women and men over long periods, especially in the context of external economic crises and other shocks. Many studies focus on short-term trends and do not consider long-term changes that occur in the economy and society. For example, the COVID-19 pandemic has significantly impacted the labor market, but its impact on gender differences in employment quality remains partially understood.

Another critical gap is the lack of consideration of the multifactorial quality of employment. Most studies focus on traditional indicators such as labor force participation and unemployment, which limits our understanding of the more complex aspects of employment. The quality of jobs includes not only quantitative indicators but also working conditions, access to social guarantees, workplace stability, excessive workload, and career opportunities. The lack of research that includes these qualitative aspects limits understanding the proper position of women and men in the labor market.

In addition, many studies do not consider differences in employment by economic sectors and occupational categories. While a large body of work is on the overall indicators of male and female participation in the economy, the structural differences between industries and professions are not well covered. For example, women are often more represented in sectors with a high degree of informality or in occupations with low wages, negatively affecting their overall employment quality. At the same time, men may face risks in industries prone to economic crises and cuts, such as construction or industry.

The novelty of this study lies in an integrated approach to analyzing the quality of employment, taking into account gender differences. For the first time in a long period

(2011-2021), an assessment of the dynamics of changes in the labor market for men and women is carried out based on standardized indicators using Z-estimates. The novelty of the work also lies in the use of a wide range of indicators to assess the quality of employment, including not only labor force participation and unemployment but also aspects such as informal employment, over-employment (more than 48 hours per week), as well as distribution by professional categories. This allows for a deeper analysis and assessment of both quantitative and qualitative aspects of employment, expanding the understanding of gender differences in the labor market. Thus, the study's novelty is that it not only fills in existing gaps in the literature but also offers a new approach to analyzing gender differences in the labor market using standardized indicators and a multidimensional approach to the quality of employment.

The primary aim of this study is to assess the quality of employment for men and women, focusing on the multidimensional quality of jobs, including formal and informal employment, unemployment, and access to highly qualified professions. The research seeks to highlight the factors that influence employment stability, labor market participation, and job quality to provide a comprehensive understanding of the current state of the labor market.

2. LITERATURE REVIEW

Gender disparities in the labor market remain one of the critical issues, and the ongoing inequality in employment and career opportunities drives the relevance of studying women's quality of employment. Research shows that women, especially during crises, are more likely to find themselves in unstable jobs and lack access to social security and opportunities for professional development. Examining quality employment, which includes job stability, working conditions, and the availability of social guarantees, is crucial for identifying qualitative aspects of gender differences in the labor market. Gender inequality is evident not only through pay gaps but also through limited opportunities for women in prestigious sectors of the economy.

Some studies explore how economic crises worsen gender disparities in employment quality, showing that economic shocks not only increase the risk of job loss but also push women into less stable forms of employment. Kalleberg et al. (2000) and McGovern et al. (2004) demonstrated that non-standard forms of employment, such as part-time and temporary work, often lack social security and limit career opportunities for women. Leschke et al. (2012) developed this idea further by showing that economic crises intensify these negative trends, particularly for women employed in informal sectors, leading to long-term deterioration in their career prospects. In their quantitative analysis, Cuberes and Teignier (2016) estimate that gender disparities in labor force participation negatively impact productivity and per capita income by nearly 12% per worker on average. Moreover, Lwamba et al. (2022) and Alhalwachi and Mordi (2022) identified structural barriers as critical obstacles to women's advancement. They emphasized the importance of closing the gender gap during crises and improving women's access to quality employment.

Studies on labor market segmentation and occupational segregation highlight how the distribution of women into low-wage sectors with limited career prospects reduces their chances of obtaining well-paid and stable positions. Hurley et al. (2013) found that women are more likely to work in sectors such as healthcare and education, where career advancement opportunities are limited. Olivetti and Petrongolo (2016) noted that in high-paying sectors like technology and finance, women are significantly less likely to hold key positions, as these sectors remain more closed due to structural barriers and unequal opportunities for advancement. Blau and Kahn (2017) and Cortes and Pan (2018) confirmed that occupational segregation widens the pay gap and creates barriers for women to access quality jobs, keeping them in less prestigious

and lower-paying professions and significantly limiting their professional development.

Research shows that non-standard forms of employment, such as temporary and part-time work, intensify gender inequality and limit women's professional growth opportunities. McGovern et al. (2004) demonstrated that these forms of employment deprive women of social security, making them more vulnerable in the labor market. Schmid (2010) clarified that labor market flexibility and the spread of temporary contracts increase income instability and reinforce barriers for women in sectors with low social protection. Stier and Yaish (2014) confirmed that this reduces the quality of jobs and limits career growth opportunities, challenging the notion that "female" sectors provide a better balance between work and personal life. Erosa et al. (2022) highlighted differences in domestic responsibilities, where women spend more time on unpaid household work, leading to significant disparities in occupational choices and working hours and exacerbating pay inequality.

Cultural and institutional factors significantly influence the persistence of gender inequality by limiting women's access to education, high-quality jobs, and career advancement. Seguino (2000), Padavic et al. (2020) and Koburtay et al. (2020) showed that traditional gender roles and expectations of family duties hinder women from obtaining education and employment and slow their career progression, especially in jobs with continuous demands. Leibbrandt and List (2015) and Baum and Espinosa (2021) noted that women in low-wage sectors often lack important aspects of job quality, such as job security and social benefits. Verick (2018) added that the lack of government support and limited private sector participation further exacerbates inequality among women in the informal economy. Witte et al. (2024) noted in their study that, unlike men, women often express the need for more holistic and individualized support, indicating the necessity of implementing gender-sensitive approaches in employment to improve its effectiveness.

The literature review revealed significant gender disparities in the labor market, evident in women's limited access to stable and quality employment as well as their underrepresentation in high-paying sectors of the economy. Economic crises, structural barriers, and restricted career opportunities disproportionately affect women, reinforcing inequality in working conditions. At the same time, long-term changes in women's employment quality, particularly during external economic shocks, remain insufficiently studied. Thus, the research focuses on a multifactorial analysis of employment quality using standardized indicators to assess the dynamics of changes in women's labor activity over the past decade, leading to the need for a comprehensive methodology that includes both quantitative and qualitative aspects of employment to understand gender differences in the labor market better.

3. RESEARCH METHODS

Standardizing employment indicators (Z-scores) were applied to analyze the quality of women's employment from 2011 to 2021, covering both men and women. In this analysis, various employment-related indicators segmented by gender were utilized and grouped into several key categories.

The first category involves labor force participation, which includes the total labor force (in thousands) and the percentage of the labor force relative to the total population. These indicators provide an overall view of how men and women engage in the labor market.

The second category focuses on employment status, capturing the employed population, salaried workers, and self-employed individuals (all in thousands). These indicators were essential for assessing the formal and informal structures of the labor market and the distribution of employment types between men and women.

The third category includes unemployment indicators, such as the total number of

unemployed individuals (in thousands), the overall unemployment rate (%), youth unemployment rates for two age groups (15-24 and 15-28 years), and the long-term unemployment rate (%). These measures allowed for a detailed examination of unemployment trends and gender disparities, particularly among younger and long-term unemployed populations.

Finally, non-participation in the labor force was also analyzed, using the number of individuals not participating in the labor force (in thousands) as a critical indicator. This measure helped identify gender differences in the labor force exclusion rates, possibly due to various factors such as caregiving responsibilities or limited employment opportunities.

For each indicator segmented by gender, the mean (μ) and standard deviation (σ) were calculated over the entire period (2011–2021). The mean values served as the baseline for further standardization. At the same time, the standard deviation was used to assess the variability of the data, accounting for fluctuations in employment indicators over the study period.

The Z-scores allowed for the standardization of indicators and revealed deviations from the mean, enabling year-to-year comparisons and evaluating changes in women's employment quality relative to men's. Z-score results are provided separately for women and men across various labor force indicators from 2011 to 2021. These results illustrated how labor market participation, employment, and occupational distribution have evolved for each gender compared to the mean values over the period.

Z-scores were calculated for each year and each indicator using the formula (1):

$$Z = \frac{X - \mu}{\sigma} \tag{1}$$

where:

X - the indicator value for a given year;
μ - the average value over the period;
σ - the standard deviation.

For women, the Z-scores highlight fluctuations in both formal and informal employment. For example, salaried workers show negative deviations in the earlier years but improve steadily, reaching positive values in 2020 and 2021. Conversely, the self-employed category exhibits positive values at the beginning of the period but declines steadily, showing a reduction in the share of self-employed women over time. Indicators such as unemployment and long-term unemployment rates show that women faced particularly challenging labor market conditions in 2012. Still, these rates gradually improved towards the later years of the analysis.

Next, in Table 1, the results for men are presented.

TABLE 1. Z-score results for men

Indicator	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Labor force, thousand persons	-1,4	0,2	0,6	-0,5	-1,5	-0,9	-0,7	0,9	1,2	0,7	1,5
Labor force as % of population	1,5	1,6	1,5	0,4	-0,7	-0,7	-1,0	-0,1	-0,3	-1,1	-0,9
Employed population, thousand persons	60,3	61,5	62,3	61,4	60,5	61,3	61,5	62,9	63,2	62,7	63,3
Salaried workers, thousand persons	-2,0	-1,3	-0,8	-0,5	0,2	0,2	0,4	0,8	0,9	1,1	1,2
Self-employed, thousand persons	1,9	1,5	1,1	0,4	-0,8	-0,5	-0,7	-0,6	-0,5	-1,0	-0,8
Unemployed population, thousand persons	1,1	2,3	0,6	0,3	0,2	-0,7	-1,0	-0,7	-1,0	-0,9	-0,3

Unemployment rate, %	1,3	2,1	0,5	0,2	0,5	-0,6	-0,8	-0,8	-1,1	-0,8	-0,6
Long-term unemployment rate, %	-0,6	2,1	0,9	0,5	1,3	-0,2	-0,6	-0,6	-1,0	-0,6	-1,0
People outside the labor force, thousands of persons	-1,7	-1,4	-1,2	-0,4	0,3	0,4	0,7	0,3	0,6	1,2	1,2
Employment rate (working-age population), %	-0,9	-0,9	0,1	-0,8	0,1	-0,9	-0,5	1,9	2,0	-0,3	0,2
Unemployment rate (working-age population), %	1,2	2,2	0,5	0,5	0,2	-0,3	-0,5	-1,0	-1,3	-1,0	-0,3
Informal sector share in total employment, %	0,7	0,2	0,2	0,3	0,1	-0,1	-0,2	-0,3	-0,3	-0,3	-0,4
Share of workers with excessive working hours (>48 hours per week), %	-1,4	-1,4	-0,1	1,6	1,2	0,3	-0,2	1,0	0,6	-0,4	-1,2
Managers and government officials	1,2	0,0	-0,2	-0,6	-0,4	-0,3	-0,4	0,2	0,4	0,2	-0,1
Professionals	-3,1	0,1	0,2	0,4	0,5	0,2	0,1	0,3	0,4	0,4	0,4
Technicians and associate professionals	2,2	1,1	0,7	0,1	0,2	0,1	-0,2	-1,1	-0,9	-1,1	-1,1
Administrative Staff	-1,1	0,5	1,0	1,2	1,1	1,1	0,5	-1,1	-1,1	-1,1	-0,9
Service and sales workers	2,7	0,1	-0,2	0,3	0,7	0,1	-0,8	-0,3	-0,7	-1,0	-0,9
Farmers and agricultural workers	2,9	0,3	0,1	0,1	-0,6	-1,0	-0,8	0,0	-0,3	-0,4	-0,3
Industrial, construction, and transport workers	3,1	-0,3	-0,2	-0,4	-0,6	-0,5	-0,3	-0,2	-0,3	-0,1	-0,2
Operators, assemblers, and drivers	2,9	-0,2	0,0	-0,6	-0,6	-0,9	-0,8	0,3	-0,1	0,0	0,1
Unskilled workers	-0,6	-1,0	-0,8	-0,8	-0,4	-0,9	-0,8	1,5	1,2	1,1	1,3

Note: compiled by authors

The Z-scores for men show similar trends, with notable shifts in formal employment, such as salaried workers and self-employed. The unemployment rate peaked in 2012 and 2020, reflecting economic downturns. Occupational groups like technicians and administrative staff also recovered after contractions.

These tables allow for a detailed comparison of gender-based employment trends over the decade, highlighting critical deviations. Z-scores provide insights into structural employment differences by gender, which are further explored in the results.

After calculating the Z-scores, a comparative analysis was done across years and indicators to track employment quality changes by gender. Significant deviations were identified, offering insight into the evolution of women's employment. Positive Z-scores indicated improvements, while negative values pointed to declines. Indicators were analyzed to determine the factors affecting employment quality. A composite index was developed to assess quality employment, weighting key indicators of stable, formal, and skilled jobs. These were grouped into four categories: employment status, unemployment, working conditions, and qualification level.

Next, weights for each indicator are given in Table 2.

A structure of indicators was used to assess quality employment with assigned weights based on their significance. In the Labor Force Participation category, the indicator for the total labor force (0.05) and the labor force as a percentage of the population (0.10) play an essential role in evaluating economic activity. In contrast, the number of people outside the labor force (0.05) indirectly impacts employment quality.

TABLE 2. Weights

Indicator	Weight
Labor force, thousand persons	0.05
Labor force as % of population	0.10
People outside the labor force, thousands of persons	0.05
Employed population, thousand persons	0.15
Salaried workers, thousand persons	0.20
Self-employed, thousand persons	0.10
Employment rate (working-age population), %	0.15
Unemployed population, thousand persons	0.05
Unemployment rate, %	0.10
Long-term unemployment rate, %	0.10
Unemployment rate (working-age population), %	0.05
Share of workers with excessive working hours (>48 hours per week), %	0.10
Informal sector share in total employment, %	0.10
Managers and government officials	0.05
Professionals	0.05
Technicians and associate professionals	0.05
Administrative Staff	0.05
Service and sales workers	0.05
Farmers and agricultural workers	0.05
Industrial, construction, and transport workers	0.05
Operators, assemblers, and drivers	0.05
Unskilled workers	0.05

Note: compiled by authors

In the Employment Status category, key indicators include the employed population (0.15) and salaried workers (0.20), reflecting stable employment, as well as self-employment (0.10) and the employment rate of the working-age population (0.15). The Unemployment category includes the number of unemployed (0.05), the unemployment rate (0.10), and the long-term unemployment rate (0.10), all of which affect labor market stability, while the unemployment rate of the working-age population (0.05) provides additional context. The Informal and Excessive Work section emphasizes the share of the informal sector (0.10) and the share of workers with excessive working hours (0.10), indicating less stable working conditions. Lastly, the Occupational Groups section evaluates high-skilled professions such as managers (0.05), professionals (0.05), technicians (0.05), administrative staff (0.05), as well as service workers, transport, construction, and unskilled labor (each weighted at 0.05).

The weighted approach ensures that the index reflects the multidimensional nature of quality employment, providing a balanced view of labor market stability and the conditions that underpin sustainable and dignified work. The calculations and comparative analysis concluded women's employment quality dynamics between 2011 and 2021. Based on identified trends and critical deviations in employment indicators, recommendations were provided to improve women's position in the labor market

4. FINDINGS AND DISCUSSIONS

In this section, we present the results of a comparative analysis of Z-scores between women and men across various labor force indicators. The data were first categorized into key employment-related groups, including labor force participation, employment status, unemployment rates, and occupational roles. The Z-scores for each category were then

compared to identify significant deviations and trends from 2011 to 2021. This analysis highlights the differences in labor market dynamics between genders, providing insights into how men and women experienced shifts in employment, unemployment, and occupational distributions relative to the average levels for each indicator. The comparison is aimed at identifying structural gender disparities in the labor market, assessing the extent of inequality, and providing a basis for developing targeted policies to address these differences and improve labor market outcomes for both genders.

Figure 1 shows results for labor force participation comparison of z-scores by gender.

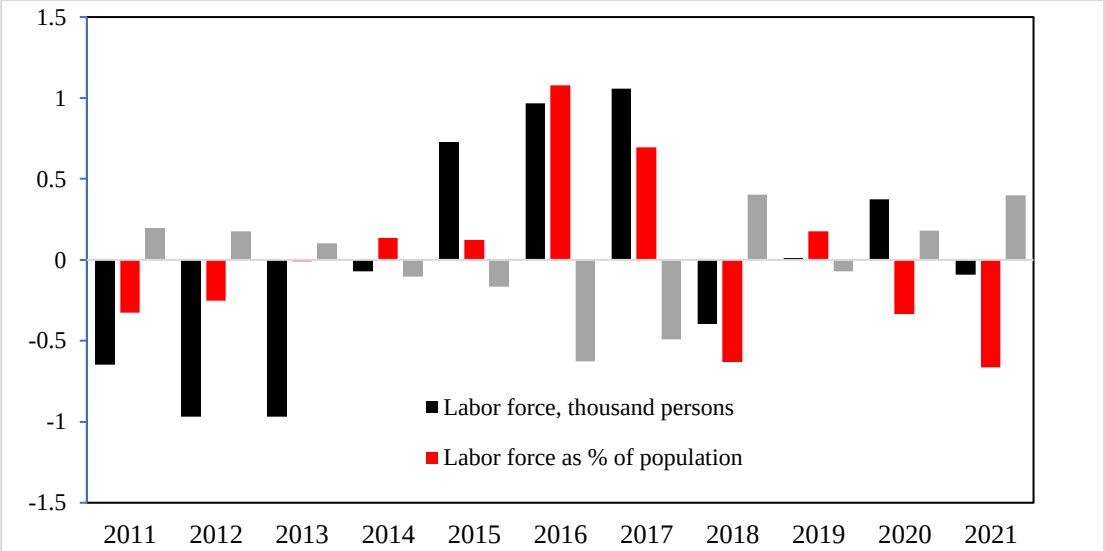

FIGURE 1. Labor force participation by gender

Note: compiled by authors

The data on the labor force (thousand persons) shows negative Z-scores from 2011 to 2014, indicating below-average participation, with the most significant deviations in 2012 and 2013 (-0.97). This trend reversed in 2015, peaking in 2017 (1.06), before declining again in 2018-2021, particularly in 2018 (-0.39), suggesting stagnation. The labor force as a percentage of the population followed a similar pattern, with low Z-scores from 2011 to 2013, a positive shift from 2014 to 2017 (1.08 in 2016), and a decline post-2018, possibly due to structural labor market changes. The number of people outside the labor force showed positive Z-scores in 2011-2013, indicating high economic inactivity, but improved by 2015 with negative Z-scores before rising again post-2018, likely due to external shocks like the COVID-19 pandemic.

These trends reflect labor market challenges in 2011-2014, recovery in 2015-2017 driven by macroeconomic improvements, and stagnation during 2018-2021 due to global economic disruptions. The most critical years appear to be 2012-2013 and 2018-2020 when the negative Z-scores point to significant deviations from average levels. In contrast, 2016-2017 represents a more favorable period, where employment and labor force engagement were at their highest.

Next, in Figure 2, there is a dynamic on employment status by gender.

The data on salaried workers (thousand persons) shows fluctuating Z-scores from 2011 to 2021. Positive deviations in 2011 and 2012 (0.24 and 0.07) were followed by a decline in 2013 (-0.33).

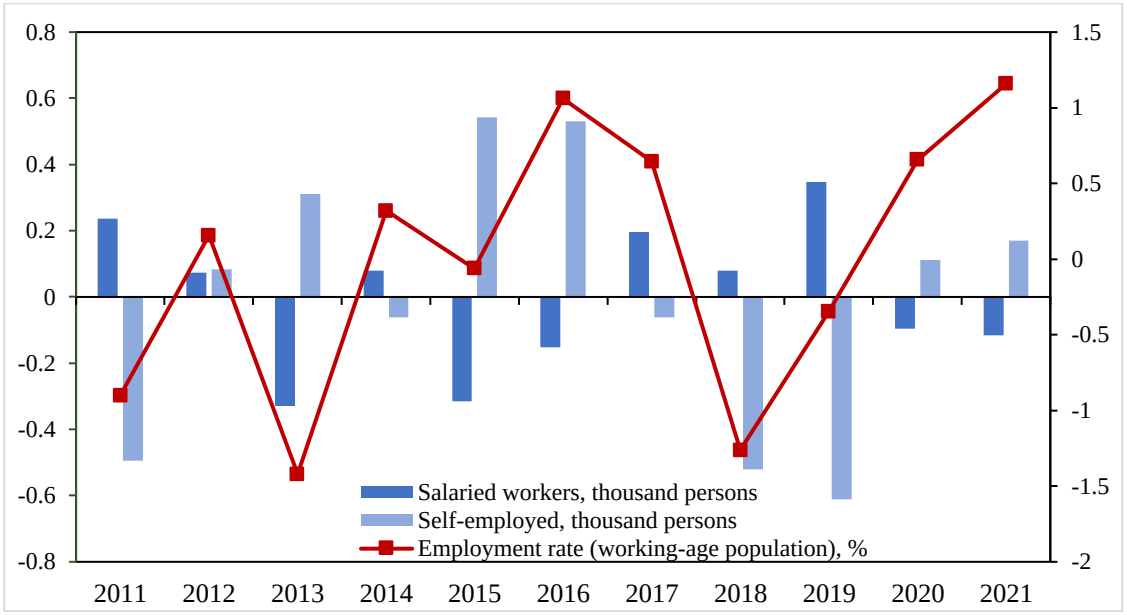

FIGURE 2. Employment status by gender

Note: compiled by authors

Alternating minor changes persisted until 2017, with a slight improvement (0.20). In 2019, the Z-score peaked (0.35) before dropping again in 2020 and 2021 (-0.10 and -0.12), likely due to external factors like the COVID-19 pandemic. For self-employed workers, Z-scores improved steadily after a 2011 dip (-0.49), turning positive in 2013 (0.31) and peaking in 2015 (0.54). However, 2018 saw a decline (-0.52), continuing into 2019 (-0.61). By 2020-2021, there was a modest recovery (0.11 and 0.17).

The employment rate (% of the working-age population) was volatile, with negative Z-scores from 2011 to 2013, reaching -1.42. A brief recovery in 2014 (0.32) followed another decline in 2015 (-0.06). Significant improvements occurred in 2016-2017 (1.06 and 0.64), but negative Z-scores reappeared in 2018-2019 (-1.26 and -0.35). Strong recovery in 2020-2021 (0.66 and 1.16) reflected post-pandemic economic interventions. Overall, the data indicates stagnation for salaried workers, with sensitivity to external economic conditions. The self-employment sector demonstrated adaptability, while employment rates showed instability followed by recovery periods, underscoring the role of labor market policies and economic conditions in shaping trends.

Next, in Figure 3, there is a dynamic in unemployment status by gender.

The data on the unemployed population (thousand persons) from 2011 to 2021 shows significant volatility. In 2012, the Z-score dropped sharply to -4.69, suggesting reduced unemployment, potentially due to economic growth or practical policies. However, 2013 saw a rebound, with a Z-score of 0.71, indicating a rise in unemployment. High Z-scores in 2019 and 2020 (1.38 and 2.10) reflect increased unemployment, likely due to the COVID-19 pandemic. By 2021, unemployment decreased but remained slightly above average (0.15).

The unemployment rate (%) followed a similar pattern, with a low Z-score of -3.99 in 2012, likely tied to strong economic conditions. However, the rate increased in 2013, fluctuating until peaking in 2019 and 2020 (1.09).

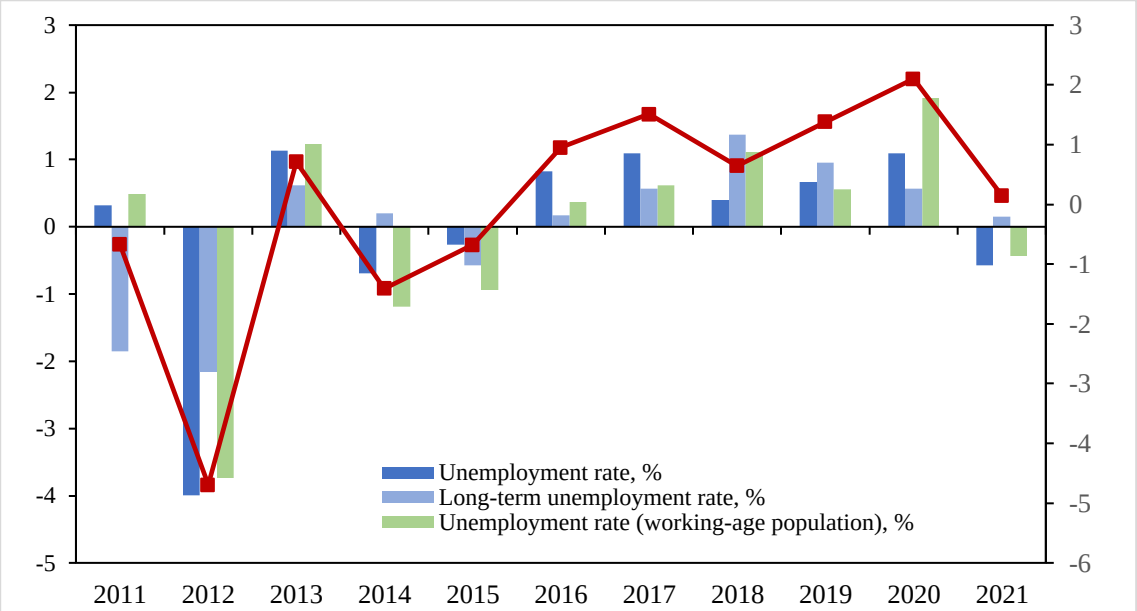

FIGURE 3. Unemployment by gender

Note: compiled by authors

A partial recovery in 2021 (-0.57) suggests stabilization, though the rate remained above pre-pandemic levels. Long-term unemployment (%) showed more stability, with negative Z-scores in 2011-2012 (-1.86 and -2.16), reflecting below-average levels. After 2013, long-term unemployment peaked in 2018 (1.37), possibly due to structural changes. By 2021, it returned to near-average levels (0.15), indicating gradual recovery.

The unemployment rate for the working-age population mirrored these trends, with a low in 2012 (-3.73) and a sharp recovery in 2013 (1.23). Positive Z-scores persisted from 2016 to 2018, peaking in 2020 (1.92), driven by the pandemic. A decline in 2021 (-0.44) suggests partial stabilization, though not a full recovery to pre-crisis conditions.

Economically, the significant drop in unemployment in 2012 across all metrics suggests a period of robust economic growth or successful labor policies that limited the duration and incidence of unemployment. However, the rise in unemployment in the following years, particularly from 2018 to 2020, reflects external pressures such as the global pandemic, which severely disrupted labor markets. The sharp increase in the unemployed population and unemployment rate in 2020 highlights the vulnerability of the labor market to sudden economic shocks. The data for 2021 suggests that while some recovery occurred, structural challenges related to long-term unemployment and overall employment rates remained, indicating a need for sustained policy interventions to address both short-term recovery and long-term labor market resilience.

Next, in Figure 4, there is a dynamic between informal and excessive work.

The data on the informal sector share in total employment (%) shows a consistent downward trend from 2011 to 2021. In 2011, the Z-score was 1.56, indicating a significantly above-average share of informal employment. This suggests that much of the labor market was not fully integrated into formal employment, possibly due to economic uncertainty or barriers to formal job creation. By 2013, the Z-score had decreased to 0.31, signaling a reduction in informal labor, though still above average.

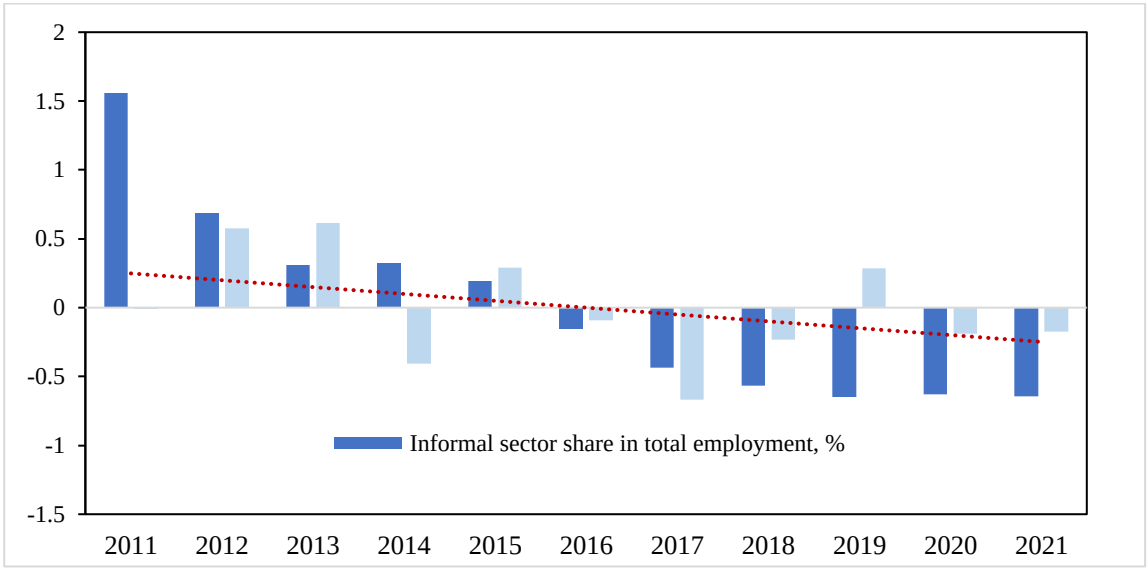

FIGURE 3. Informal and excessive work, by gender

Note: compiled by authors

From 2016 onward, the Z-scores turned negative, indicating a steady decline in informal employment. The lowest point occurred in 2019 (-0.65), likely reflecting an expansion of formal job opportunities and improved labor regulations. Despite external shocks like COVID-19, the informal sector did not rebound in 2020 and 2021 (-0.63 and -0.64), suggesting a structural shift toward greater labor formalization. The data on excessive working hours follows a more fluctuating pattern. In 2011, the Z-score was near zero (-0.01), but by 2013, it rose to 0.62, indicating increased workers putting in long hours. After 2013, Z-scores fell into negative territory, with the lowest point in 2017 (-0.67), likely due to improved labor protections or changing work patterns. A slight recovery occurred in 2019 (0.29), but the Z-scores remained negative in 2020 and 2021, indicating the share of workers with excessive hours remained below average.

Economically, the decline in informal sector employment reflects a shift towards formalization attributed to government efforts to improve labor conditions. However, the persistence of informality in earlier years underscores challenges such as regulatory barriers and sector-specific constraints.

Figure 5 presents the results for the aggregated index for women.

The Labor force indicator for women exhibits slight fluctuations around zero, with a positive deviation in 2012. However, the negative values in subsequent years 2014 and 2015, a decline in labor force among women, potentially due to external economic factors limiting women's sustained involvement in the labor market. Overall, labor force participation for women has a relatively small and unstable impact on the aggregate index, highlighting the ongoing challenges they face in maintaining a consistent presence in the workforce.

The Employment status category stands out as the most significant factor for women, showing steady growth across the entire period from 2011 to 2021.Thus, more women are gaining access to quality employment opportunities, increasing access to stable and secure employment, with a particularly sharp increase evident from 2018 to 2021. This surge likely indicates notable improvements in working conditions, enhanced job security, and the introduction of supportive workplace policies, such as flexible working hours or family-friendly initiatives.

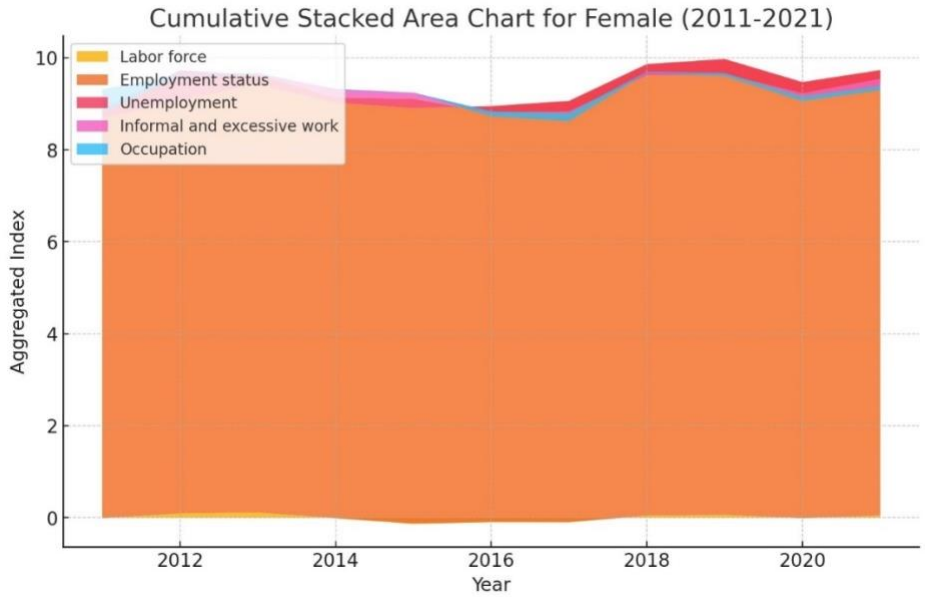

FIGURE 5. Aggregated index for women

Note: compiled by authors

In contrast, unemployment for women showed significant fluctuations, with a sharp peak in 2012 (0.65), reflecting a potential temporary deterioration in labor market conditions for women during that period. However, from 2016 onwards, the impact of unemployment on the index becomes negative, indicating a steady decline in unemployment rates.

The Informal and excessive work category reveals some positive trends in 2014 and 2015, potentially signifying improvements in working conditions, such as a reduction in informal employment or a decrease in excessive working hours. However, the reappearance of negative values in 2020-2021, possibly linked to the economic disruptions caused by the global pandemic. These shifts could indicate a deterioration in job quality for women, where informal or precarious work arrangements became more prevalent.

Finally, Occupational categories for women predominantly show neutral or negative values, indicating persistent limitations in accessing higher-quality, skilled occupations. Especially in 2016 and 2017, when the values with a sharp reduction in the number of women occupying skilled positions during these years. Such barriers may include gender biases in hiring, a lack of career advancement opportunities, or systemic challenges in traditionally male-dominated sectors.

In Figure 6, the results for the aggregated index for women are presented.

The *Labor force participation* for men similarly shows modest fluctuations, with its impact on the overall index being relatively minor. For instance, a positive increase in 2019 suggests a temporary improvement in male participation in the workforce. However, by 2020 and 2021, the values turn negative again, indicating instability in male labor force participation during these later years.

The Employment status indicator plays a crucial role for men, but unlike women, it begins with negative values in the early years from 2011 to 2015 reflecting initial challenges in employment conditions, where men may have faced limited opportunities or deteriorating job quality. However, starting in 2016, employment status for men showed a marked improvement, which could be related to employment opportunities and job conditions improvement, likely driven by economic recovery or increased demand in key sectors.

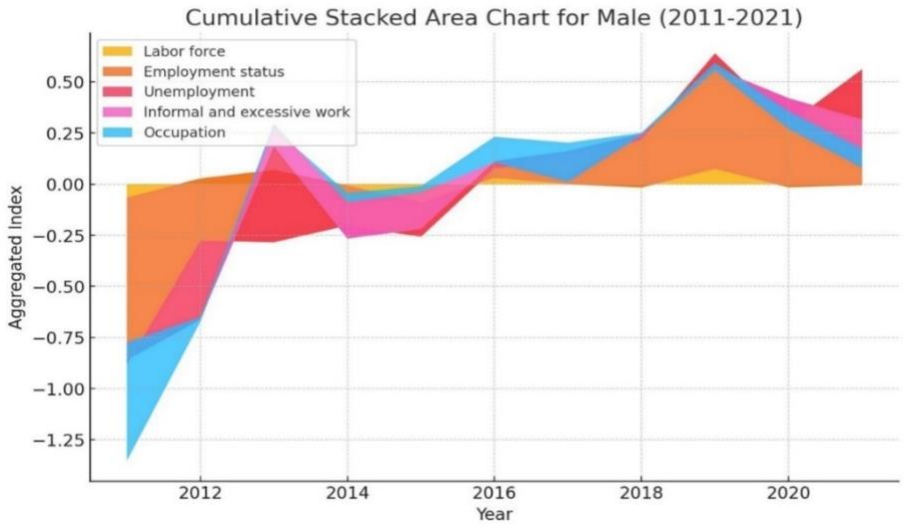

FIGURE 6. Aggregated index for men

Note: compiled by authors

The *Unemployment category* for men exhibits fluctuations, most notably in 2013 when there was a significant spike (0.47), pointing to a temporary rise in unemployment rates. Notwithstanding, in subsequent years, the effect of unemployment on the index diminishes, hovering close to zero. This stabilization implies that unemployment rates for men have leveled off, and improvements in employment status have mitigated any earlier challenges. The positive shift in employment conditions seems to have compensated for earlier increases in unemployment, bringing overall stability to male employment by the end of the period.

The *informal and excessive work indicators* show noticeable variation throughout the years. Positive values between 2013 and 2015 suggest a period of increased informal employment or overworking, perhaps due to temporary jobs or unstable labor market conditions. However, by 2020-2021, these values turn negative, reflecting a decline in informal work or excessive working hours. This reduction in harmful labor practices could be attributed to regulatory changes or shifts in employment patterns, where more formalized job opportunities became available, improving overall job quality for men.

Occupational opportunities for men have become increasingly influential on the index since 2016. The data points to a steady rise in skilled job opportunities for men, better positioned to take advantage of job growth in higher-level occupations, contributing to an overall rise in employment quality. The ability to access skilled roles likely reflects industry-specific demand and men's broader integration into more diverse and rewarding career paths, further enhancing their job market outcomes during this period.

The analysis of cumulative indices and gender comparison reveals distinct differences in labor force participation, employment status, unemployment, informal employment, and occupational opportunities for men and women from 2011 to 2021. While both genders experienced fluctuations in employment conditions, the patterns and trajectories of these changes differ significantly between men and women. For women, employment status showed consistent growth, particularly from 2016 onwards, reflecting improvements in job quality and access to stable employment. However, challenges such as unemployment and informal work remained significant, indicating that despite increased participation in the labor market, women continued to face

barriers to securing formal, high-quality employment.Men exhibited a different trajectory. Their employment status was weaker between 2011 and 2015, likely due to economic downturns or shifts in traditionally male-dominated sectors. However, starting in 2016, their situation improved considerably, with a recovery in job stability and increased access to skilled occupations, positively influencing the overall index. The gender comparison highlighted that, women experienced more consistent employment growth but continued to struggle with informal work and higher unemployment rates. For men, the recovery after early challenges was more pronounced, driven by better access to skilled professions and improved job stability.

In conclusion, targeted policies were needed to address these gender-specific challenges. For women, reducing unemployment and informal employment was critical, while for men, maintaining access to skilled occupations was essential to sustain their positive employment trends.

5. CONCLUSIONS

The primary aim of this study was to evaluate and compare the quality of employment across various labor force indicators, focusing on gender differences. The research identified key trends in labor market participation, employment stability, and job quality over time using Z-scores and weighted indices.

One of the most significant findings is the clear divergence in labor market experiences between men and women over the period studied. Women, in particular, exhibited greater volatility in self-employment and participation in the informal sector, both of which are typically associated with lower job security and fewer social protections. Moreover, women faced more persistent challenges related to excessive working hours and instability in formal employment, suggesting that despite some progress in labor force participation, structural barriers still hinder women's access to high-quality employment.

For men, the data showed more stability in formal employment categories, with a noticeable recovery in job quality after 2016. This recovery coincided with an increase in access to skilled and high-paying occupations, which likely contributed to an overall improvement in employment quality for men. However, men were also found to be vulnerable to sectoral shifts and economic downturns, particularly in industries that are more susceptible to restructuring or crises.

The gender comparison illuminated the persistent gaps in employment quality, with men generally benefiting from more stable and formalized employment structures, while women continued to face significant hurdles, particularly in the informal sector and in terms of securing long-term, stable jobs.

To address gender disparities in employment, the study recommends expanding formal employment opportunities for women, particularly in sectors where informal work is common. Reducing informal employment and excessive working hours through stricter regulations is crucial for improving job quality. Furthermore, increasing women's access to skilled professions, particularly in technology and finance, can help close the gender gap. Addressing long-term unemployment through re-skilling and job placement programs is essential, especially for women. Finally, gender-responsive policies are needed to ensure equal access to quality jobs and to reduce the impact of economic downturns on women.

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