Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics

Bachelor Thesis

A Comprehensive Analysis of Unemployment in Moldova

Irina Topciu

Supervisor: prof. Ing. Mansoor Maitah, Ph.D. et Ph.D.

© 2025 CZU Prague

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

BACHELOR THESIS ASSIGNMENT

Irina Topciu

Economics and Management

Thesis title

A Comprehensive Analysis of Unemployment in Moldova

Objectives of thesis

The main goal of this thesis is to investigate the complex problem of unemployment in Moldova by carefully examining its sources, effects, and changing patterns. The goal of the study is to provide a comprehensive understanding of the unemployment situation in the nation, including theoretical understandings as well as real-world applications.

Methodology

This study is divided into theoretical and practical sections. The theoretical part examines unemployment fundamentals and policy implications, while the practical phase analyzes Moldova's unemployment trends using compharative and discriptive methods. The synthesis offers strategic recommendations to address unemployment challenges in Moldova.

The proposed extent of the thesis

35 – 50 Pages

Keywords

Moldova, unemployment trends, job market analysis, economic issues, policy implications.

Recommended information sources

Christopher A. Pissarides, ”Equilibrium Unemployment Theory”, MIT Press, 2000, ISBN 0262264064

Norman T. Feather, ”The Psychological Impact of Unemployment”, Springer Science & Business Media, 2012, ISBN 1461232503

Richard Layard, P. Richard G. Layard, S. J. Nickell, Richard Jackman: ”Unemployment: Macroeconomic Performance and the Labour Market”, Oxford University Press, 2005, ISBN 0-19-927917-9

Expected date of thesis defence

The Bachelor Thesis Supervisor

prof. Ing. Mansoor Maitah, Ph.D. et Ph.D.

Supervising department

Department of Economics

Electronic approval: 24. 03. 2024

prof. Ing. Lukáš Čechura, Ph.D.

Head of department

Electronic approval: 25. 03. 2024

doc. Ing. Tomáš Šubrt, Ph.D.

Dean

Prague on 06. 03. 2025

Declaration

I declare that I have worked on my bachelor's thesis titled "*A Comprehensive Analysis of Unemployment in Moldova*" by myself, and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break any copyrights.

In Prague on 09.03.2025

_____

Irina Topciu

Acknowledgement

I would like to express my sincere gratitude to my supervisor, prof. Ing. Mansoor Maitah, Ph.D. et Ph.D., for his valuable guidance, support, and encouragement while writing this bachelor thesis. His expertise and insights have been instrumental in shaping the direction of my research and refining my academic work.

A Comprehensive Analysis of Unemployment in Moldova

Abstract

The purpose of this bachelor's thesis analyzes Moldova's unemployment rate by studying its core drivers as well as geographic and population disparities followed by legislative possibilities. The research analyzes the unemployment pattern transformations from 2019 to 2023 by discussing key structural and economic factors that impact worker market transitions. The investigation specifically examines both the employment movement between different sectors combined with migration patterns and the gendered distribution of jobless people. The research adopts an analytical method for labor market evaluation through regression modeling and correlation analysis and predictive forecasting and hypothesis testing. During the initial research period unemployment rates declined until they grew substantially afterward because of fundamental labor market problems combined with outside economic forces. Regional and gender disparities persist in Moldova because males obtain better unemployment outcomes than females and urban labor markets demonstrate bigger vulnerabilities than rural ones. The thesis implements particular policy recommendations which stem from its results for enhancing workforce resilience together with educational-employment market alignment and employment stimulus. The research contributes new information about employment stability in Moldova which supports existing debate within the field by providing beneficial insights to market players and policymakers.

Keywords: Unemployment analysis, Moldova labor market, economic trends, policy recommendations, statistical modeling, demographic disparities, regional employment, labor migration, workforce resilience.

Komplexní analýza nezaměstnanosti v Moldavsku

Abstrakt

Účelem této bakalářské práce je analyzovat míru nezaměstnanosti v Moldavsku prostřednictvím zkoumání jejích hlavních faktorů, jakož i geografických a populačních nerovností, a následně legislativních možností. Výzkum analyzuje transformace vzorců nezaměstnanosti v období od roku 2019 do roku 2023 s důrazem na klíčové strukturální a ekonomické faktory, které ovlivňují přechody na trhu práce. Šetření se zaměřuje zejména na pohyb zaměstnanosti mezi různými sektory v kombinaci s migračními vzorci a genderovým rozdělením nezaměstnaných osob. Výzkum využívá analytickou metodu hodnocení trhu práce prostřednictvím regresního modelování, korelační analýzy, prediktivního prognózování a testování hypotéz. V počátečním období výzkumu míra nezaměstnanosti klesala, ale následně výrazně vzrostla v důsledku základních problémů trhu práce v kombinaci s vnějšími ekonomickými vlivy. Regionální a genderové nerovnosti v Moldavsku přetrvávají, přičemž muži dosahují lepších výsledků v oblasti nezaměstnanosti než ženy a městské trhy práce vykazují větší zranitelnost než venkovské. Tato práce přináší konkrétní politická doporučení vycházející z jejích výsledků s cílem posílit odolnost pracovní síly, sladit vzdělávání s trhem práce a stimulovat zaměstnanost. Výzkum přispívá novými poznatky o stabilitě zaměstnanosti v Moldavsku a podporuje stávající debatu v této oblasti tím, že poskytuje cenné poznatky pro tržní subjekty a tvůrce politik.

Klíčová slova: Analýza nezaměstnanosti, trh práce v Moldavsku, ekonomické trendy, politická doporučení, statistické modelování, demografické rozdíly, regionální zaměstnanost, pracovní migrace, odolnost pracovní síly.

Table of Contents

1. Introduction 10

2. Objectives and Methodology 11

2.1. Objectives 11
2.2. Methodology 11

3. Literature Review 13

3.1. Introduction to Unemployment 13
3.1.1. Definition and Concept 13
3.2. Economic Theories Related to Unemployment 14
3.2.1. Classical and Neoclassical Views 14
3.2.2. Keynesian View 15
3.2.3. Monetarism 16
3.2.4. Other Schools of Thought 16
3.3. Types and Causes of Unemployment 17
3.3.1. Frictional Unemployment 17
3.3.2. Structural Unemployment 18
3.3.3. Cyclical Unemployment 19
3.3.4. Seasonal and Voluntary Unemployment 20
3.4. Unemployment Indicators and Measurement 21
3.4.1. Unemployment Rate Calculation 21
3.4.2. Unemployment Metrics in Moldova 22
3.4.3. Impact of Labor Migration and COVID-19 on Unemployment 23

4. Practical Part 25

4.1. Overview of Moldova's labor market 25
4.1.1. General Economic Background 25
4.1.2. Structure of the Labor Market 26
4.1.3. Key Demographics 28
4.2. Statistical Analysis of Unemployment Trends 29
4.2.1. Interval Estimate Prediction 30
4.2.2. Correlation Analysis of National Unemployment 31
4.2.3. Chain Base Fixed Base Indices of National Unemployment 33
4.3. Statistical Analysis of Unemployment by Gender 35
4.3.1. Correlation Analysis of Unemployment by Gender 36
4.3.2. Hypothesis Testing of Unemployment by Gender 37
4.3.3. Linear Regression Analysis of Unemployment by Gender 38

4.4. Statistical Analysis of Unemployment by Area 40
4.4.1. Hypothesis Testing of Unemployment by Type of Residence 41

5. Results and Discussion 43

5.1. Unemployment Trends and Forecasting 43
5.2. Correlation Analysis of Unemployment Over Time 43
5.3. Unemployment by Gender 43
5.4. Unemployment by Area 44
5.5. Implications of Findings 44

6. Conclusion 45

7. References 46

List of Supplements 48

List of Tables 48
List of Charts 48
List of Figures 48

1. Introduction

The sustainable growth of Moldova remains threatened by unemployment since it represents a fundamental economic and social challenge for the nation. Labor market conditions underwent essential changes within the past few years with parallel effects on domestic workplace management as well as foreign business operations. Research seeks extensive understanding of unemployment rates because their fluctuations result from major labor movement and economic uncertainties together with employment shifts between different industries.

The study examines the shifting employment dynamics in Moldova through analysis of major factors such as geographic disparities as well as inequality affecting women and broader economic system changes. Workers face changes in stability and employment rates from labor movements while economic policy affects unemployment reduction. Prior implementation of labor market reform is essential because youth unemployment shows direct connections with mismatches between education and labor market requirements.

To evaluate and predict future unemployment patterns in the labor market the research employs multiple statistical approaches which include correlation tests, regression models and hypothesis evaluation. This examination of joblessness through these multiple perspectives provides researchers enhanced understanding about the work market structure and basic operational issues. Through its results the analysis provides essential recommendations to policy officials along with labor market guardians who need to implement strategies for economic adaptability improvement. The research provides Moldova with effective understanding of its employment trends through systematic policy recommendations that create both job security and long-term workforce growth.

2. Objectives and Methodology

2.1. Objectives

This thesis explores Moldova's unemployment patterns from 2019 to 2023 by focused on detailed statistical investigation of the data collection. Researchers aim to enhance their knowledge about external factors as well as demographic statistics and economic variables which influence unemployment levels in Moldova. The research merges conceptual models with tangible data to examine the intricate nature of joblessness which reveals foundation reasons for employment market turbulence and demonstrates the effectiveness of present day labor system regulations.

One distinctive element of this research document establishes its analysis of the gender-related differences in unemployment statistics. The investigation bases its foundation on a systematic comparison between unemployment rates of women and men while examining the root causes of these differences to create an extensive comprehension of employment sector gender-specific aspects. The research study analyzes the geographic variations between urban-rural unemployment through detailed unemployment rate analysis in order to present key differences while proposing policy recommendations.

2.2. Methodology

The thesis includes an examination of the trends of unemployment between various economic sectors. Utilization of this research method will facilitate the identification of sectors that strongly retain employment stability and are most vulnerable to job loss. Furthermore, the impact of labor migration on domestic employment and labor force composition in Moldova will be examined, yielding data regarding the effects of migration trends on the domestic labor market.

The research adopts regression analysis with interval estimate predictions as a statistical method to predict future unemployment patterns. The forecasting system allows simultaneous market risk detection alongside the development of responses through proven data that supports employee market equilibrium. Statistical measurements will be used to validate known patterns and relationships between labor market characteristics as part of

the hypothesis verification process in this thesis.

Through the combination of comparative and descriptive methodologies this study aims to enhance scholarship about unemployed labor force in Moldova while developing practical policy recommendations for decision-makers toward developing effective labor market solutions.

3. Literature Review

3.1. Introduction to Unemployment

3.1.1. Definition and Concept

The labor force's employment situation holds economic importance because it demonstrates the percentage of people who lack work opportunities while keeping a desire for employment. According to the International Labour Organization the definition of unemployment includes those people who match their country's age specifications, are at present without work yet remain actively engaged in job search activities. Almost all economic frameworks use the unemployment rate calculation as the fraction between unemployed and total labor force population that includes employed and unemployed people from age 15 to 64 years (Englama, 2001). The unemployment ratio stands as the main indicator to assess market conditions because it reveals economic well-being or problems.

Academic research about unemployment establishes distinctions based on different variations of this issue. According to classical economics the unemployment condition exists as a brief departure from equilibrium before wages adjust between supply and demand to restore equilibrium (Robert E. Lucas, 1978). According to Keynesian theory the labor market may fail to operate at full employment without external causes being responsible for unemployment which require government intervention to decrease unemployment levels (Englama, 2001).

The measurement process of unemployment contains fine details about how to classifying workers based on their desire to work versus their job search. The counting methods for these individuals create definitional uncertainties because different countries classify them as either unemployed workers or absent from the labor force entirely which affects unemployment measurement standards (Jones & Riddell, 1999).

The basic definition presents an overview of both unemployment measurement intricacies and workforce membership effects on society. Knowledge of these concepts remains crucial since unemployment functions as an economic cycle indicator which affects public policy and social health and lifestyle quality (Dorling, 2009).

3.2. Economic Theories Related to Unemployment

3.2.1. Classical and Neoclassical Views

Nickell (1998) states the classical economic theory from the late 18th century maintains that market self-correction relying on flexible pricing and wage rates leads to full employment. According to classical economic theory labor supply and demand automatically achieve balance and eliminate persistent involuntary unemployment when left unmodified by outside forces. The theory indicates that full employment deviations become momentary because wages reduce automatically when labor demand exceeds supply to achieve employment equilibrium (Nickell, 1998).

A ccording to Dorling (2009), the neoclassical theory extends classical principles by incorporating marginalist views which show that employment depends on workforce productivity together with technological changes (Solow, 1980). The method holds that demand-stimulus interventions provide at most temporary employment impacts which structural labor market elements determine the long-term employerment status. According to neoclassical economic theory wage and price flexibility maintains full employment along with voluntary unemployment as an outcome of individual worker choices instead of market failures (Dorling, 2009).

According to Robert E. Lucas (1978) continuous equilibrium represents a crucial distinction between classical and Keynesian approaches of thinking. According to Neoclassical theory wages and prices immediately realign to remove involuntary unemployment which completely reveals personal selection in unemployment rates. Keynesian economics stands in opposition to classical thought because it declares market defects stop the market from balancing which leads to enduring involuntary joblessness that governments might need to fix (Robert E. Lucas, 1978).

According to Neoclassical economic theory the economy naturally maintains a particular rate of unemployment that it steadily moves towards during extended periods. Monetary policy has no impact on this rate because monetary supply adjustments mainly affect prices instead of actual employment levels. Under neoclassical thinking policy

interventions to decrease unemployment by using demand enhancements prove to be futile in the long-term (Nickell, 1998).

3.2.2. Keynesian View

According to Keynesian economics theory insufficient aggregate demand triggers high unemployment rates in an economic system. Keynes maintained that contrary to market equilibrium theories the economy might maintain long-lasting unemployment because insufficient spending creates an insufficient market demand. The total economic spending becomes insufficient based on this interpretation to maintain full employment at businesses because firms do not generate enough revenue (Englama, 2001).

Keynesian economic theory describes how diminished consumer spending and reduced investment levels create lower national demand which forces companies to decrease operations and dismiss employees from work. Uncountable cycles of economic shortfall persist since unemployed staff members reduce their purchasing power leading to deeper economic depression. An intervention by the government provides the essential remedy to fight off this problem according to Keynesian economic principles. Public infrastructure spending and tax easing measures in government fiscal policy lead to increased market demand that attracts businesses to add more employees (Nickell, 1998).

A big part of economists from the Keynesian school agree that lowering interest rates is critical to support consumer and business borrowing and spending according to Englama (2001). Fiscal policy stands out to Keynesians as their preferred choice for direct demand stimulation during economic recessions (Englama, 2001).

As Birca (2019) illustrates the Phillips curve serves as a vital element of Keynesian theory because it demonstrates an opposing connection between inflation and unemployment rates. The concept states that demand stimulation results in lower unemployment rates but inflation turns out to be a secondary effect. Through policy adjustments based on this framework Keynesians state that it is achievable to balance unemployment rates against inflation (Birca, 2019).

Through Keynesian economics governments demonstrate the need for economic intervention particularly during recessions for the purpose of stabilizing employment while avoiding extended periods of high unemployment.

3.2.3. Monetarism

According to the monetarist theory all inflation derives from monetary factors because controlling money supply effectively controls inflation independent of employment level changes. The natural rate unemployment assumption underlies this perspective because it determines money supply changes result in price fluctuations instead of employment and real production effects. According to monetarism the growth of money supply leads to aggregate demand changes yet ultimately settles at the natural rate while prices rise.

The monetary theory emerged as a main economic strategy during the 1970s following the Keynesian policy failures during periods of stagflation. Based on monetarist doctrine maintaining tight monetary policy lets inflation decline regardless of temporary jobs losses since a permanent stable market system represents the beneficial outcome (Ng'andwe, 2020). According to monetarism full employment policy measures interfere with market efficiency which means unemployment should be managed by market adjustments rather than government intervention.

Monetarists strongly oppose using expansionary monetary policy for permanent employment rate decrease. The belief derives from the assessment that "monetary interventions" create temporary job reduction along with future inflation increases from market price and wage pressure reactions that result in the restoration of natural employment levels (Bonefeld & Holloway, 1995). According to the monetarist theory full employment interventions create excessive inflation that weakens economic stability.

3.2.4. Other Schools of Thought

The evaluation of unemployment requires alternative economic viewpoints. Marxist theorists view elevated unemployment rates as a fundamental aspect of capitalist economies because they create a workforce of available workers who regulate salary levels and sustain employer dominance. From this standpoint unemployment appears as a built-in feature of capitalist economic systems that cannot be permanently eliminated.

Institutional theories investigate the impact of trade unions together with unemployment insurance elements. Economic downturns cause higher unemployment because wages become stubborn to decrease when the labor market demand falls.

According to the hysteresis theory short-lived spikes in unemployment create prolonged impact on employment levels. According to this view the current level of unemployment stems from past occurrences since economic shocks of short duration may result in enduring unemployment if left unattended (Solow, 1980).

3.3. Types and Causes of Unemployment

3.3.1. Frictional Unemployment

People experience frictional unemployment when they lack work between job positions or when starting their job search or while moving residences. The natural occurrence of frictional unemployment becomes an acceptable part of economic dynamics because this form of unemployment differs from both structural and cyclical joblessness. The natural shifting of workers between positions causes this unemployment type that results from the typical movement of labor between jobs.

The duration required to locate work positions compatible with workers' abilities along with their location requirements causes the main source of frictional unemployment. The job search period facing new market entrants could lead to their temporary unemployment while pursuing appropriate employment opportunities. Workers who depart their employment for enhanced pay and better conditions or career expansion experience temporary joblessness until they secure new positions. People find themselves between one job and the next as they transition employment thus producing this kind of temporary unemployment (Englama, 2001).

The short duration of this type of unemployment contributes significant value to the functioning of labor markets. The temporary employment change allows employees to position themselves and acquire matching roles that match their skills and career interests. The efficient operation of an economy depends on frictional unemployment because it facilitates employer-suitable candidate matches (Ogujiuba & Cornelissen, 2020).

The reduction of frictional unemployment can be achieved through better job resource availability according to economists. Job matching services combined with career counseling services can assist job seekers to procure positions faster thus minimizing the time spent in frictional unemployment condition. Frictional unemployment remains a positive element of the active labor market because it demonstrates the ongoing changes and development within the workforce (Englama, 2001).

3.3.2. Structural Unemployment

Structural unemployment develops because workers possess different qualifications than what employers need for their job positions. The nature of structural unemployment differs from frictional unemployment since it leads to prolonged joblessness due to a skills-demand mismatch which occurs during changing patterns of production and demand. A permanent job shortage emerges because technological developments and changing consumer preferences together with location adjustments in job positions make particular job skills and types become outdated.

The application of automation technology and artificial intelligence alongside each other has reduced manual labor job availability and raised the numbers of unskilled workers who need jobs. Workers in affected areas experience employment challenges because industries evolve through relocation or movement to different regions and countries requiring new skills or relocation for employment opportunities. A welding professional who dedicated 25 years to shipbuilding faces an arduous path toward entering a different sector unless he obtains extensive new training (Englama, 2001).

Areas that lack job opportunities primarily experience structural unemployment in particular regions and sectors. Structural unemployment intensifies because of demographic changes that modify both the composition of workers and market sector requirements. Economic redevelopment actively causes extensive job loss in areas whose manufacturing sectors form the economic base (Ogujiuba & Cornelissen, 2020).

Public institutions establish educational and training opportunities for unemployed workers to find employment opportunities matching market demands. Workforce development programs together with skill development subsidies help people move into different career positions. Long-term economic stability along with better job adaptation

requires a dedicated effort to reduce structural unemployment because this solution supports workers in responding to industry changes (Englama, 2001).

3.3.3. Cyclical Unemployment

The business cycle creates cyclical unemployment that appears mainly in times of economic recession or economic downturn. The business cycle contains expansion and contraction patterns that lead to this employment deficit. Companies usually decrease production because of falling consumer demand which causes both unemployment numbers to rise and workforce reductions. The economy encounters this form of unemployment when "short-run cyclical downswings in the level of macroeconomic activity income" causes employment level decreases in relation to falling economic output.

Companies reduce labor costs because economic downturns create reduced revenues which they need to maintain profitability. When demand declines business operations get reduced which results in job loss to match the reduced income level and grow unemployment rates across the economy. The cyclical unemployment pattern simultaneously influences diverse industrial sectors which depend on customer purchases including manufacturing and retail.

Keynesian economists identify insufficient expenditure as the primary reason for cyclical unemployment because it creates levels of output and employment that do not meet full employment requirements. Government policies known as "expansionary fiscal policy" serve as the recommended solution when these unemployment patterns occur because they help boost total economic spending to reduce cyclical joblessness (Ogujiuba & Cornelissen, 2020). The policy actions typically consist of public budget increases or tax rate reductions with interest rate reductions as part of an effort to boost spending by households and businesses.

The nature of cyclical unemployment differs from structural unemployment because this type of unemployment ends with economic growth and increasing demand. When economic recessions stretch out in time the adverse effects on the workforce end up lingering because skilled attributes fade while job stability for workers diminishes in the aftermath. Economic stabilization policies including tax cuts and low interest rates serve governments

when they need to reverse downturns and achieve economic recovery (Robert E. Lucas, 1978).

3.3.4. Seasonal and Voluntary Unemployment

Seasonal unemployment occurs because businesses demand more or less workforce depending on time periods which affects industries whose operations follow annual patterns. The unemployment pattern is most common in agricultural, tourism and retail industries because their "seasonal patterns of increased or decreased activity in a certain sector of the economy" determine the employment requirements (Ogujiuba & Cornelissen, 2020). Jobs within the agricultural sector reach their highest point when farmers plant crops and harvest them while the employment levels decrease as we move into seasons without planting or harvesting. The tourism industry faces rising employee requirements during travel high seasons such as summer and winter holidays although it cuts employment numbers during low seasons.

Seasonal unemployment exists in predictable patterns according to seasonal market changes with most industries regarding it as a natural labor market fluctuation. Government policies for alternative employment training programs in certain economies work to reduce seasonal unemployment by creating job opportunities in non-seasonal industries during off periods.

Individuals who avoid employment opportunities at present wage rates yet find suitable job positions available experience voluntary unemployment. The employment decision to seek education or training or prioritize family responsibilities among others represents this form of unemployment pattern. Available jobs will drive workers away from employment when their skill requirements or wage expectations or working environment needs are not sufficiently satisfied. Workers choose to stay out of the labor market or keep looking for better alternatives because "labor is unwilling to work at the prevailing money wage" (Englama, 2001).

Both types of unemployment highlight distinct aspects of labor market behavior. Seasonal unemployment patterns stem from the expected shifts in labor market demand yet voluntary unemployment arises because individuals prefer different work conditions and

salaries. Knowledge of these unemployment types enables policy leaders to remedy workforce limitations and create suitable employee-job placements.

3.4. Unemployment Indicators and Measurement

3.4.1. Unemployment Rate Calculation

The unemployment rate is calculated as the percentage of unemployed individuals within the total labor force. It is generally expressed as presented in equation 1:

$$Unemployment\ Rate = \left(\frac{Number\ of\ Unemployed}{Labor\ Force}\right) \times 100 \quad (1)$$

According to recent international standards, this indicator helps assess the "degree of underutilization of labor" and serves as a core measurement in labor market analysis.

Alternative indicators extend beyond this primary calculation for additional labor market insights. For example, the "compound rate of underemployment and unemployment" (LU2) is defined as specified in equation 2:

$$LU2 = \left(\frac{Unemployed+Underemployed}{Labor\ Force}\right) \times 100 \quad (2)$$

This composite indicator reflects both those unemployed and those employed part-time but desiring more work. The next indicator is the Labor Force Participation Rate (LFPR). The formula expressed in equation 3 specifies the proportion of the working-age population in the labor force.

$$LFPR = \left(\frac{Labor\ Force}{Working-Age\ Population}\right) \times 100 \quad (3)$$

Dependency Ratio is the subsequent indicator frequently used. It measures the proportion of dependents (non-working population) to the working-age population, and i tis calculated as presented in equation 4.

$$Dependency\ Ratio = \left(\frac{Population\ Aged\ 0-14\ and\ 65+}{Working-Age\ Population\ (15-64)}\right) \times 100 \quad (4)$$

These calculations provide a framework for measuring labor market health, with variations across national contexts in defining active job search methods, which impacts the resulting unemployment statistics (Robert E. Lucas, 1978).

3.4.2. Unemployment Metrics in Moldova

The Moldova labor market shows substantial changes in its structure over the past few years. During 2017 the unemployment rate in Moldova decreased to 4.1% when comparing to unemployment statistics from previous years. The actual labor market situation cannot be measured thoroughly from this statistic especially regarding youth unemployment and regional inequalities.

The problems related to youth joblessness persist as a major concern. The unemployment rate among people aged 15-24 far exceeded national norms in 2017 which shows older young people struggled to find work. The gap emphasizes that authorities should implement specific measures to remove the obstacles that prevent young workers from finding employment (Savelieva & Zaharov, 2022).

The employment situation in Moldova is deeply influenced by geographic areas. The unemployment rates in urban areas including the capital city stay beneath the levels observed in rural territories. Job scarcity exists in rural domains which results in high unemployment rates together with underemployment. Regional development initiatives must focus on establishing employment opportunities throughout Moldova because of the existing urban-rural gap (Birca, 2015).

The employment statistics in Moldova are strongly affected by the process of labor migration. About half of the people in Moldova in working age look for jobs abroad which results in a reduction of the workforce at home. The external funds from migrant workers benefit the country's economy but create difficulties for local manufacturing sectors and endanger the stability of Moldovan workers (Vasilescu & Sandroshvili, 2017).

To handle these complicated challenges Moldova needs extensive strategies which combine better vocational training programs and regional economic advancement initiatives and local investment incentives for businesses. To achieve balance and strength in its labor market Moldova needs strategic action against youth joblessness and regional gaps and workforce absences from migration.

3.4.3. Impact of Labor Migration and COVID-19 on Unemployment

The labor market of Moldova faces two major influences including COVID-19 pandemic and extensive labor exodus. These phenomena have altered employment patterns of the nation in separate ways which present opportunities alongside difficulties for growth.

- Labor Migration and Its Effect on Employment

Scale of Labor Migration

Since economic turmoil and employment shortages in Moldova began during the early 1990s the country experienced large-scale worker migration. The overseas employment of more than 1 million Moldovans makes up over 25% of the country's total population and mostly occurs in Russia together with Italy Ukraine Romania France Portugal Spain Greece Turkey and Israel (University of Texas, 2007).

Impact on Domestic Unemployment

Nationwide emigration has led domestic workers to drastically reduce their job search activities which artificially decreases the unemployment rate because of the smaller workforce participating in employment searches. The massive exodus of workers creates a critical shortage of labor in crucial industries while making Moldova heavily dependent on overseas money transfers which contributed about 15.8% to the national GDP in 2020[1].

Social Implications

[1] Federal Reserve Bank of St. Louis, 2020. Remittance inflows to Moldova (% of GDP). Available at: https://fred.stlouisfed.org/series/DDOI11MDA156NWDB [Accessed 27 February 2024].

The economic gain from remittances does not offset the productivity loss from population depletion among working-age adults who have moved abroad resulting in damaged family systems as well as decreased economic output. It was projected in 2003 that labor migration created a social crisis when it was estimated that 100,000 Moldovan children had become parentless because their parents migrated for work. [2]

- The COVID-19 Pandemic and Unemployment Trends

Economic Contraction and Job Losses

COVID-19 together with an acute drought forced Moldova into an extensive economic downturn which reduced real GDP by 7.2% in 2020. Economic research predicted that employment levels would drop by 8% or lose around 70,000 positions mostly throughout commercial sectors alongside hospitality services and agricultural activity as well as industries.

Sectoral and Demographic Impact

The COVID-19 pandemic influenced diverse groups of people and industrial sectors in different ways. Employment gaps appeared mainly within the trade and hospitality sectors before industry and agriculture followed. The young population aged 25 to 34 years old incurred most job losses in the workforce.

Labor Force Participation and Migration Dynamics

Since employment vacancies decreased during the pandemic many job seekers gave up their work search resulting in reduced labor force involvement. Migration patterns underwent changes because migrant workers chose to go back to their home countries due to disruptions in international travel.[3]

---

[2] Migration Policy Institute, 2024. Moldova: Country Resource. Available at: https://www.migrationpolicy.org/country-resource/moldova-republic [Accessed 27 February 2024].

[3] World Bank, 2024. Moldova: Overview. Available at: https://www.worldbank.org/en/country/moldova/overview[Accessed 27 February 2024].

4. Practical Part

4.1. Overview of Moldova's labor market

Moldova uses agriculture to employ the majority of its workforce alongside its service and industrial job sectors. The agriculture industry maintains its status as a major job provider although urban centers focus mostly on service sector operations within rural regions of Moldova. The country faces three national problems which include active workforce movement as well as a growing elderly population alongside variable employment options depending on location. The employment statistics of Moldova suffer significant changes because many working people migrate outside the country for work purposes thus decreasing the workforce numbers within the nation. Foreign labor outflows create operational issues for domestic firms despite bringing financial support for the country through overseas remittances.

4.1.1. General Economic Background

Moldova maintains a compact sized economy which ranks as lower middle class. During the early 2000s Moldova emerged as the least prosperous European state yet it successfully reduced poverty rates while establishing economic equality. The national economy expands at a constant 5% rate annually because of money sent by migrants and domestic consumption. World GDP consists of one-fourth which represents one of the highest segments in the global economy.

The economic development of Moldova received significant boost through commercial partnerships between CIS member states and the European Union. The three main export products from Moldova are athletically related equipment together with apparel and farming goods. The world ranks Moldova as its 21st largest wine exporter and wine exports placed fifth in value among 2021 exports at $140 million.[4]

Moldova seeks foreign investment mostly in production and technological sectors where they possess many available workers. Information and communication technology

[4] World Bank, Moldova - Country Overview, [online] Available at: https://www.worldbank.org/en/country/moldova [Accessed 10 February 2025].

(ICT) generates close to 10% of Moldova's GDP as this sector represents a promising economic opportunity for the country. Each year more than 2,000 Moldovans graduate with computer-related degrees. Information technology business production results are sent to seven foreign markets at a rate of 80% with the US, UK, France, Germany, the Netherlands, and Romania as leading recipients. [5]

The Moldovan government has attempted to reduce labor market challenges by applying employment programs in combination with tax incentives for companies along with support for new business startups. The government developed distinct programs for resolving rural employment issues together with reducing youth joblessness and strengthening skill education infrastructure (Ulandssekretariatet, 2023).

4.1.2. Structure of the Labor Market

The labor force in Moldova finds employment in various industry segments from farming to manufacturing to service providers. Workers in Moldova distributed across three sectors of the economy in 2022 with 22.9% in agriculture and 22% in industry and construction and 55.1% in services. [6]

Agricultural Sector

The agricultural industry plays an essential role in the employment market of rural areas. Most agricultural operations in Moldova operate at the small farm level yet remain exposed to weather and global market values. Workers who participate in this industry must endure financial instability because of market sensitivity.

Industrial and Construction Sectors

The manufacturing sector alongside mining and utilities operations belong to industrial activities but infrastructure development drives growth in the construction field. Various

[5] U.S. Department of Commerce. 2022. *Moldova - Information and Communication Technology*. Available at: https://www.trade.gov/country-commercial-guides/moldova-information-and-communication-technology [Accessed 10 February 2025].

[6] National Bureau of Statistics of the Republic of Moldova. 2023. *Labour Force in the Republic of Moldova: Employment and Unemployment in 2022*. Available at: https://statistica.gov.md/en/labour-force-in-the-republic-of-moldova-employment-and-unemployment-in-2022-9430_60383.html [Accessed 10 February 2025].

industries encounter operational problems stemming from their outdated equipment and insufficient investment practices that impair both production numbers and employee safeguarding.

Services Sector

Information technology together with retail and healthcare join education as they represent the largest employment sector. The Information and Communication Technology (ICT) industry represents the highest potential sector with a contribution of over 10% to the Gross Domestic Product (GDP). Indian IT companies deliver 80 percent of their total output to the US as well as UK and France and Germany and the Netherlands and Romania.

Informal Employment

Many Moldovan workers engage in informal employment which primarily happens in small retail businesses and agricultural farms. Investors expose themselves to safety risks when working in informal sectors because these jobs fail to provide either security or personal protection benefits.

Labor Migration

The labor migration patterns of Moldova strongly influence employment statistics because many working-age residents choose to work abroad which lowers the available workforce in the domestic labor market. Labor migration creates two main problems for indigenous companies and home-based workforce retention yet overseas remittances maintain national economic stability.

Gender and Age Distribution

The workplace shows different employment patterns between men and women because males have higher employment rates. The workforce integration rate for 15 to 24-year-olds shows high unemployment numbers above the national average statistics. Young people face continuing substantial difficulties in obtaining employment (Ulandssekretariatet, 2023).

4.1.3. Key Demographics

Age

The analysis of unemployment depends heavily on age because distinct age groups experience diverse employment entry difficulties and related obstacles. Young job seekers face elevated unemployment because they bring limited experience and skills that fail to meet market requirements based on new labor market research (Eurostat, 2022). Moldova faces a serious problem with young joblessness and this situation highlights the importance of the topic. Research findings reveal that "youth aged 15–24 face elevated unemployment rates compared to older populations because they pursue employment opportunities in other countries" (World Bank, 2019b). Young talent faces difficulty in staying in Moldova because they leave the country to pursue better professional opportunities (World Bank, 2019a).

Gender

The workforce situation for Moldova faces specific challenges because of gender inequalities. Studies show that social pressure together with family duties prevent Moldovan women from labor participation thus diminishing the country's female workforce numbers.[7] Research reveals that Moldovan women typically work part-time jobs besides informal work because they fulfill family care roles yet male workers tend to obtain formal employment.[8] The identification of employment patterns among different genders requires an understanding of inequalities since it enables better execution of inclusive employment strategies.

Educational Attainment

Education level determines the job opportunities available to people in addition to their potential income. People from Moldova with advanced levels of education tend to maintain employment rates below the national average. Study results demonstrate that educated individuals face unemployment rate percentages half that of secondary education holders.

[7] United Nations Development Programme (UNDP), *Gender Equality in Moldova*, [online] Available at: https://www.undp.org/moldova/gender-equality [Accessed 10 February 2025].

[8] United Nations Development Programme (UNDP), *Gender Equality Focus in Moldova*, [online] Available at: https://www.undp.org/moldova/gender-equality-focus [Accessed 10 February 2025].

Moldovan graduates end up working in low-demand sectors after finishing their studies which makes them seek jobs elsewhere or remain underemployed. A significant employment rate issue in Moldova originates from the misalignment between academic degrees and industry market needs thus creating skill deficits as well as employment mismatches (International Labour Organization (ILO), 2020).

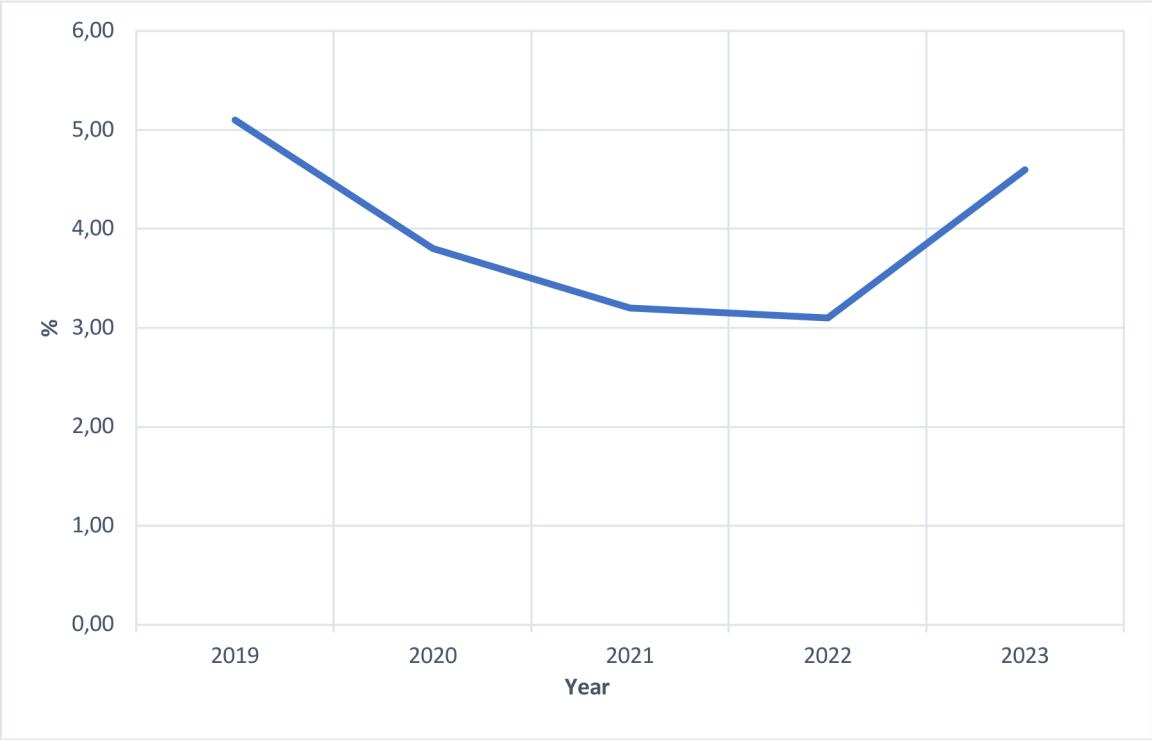
Regional Distribution

The levels of unemployment differ among Moldova's different geographical areas. Metropolitan centers experience lower unemployment rates than rural communities because the rural population lacks numerous employment opportunities. A study demonstrates that Chisinau urban dwellers specifically earn better wages since they access broader employment possibilities than farm laborers in the rural areas who receive meager pay scales (World Bank, 2019). The rural-urban employment differences make it crucial to create economic development policies which address rural unemployment problems.

4.2. Statistical Analysis of Unemployment Trends

Chart 1 displays the overall unemployment rate in Moldova from 2019 to 2023.

Chart 1: The unemployment rate in Moldova for the period 2019-2023.



Source: Statbank MD, own processing, 2024.

The unemployment rate decreased consistently as shown in Chart 1 after 2019 when it reached about 5.3%. The lowest level of unemployment was recorded at 3.1% during 2021. The unemployment decrease resulted mainly from workforce movement and the pandemic-induced lowering of available job candidates as well as short-term public measures which kept people employed. The unemployment rate shifted course in the timeframe of 2021-2022 and rose to 4.8% at the beginning of 2023. The decline of the economy together with ending government aid programs along with rising inflation and decreased foreign worker migrations caused unemployment to increase. An enlarged labor pool entered the market to fight for a decreasing labor supply.

4.2.1. Interval Estimate Prediction

The data allows us to construct a prediction through interval estimating with 95% confidence which features upper and lower confidence limits. To ensure the reliability of this prediction, the REF formula (equation 5) is applied:

$$REF = \left|\frac{P-A}{A}\right| \times 100\ (\%) \tag{5}$$

where P represents the predicted value, A is the actual value, and REF denotes the relative error of forecast.

The percentage calculation of predicted-actual value differential through this formula helps determine reliability. Real unemployment rate for 2023 reached 4.6% which differs from the forecasted value of 2.15%. The unemployment trend had steadily decreased since 2017 but the economic conditions in 2023 created a sudden increase that invalidated the forecast predictions.

The REF value of 53.26% exceeds its acceptable limit of 10% indicating that the data lacks reliable accuracy for forecasting purposes. The general trend remains estimable despite these difficulties. A calculation based on the point estimate methodology predicts that 3.96% of employed people will remain unemployed during 2024. Thus the LCL sits at 2.88% while the UCL rests at 5.04%. The final confidence interval can be expressed as presented in equation 6:

$$P\ (2.88\% < 3.96\% < 5.04\%) = 0.95 \tag{6}$$

Additionally, the average annual growth rate is determined using the formula shown in equation 7.

$$\overline{K} = \sqrt[n-1]{\frac{Y_n}{Y_1}} \tag{7}$$

The outcome of the formula reveals a yearly rate of decline at -2.55%. The first projection indicates unemployment rates fall by an average of 2.55% yearly. The unemployment rate shows indications that it will keep decreasing at a stable pace if environmental conditions persist.

4.2.2. Correlation Analysis of National Unemployment

To comprehend trends in the labor market, it is crucial to consider the correlation between unemployment rate and time. In order to investigate if unemployment rates

demonstrate a time-dependent pattern, the Pearson correlation coefficient was computed between the unemployment rate and the year for the period of 2019–2023 (see Figure 1).

Figure 1: Pearson correlation between unemployment rate and year (2019–2023).

The CORR Procedure

2 Variables:	Year UnemploymentRate

Simple Statistics						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Year	5	2021	1.58114	10105	2019	2023
UnemploymentRate	5	3.96000	0.87350	19.80000	3.10000	5.10000

Pearson Correlation Coefficients, N = 5 Prob > |r| under H0: Rho=0		
	Year	UnemploymentRate
Year	1.00000	-0.30772 0.6145
UnemploymentRate	-0.30772 0.6145	1.00000

Source: SAS OnDemand, own calculations, 2024.

The results of the analysis showed r = -0.30772 indicating that unemployment has a weak negative connection with the passing years as Figure 1 shows. The data shows unemployment has a very small tendency to decline from year to year but the pattern remains unstable. The p-value of 0.6145 surpasses 0.05 thus validating the non-significance of the correlation.

This dataset contains the following statistical characteristics: maximum value stands at 5.1% while minimum value equals 3.1% and the mean value measures 3.96% with standard deviation at 0.87% and standard error at 0.39%.

The obtained data points show no substantial irregularities that point to a distinct yearly pattern. The data reveals that unemployment movements come from economic influences and policy changes while showing no systematic pattern based on time.

The study results confirm that time does not serve as an important indicator for unemployment rate changes. Analysis of multiple economic indicators is essential for determining all of the variables which affect market labor shifts. The data confirms that unemployment rates fail to follow regular chronological patterns because specific years showed increased unemployment numbers versus others that experienced reduction in these figures.

The results from correlation analysis indicate that time initially shows no ability to adequately explain unemployment patterns and multiple economic metrics become necessary to understand labor market changes.

4.2.3. Chain Base Fixed Base Indices of National Unemployment

The Pearson correlation coefficient reveals useful information regarding the relationship between unemployment and time though it inadequately describes annual employment rate modifications. In order to comprehend these variations more thoroughly, calculations were performed for the Fixed Base Index (FBI) and Chain Base Index (CBI), using the formula from equation 8 and equation 9, respectively.

$$Chain\ base\ index: y = \left(\frac{Y_n}{Y_{n-1}}\right) \times 100 \tag{8}$$

where: Y_n is the unemployment rate in the current year, Y_{n-1} is the unemployment rate in the previous year.

$$Fixed\ base\ index: y = \left(\frac{Y_n}{Y_0}\right) \times 100 \tag{9}$$

where Y_n is the unemployment rate in a given year, and Y_0 is the unemployment rate in the base year (traditionally, the first year of the time series). Figure 2 presents the calculation results.

Figure 2: Chain base index & fixed base index for overall unemployment (2019–2023).

	Year	UnemploymentRate	ChainBaseIndex	FixedBaseIndex
1	2019	5.1	.	100
2	2020	3.8	74.509803922	74.509803922
3	2021	3.2	84.210526316	62.745098039
4	2022	3.1	96.875	60.784313725
5	2023	4.6	148.38709677	90.196078431

Source: SAS OnDemand, own calculations, 2024.

The Chain Base Index measurement between 2023 and 2022 stood at 1.4839 indicating that unemployment grew by 48.39 percent. A substantial rise in 2023 broke away from post-pandemic stability because unemployment levels declined during previous years. The economic effects from the pandemic caused most of the early changes in these numbers. Labor market conditions together with external economic factors seem to have undergone a sudden shift in 2023 based on the substantial unemployment rate increase.

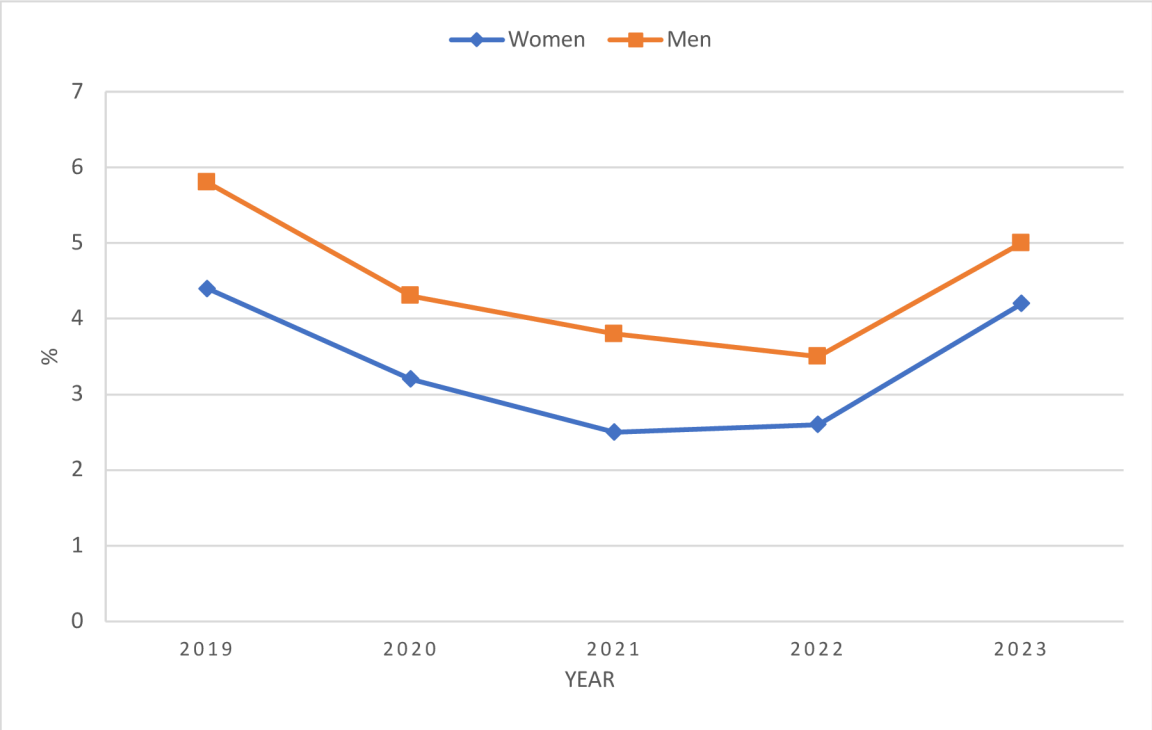
According to the Fixed Base Index (FBI), 2023 unemployment numbers amounted to 90.2% of the 2019 baseline. The 0.902 FBI value for 2023 shows unemployment at that year corresponded to 90.2% of the 2019 unemployment rate. The pandemic brought substantial job loss in 2023 but unemployment numbers stayed below pre-pandemic figures. Unemployment experienced a continuous decline from 2019 to 2022 so that it achieved its most minimal point in 2022 which equated to 60.78% of the 2019 unemployment level. The 2023 statistical reversal was almost capable of reaching pre-pandemic unemployment figures.

Unemployment data shows that Moldova experienced stabilized rates before the 2023 rise that created a notable economic milestone. This sudden shift indicates that labor market conditions may have undergone substantial pressure which needs detailed study for discovering its factors.

4.3. Statistical Analysis of Unemployment by Gender

Chart 2 opens the chapter with a presentation of the unemployment rate by gender in Moldova between 2019 and 2023.

Chart 2: The unemployment rate by gender in Moldova for the period 2019-2023.



Source: Statbank MD, own processing, 2024.

Moldova faces a major problem regarding gender disparities in employment opportunities. The workforce participation rate of men in 2023 stood at 4.9% whereas women had a lower rate of 4.1% during this period. Multiple essential causes explain the differences in employment statistics between male and female workers in Moldova:

- **Employment differences across sectors**: a higher percentage of men work in industrial and construction sectors where plants experience frequent economic slowdowns and have high rates of employment loss.

- **Increased representation of women in stable sectors:** women work mainly in stable sectors including education and healthcare alongside public administration due to better job security and decreased economic sensitivity.

- **Cultural and societal influences:** society along with culture pulls men and women toward different careers by maintaining traditional gender roles leading to gaps between women's and men's employment benefits.

Table 1 continues the presentation of the unemployment rate among women and men from 2019 to 2023, and Figure 3 presents the result of the correlation analysis.

Table 1: The unemployment rate among women and men in Moldova for the period 2019–2023 (in %).

Year	Men	Women
2019	5.8	4.4
2020	4.3	3.2
2021	3.8	2.5
2022	3.5	2.6
2023	5.0	4.2

Source: Statbank MD, own processing, 2024.

Figure 3: Pearson correlation between male and female unemployment rates (2019–2023).

The CORR Procedure

2 Variables:	Unemployment_Men Unemployment_Women

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Unemployment_Men	5	4.48000	0.93113	22.40000	3.50000	5.80000
Unemployment_Women	5	3.38000	0.88431	16.90000	2.50000	4.40000

Pearson Correlation Coefficients, N = 5
Prob > |r| under H0: Rho=0

	Unemployment_Men	Unemployment_Women
Unemployment_Men	1.00000	0.96186 0.0089
Unemployment_Women	0.96186 0.0089	1.00000

Source: SAS OnDemand, own calculations, 2024.

4.3.1. Correlation Analysis of Unemployment by Gender

A strong positive correlation exists between male and female unemployment rates as shown by the Pearson correlation coefficient (r) value of 0.96186 from 2019 to 2023. The labor market trends influence male and female employment simultaneously. The significant

correlation between these variables becomes established through the p-value calculation of 0.0089 since the value remains below the 0.05 threshold thereby demonstrating the labor market's systematic pattern. The statistical characteristics of the dataset further reinforce these findings:

- For men, the mean unemployment rate was 4.48%, and the standard deviation was 0.93%, with a range between 3.50% and 5.80%.
- For women, the mean unemployment rate was 3.38%, and the standard deviation was 0.88%, with a range between 2.50% and 4.40%.

The unemployment rate for male workers slightly exceeded the unemployment rate for female workers throughout the entire analyzed period. The unemployment patterns between male and female workers matched each other which strengthens the connection between their employment trends.

4.3.2. Hypothesis Testing of Unemployment by Gender

A paired t-test was conducted to evaluate the statistical significance of the difference in unemployment rates between men and women, with the following hypotheses:

- **H_0 (Null Hypothesis)**: There is no significant difference between male and female unemployment rates.
- **H_1 (Alternative Hypothesis)**: There is a significant difference between male and female unemployment rates.

According to test results men remain unemployed longer than women although the total unemployment gap stands at 1.1%. The mathematical calculations contain a t-value measure of 9.65 and a p-value reading of 0.0006. Scientists discard the null hypothesis through p-values under 0.05 to prove that male and female populations have different unemployment rates.

The studied data reveals that unemployment impacts men more than women in every period that records were collected. All available data reveals that males choose employment roles in manufacturing and construction but females select positions in healthcare and education that present more stability.

4.3.3. Linear Regression Analysis of Unemployment by Gender

The linear regression analysis for unemployment rates of men and women from 2019 to 2023 shows the following trend equations (equations 10 and 11):

$$Men: y' = 489.520 - 0.240x \quad (10)$$

$$Women: y' = 205.480 - 0.100x \quad (11)$$

The negative values of the slopes (-0.240 for men and -0.100 for women) suggest that there has been a general decline in unemployment over time. The pronounced rise in 2023, however, interrupts this trend and indicates that unemployment rates cannot be attributed solely to temporal factors.

The R^2 values show that time by itself does not strongly predict unemployment rates:

- **R^2** for men's model = 16.61%, meaning that only 16.61% of the variation in male unemployment rates can be explained by time.
- **R^2** for women's model = 3.20%, indicating that only 3.20% of female unemployment rate fluctuations are explained by time.

The p-values of 0.4958 for the male regression combined with 0.7736 for the female regression surpass 0.05 thus confirming that the trends have no statistical significance. The data shows that environmental economic variables and policy factors substantially affect unemployment rates instead of yearly developments. The theoretical values for gender-specific unemployment rates appear in Table 2 while Table 3 presents residual values.

Table 2: Unemployment rates among women and men in Moldova for the period 2019–2023. Theoretical values.

Year	Men	Women
2019	**4.96**	**3.58**
2020	**4.72**	**3.48**
2021	**4.48**	**3.38**
2022	**4.24**	**3.28**
2023	**4.00**	**3.18**

Source: SAS OnDemand, own calculations, 2024.

Table 3: Unemployment rates among women and men in Moldova for the period 2019–2023. Residual values.

Year	Men	Women
2019	**0.84**	**0.82**
2020	**-0.42**	**-0.28**
2021	**-0.68**	**-0.88**
2022	**-0.74**	**-0.68**
2023	**1.00**	**1.02**

Source: SAS OnDemand, own calculations, 2024.

Research findings reveal a robust positive statistical connection between the data points between 2019-2023 because of the Pearson coefficient value r = 0.96186. The employment trends of women exactly mirror those of men because workforce adjustments impact both genders in exactly the same manner.

Linear regression models were applied to generate theoretical data which proved the long-term trends exclusively influenced this correlation. The predicted values demonstrate a perfect linear relationship due to a correlation coefficient value of r = 1.0000 between male and female unemployment rates. The model correctly demonstrates that male and female unemployment tracks exactly in tandem throughout time.

A slight difference exists between actual (0.96186) and theoretical (1.0000) correlations yet it demonstrates that long-term elements do impact this relationship whereas additional economic factors contribute to its influence. Unemployment rates demonstrate

both predicted labor market patterns and discrete economic occurrences and legislative changes and unexpected events that generate distinct annual employment conditions.

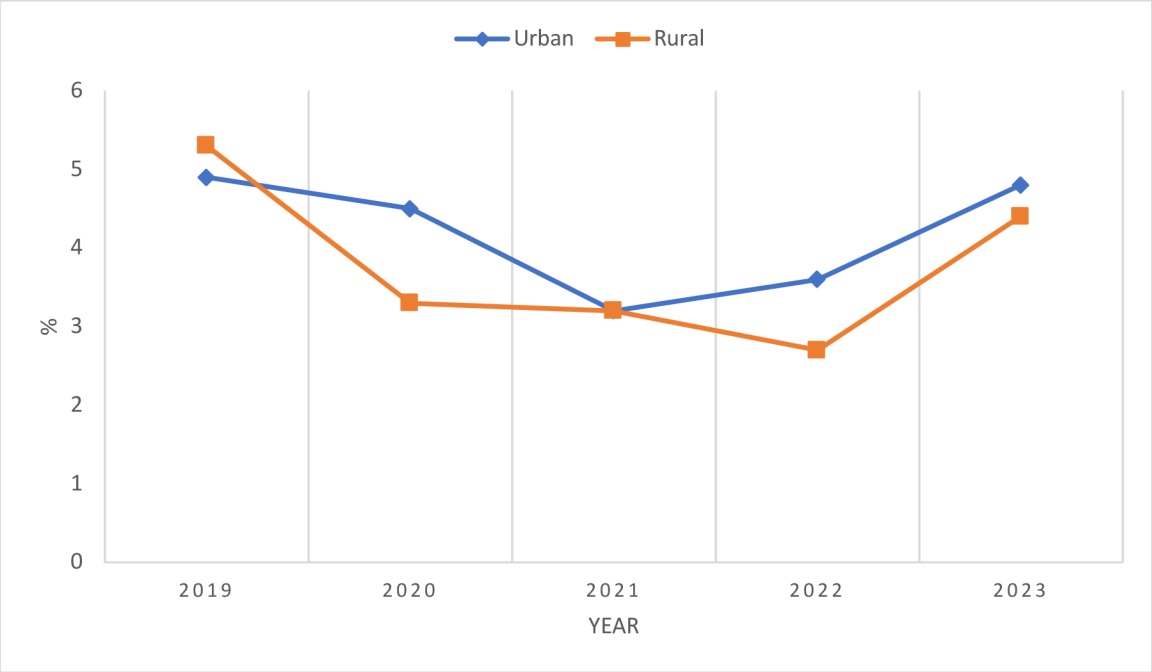
Recorded data shows that male and female unemployment rates strongly match each other due to general economic factors despite excluding gender-specific elements.

4.4. Statistical Analysis of Unemployment by Area

During the period starting from 2019 the jobless rate decreased in urban and rural territories before reaching its lowest point at 2.9% in rural areas and 3.1% in urban areas during 2021.

Unemployment rates in both areas began rising after 2021. Unemployment numbers in countryside areas grew steadily yet the jobless rate in urban centers experienced a greater escalation. The unemployment statistics for urban as well as rural regions reached almost identical levels at 4.7% during 2023. The labor market conditions of these areas were showing signs of convergence. The unemployment rate stands in relation to urban/rural residence distribution as shown in Chart 3.

Chart 3: The unemployment rate by area in Moldova for the period 2019-2023.



Source: Statbank MD, own processing, 2024.

4.4.1. Hypothesis Testing of Unemployment by Type of Residence

The t-test statistics confirmed that different unemployment rates between urban and rural communities generated valuable statistical results. Group average unemployment variables that surpass random statistical variation are analyzed to prove unique labor market characteristics using statistical methodologies in this method.

Figure 4: Hypothesis testing for rural and urban unemployment rates (paired t-test, 2019–2023).

Variable: UnemploymentRate

AreaType	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
Rural		5	3.7800	1.0521	0.4705	2.7000	5.3000
Urban		5	4.2000	0.7583	0.3391	3.2000	4.9000
Diff (1-2)	Pooled		-0.4200	0.9171	0.5800		
Diff (1-2)	Satterthwaite		-0.4200		0.5800		

AreaType	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
Rural		3.7800	2.4736	5.0864	1.0521	0.6304	3.0234
Urban		4.2000	3.2585	5.1415	0.7583	0.4543	2.1790
Diff (1-2)	Pooled	-0.4200	-1.7575	0.9175	0.9171	0.6194	1.7569
Diff (1-2)	Satterthwaite	-0.4200	-1.7811	0.9411			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	8	-0.72	0.4896
Satterthwaite	Unequal	7.2725	-0.72	0.4916

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	4	4	1.93	0.5414

Source: SAS OnDemand, own calculations, 2024.

A graphical display in Figure 4 presents unemployment data points which extend until 2023. The data showed urban employment statistics at 4.20 percent with standard deviation of 0.7583 but rural employment equaled 3.78 percent and had a standard deviation of 1.0521. The city unemployment rate maintained a steady 4.20 percent yet the rural areas exhibited 3.78 percent accompanied by -0.42 percentage points of decreased unemployment indicating a greater urban unemployment situation.

The hypothesis for this test is formulated as follows:

- **Null Hypothesis (H_0):** There is no significant difference in unemployment rates between urban and rural areas.
- **Alternative Hypothesis (H_1):** There is a significant difference in unemployment rates between urban and rural areas.

The pooled variance t-test and the Satterthwaite t-test (for unequal variances) were performed to evaluate the statistical significance of the observed difference.

t-value = -0.72, Degrees of Freedom (DF) = 8, p-value = 0.4896

Satterthwaite t-test (unequal variances):

t-value = -0.72, Degrees of Freedom (DF) = 7.27, p-value = 0.4916

The research findings support the null hypothesis due to the calculated p-value exceeding the established threshold of 0.05 at 0.49. Across the observed period the labor market applied equivalent effects on urban and rural areas which resulted in a uniform unemployment rate pattern. The majority of this research project shows study results while performing analysis on them.

5. Results and Discussion

The results of the statistical study of Moldova's unemployment patterns are shown in this section, with particular attention paid to important discoveries from hypothesis testing, correlation analysis, and interval estimate prediction. These findings are integrated with the discussion to thoroughly grasp the variables affecting unemployment across demographic and geographic categories.

5.1. Unemployment Trends and Forecasting

Statistically relevant changes in unemployment occurred between 2019 and 2023 due to structural and economic reasons. The unemployment rate decreased to 3.1% in 2021 compared to 5.3% in 2019 because of government interventions and labor migration as well as COVID-19 related job-seeker deterrence. From 2021 through 2023 unemployment rates rose to 4.8% due to market inflation and economic downturns together with decreased foreign worker migration.

At a 95% confidence level the predicted unemployment rate for 2024 reached 3.96% based on the interval estimate with lower and upper confidence limits of 2.88% and 5.04%. Extremely high external economic variables led to a substantial 53.26% relative error rate in the reliability test (REF).

5.2. Correlation Analysis of Unemployment Over Time

The Pearson correlation analysis showed -0.30772 weak negative correlation between year and unemployment rate which means no time-based patterns were detectable in the unemployment data. The unemployment patterns maintained their statistical insignificance according to the high p-value (0.6145) leading to the confirmation that economic factors mainly impact unemployment rather than temporal patterns.

5.3. Unemployment by Gender

Female unemployment rates showed a strong positive link to male unemployment rates through time and revealed consistent higher unemployment levels for men compared to women based on the gender-specific analysis (Pearson correlation coefficient 0.96186). The analysis through hypothesis testing established significant statistical evidence about

employment rates because men maintained an average unemployment rate of 4.48% superior to the 3.38% experienced by women.

The data did not show that time was an adequate variable when compared to external influencing factors which had stronger effects on linear regression results. The unemployment statistics of both men and women were primarily determined by sectoral shifts and economic cycles according to their statistical data with high p-values and R^2 values reaching only 0.4958 for men and 0.7736 for women.

5.4. Unemployment by Area

Statistical analysis of unemployment in urban versus rural areas proved that unemployment levels were similar but slightly elevated in urban centers at 4.20% compared to rural areas at 3.78% (p-value = 0.49). The comparable unemployment data reveals that workforce movement and economic changes produce equivalent effects between rural and urban areas although fluctuations are more apparent in cities.

After 2021 both urban areas and rural areas exhibited convergence in their unemployment rates that reached approximately 4.7%. The convergence pattern represents similar effects of structural economic shifts between urban and rural labor markets which led traditional industry employment to decline and informal employment to increase.

5.5. Implications of Findings

The research evidence demonstrates that Moldova's unemployment rates are more influenced by migration patterns and industrial fluctuations as well as foreign economic conditions than by consistent persistent trends. Moldova needs specific workplace legislation to reduce unemployment because men continue experiencing higher rates than women especially across manufacturing and construction jobs. Regional economic policies stand vital to providing equal labor market possibilities across all areas since urban and rural unemployment rates maintain similar levels.

6. Conclusion

A thorough research of Moldova's unemployment patterns in this bachelor thesis explores the economic factors together with geographic and demographic elements affecting labor market activities. Results indicate that Moldova's unemployment rate changes because of external finance situations and changes in labor migration and structural shifts in leading industries over the past five years.

Unemployment data fails to reveal any patterns that follow the flow of time which means external economic factors alongside government policies cause bigger changes than neighborhood market conditions. The existence of sector-specific strategies becomes essential due to the clearly identifiable disparity between men and women in unemployment numbers which affects primarily industries dominated by males that suffer most in times of economic instability.

The statistics on regional unemployment demonstrate a clear necessity to develop employment generation along with skill improvement frameworks for every area because these numbers show matching systematic challenges exist in cities and rural sector labor markets. The Moldovan government previously tried to address these issues but the nation continues to confront problems with labor migration and young workforce unemployment as well as underemployment in essential industries which require extensive policy solutions.

The difficulties of the labor market should put priority on industries with job potential and educational programs must link to market needs while focusing on skill acquisition to reduce these problems. Domestic job creation supported by entrepreneurial assistance and investment incentives will help create a sustainable reduction of unemployment rates.

Addressing systemic labor market problems through proper interventions will enable Moldova to develop a flexible workforce that encourages economic growth with equal participation which enables better job prospects for citizens.

7. References

1. Birca, A. (2015). A comparative analysis of the labor market behavior in the European Union and the Republic of Moldova.
2. Birca, A. (2019). Economic Convergence in European Union.
3. Bonefeld, Werner., & Holloway, John. (1995). Global capital, national state, and the politics of money.
4. Dorling, D. (2009). Unemployment and health.
5. Englama, A. (2001). Unemployment: concepts and issues. 25, 1–5.
6. International Labor Organization (ILO). (2020). Skills Mismatch in Labor Markets: Concepts and Measurement Techniques.
7. Jones, S. R. G., & Riddell, W. C. (1999). The measurement of unemployment: An empirical approach.
8. Ng'andwe, C. (2020). Inadequacies of monetarism for Developing Countries with Mass Unemployment: A Theoretical Framework.
9. Nickell, S. (1998). Unemployment: questions and some answers.
10. Ogujiuba, K., & Cornelissen, M. (2020). Macroeconomic Theory and Unemployment: A Comparison between the Keynesian and New Classical Model.
11. Robert E. Lucas, J. (1978). Unemployment Policy.
12. Savelieva, G., & Zaharov, S. (2022). Analysis of Principal Tendencies of Labour Market in the Republic of Moldova.
13. Solow, R. M. (1980). On Theories of Unemployment (Vol. 70, Issue 1).
14. Ulandssekretariatet. (2023). Labor market profile Moldova.
15. University of Texas. (2007). Decision-Making Activity: Russia and Its Neighbors.
16. Vasilescu, D., & Sandroshvili, K. (2017). Youth Unemployment and Experiments for Labor Market Inclusion: Perspective for Youth in Moldova. 246–261.
17. World Bank. (2019a). Behavioral Solutions for Youth Unemployment.
18. World Bank. (2019b). ETFUBA Presentation – Moldova.

Web sources

1. Federal Reserve Bank of St. Louis, 2020. Remittance inflows to Moldova (% of GDP). Available at: https://fred.stlouisfed.org/series/DDOI11MDA156NWDB [Accessed 27 February 2024].
2. Migration Policy Institute, 2024. Moldova: Country Resource. Available at: https://www.migrationpolicy.org/country-resource/moldova-republic [Accessed 27 February 2024].
3. World Bank, 2024. Moldova: Overview. Available at: https://www.worldbank.org/en/country/moldova/overview[Accessed 27 February 2024].
4. World Bank, Moldova - Country Overview, [online] Available at: https://www.worldbank.org/en/country/moldova [Accessed 10 February 2025].
5. U.S. Department of Commerce. 2022. *Moldova - Information and Communication Technology*. Available at: https://www.trade.gov/country-commercial-guides/moldova-information-and-communication-technology [Accessed 10 February 2025].
6. National Bureau of Statistics of the Republic of Moldova. 2023. *Labor Force in the Republic of Moldova: Employment and Unemployment in 2022*. Available at: https://statistica.gov.md/en/labour-force-in-the-republic-of-moldova-employment-and-unemployment-in-2022-9430_60383.html [Accessed 10 February 2025].
7. United Nations Development Program (UNDP), *Gender Equality in Moldova*, [online] Available at: https://www.undp.org/moldova/gender-equality [Accessed 10 February 2025].

List of Supplements

List of Tables

Table 1: The unemployment rate among women and men in Moldova for the period 2019–2023 (in %).....36

Table 2: Unemployment rates among women and men in Moldova for the period 2019–2023. Theoretical values. 39

Table 3: Unemployment rates among women and men in Moldova for the period 2019–2023. Residual values. 39

List of Charts

Chart 1: The unemployment rate in Moldova for the period 2019-2023. 30

Chart 2: The unemployment rate by gender in Moldova for the period 2019-2023. 35

Chart 3: The unemployment rate by area in Moldova for the period 2019-2023.....40

List of Figures

Figure 1: Pearson correlation between unemployment rate and year (2019–2023). .32

Figure 2: Chain base index & fixed base index for overall unemployment (2019–2023). 34

Figure 3: Pearson correlation between male and female unemployment rates (2019–2023). 36

Figure 4: Hypothesis testing for rural and urban unemployment rates (paired t-test, 2019–2023). 41