Czech University of Life Sciences Prague

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Diploma Thesis

Unemployment in Jordan: Causes and Possible Solutions

Author: Batool Alshraiedeh
Supervisor: prof. Ing. Mansoor Maitah, Ph.D. et Ph.D.

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DIPLOMA THESIS ASSIGNMENT

Batool Alshraiedeh

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Unemployment in Jordan: Causes and Possible Solutions

Objectives of thesis

The primary target of this diploma thesis is to explore deeply the unemployment situation in Jordan. It aims to analyze the root causes, looking closely at various elements – from socioeconomic trends to national policies – that may have significantly influenced the current situation. Historical trends will be examined to understand the evolution of unemployment in the country and identify patterns that may offer insights.

Lastly, this research will not just highlight problems but also propose actionable, evidence-based solutions. The aim is to suggest ways to better connect education with job opportunities, and find a long-term solution to reduce unemployment and boost economic growth in Jordan.

Methodology

To gain a comprehensive understanding of the unemployment landscape in Jordan, I employ a range of statistical methods. These methods are critical in interpreting data, which I primarily source from reputable institutions such as the Jordan Department of Statistics and the World Bank. The main focus is on the unemployment rate, but I also consider factors like Jordan's GDP, education level, and foreign direct investment. By using econometrics tools, I explore how these economic factors impact unemployment.

The proposed extent of the thesis

60 – 80 pages

Keywords

Unemployment, Economic growth, GDP, Foreign direct investment, Jordan

Recommended information sources

Assaad, R., Krafft, C.: The Jordanian Labor Market: Between Fragility and Resilience. 2019. ISBN: 978-0198846079

Assaad, R.: The Jordanian Labor Market in the New Millennium. 2014. ISBN: 978-0198702054

Razzaz, S.: A Challenging Market Becomes More Challenging: Jordanian Workers, Migrant Workers and Refugees in the Jordanian Labour Market. 2017. ISBN: 978922130341

Tag el-Din, S. I.: Maqasid Foundations of Market Economics. 2013. ISBN: 9780748670024

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The Diploma Thesis Supervisor

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

Supervising department

Department of Economics

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prof. Ing. Lukáš Čechura, Ph.D.

Head of department

Electronic approval: 3. 11. 2023

doc. Ing. Tomáš Šubrt, Ph.D.

Dean

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Declaration

I hereby declare that the diploma thesis titled "Unemployment in Jordan: Causes and Possible Solutions" was written independently by me, with the assistance of specific literature and other sources listed in the review of used materials, and with guidance and advice from my supervisor, prof. Ing. Mansoor Maitah, Ph.D. et Ph.D.

In Prague 31st of March 2024   Signature.............

Acknowledgment

Firstly, I want to thank my husband for his support. Also, I extend my deepest gratitude to prof. Ing. Mansoor Maitah, Ph.D. et Ph.D., for his invaluable guidance, profound expertise, and unwavering support throughout the development of this thesis. His insights and dedication have been pivotal to the completion of this work.

Unemployment in Jordan: Causes and Possible Solutions

Summary

This diploma thesis examines the unemployment situation in Jordan, delving into its root causes, demographic disparities, and the impact of both public and private sectors on employment rates. Central to this exploration is the construction and analysis of an econometric model aimed at identifying the primary determinants affecting Jordan's unemployment rates, focusing on variables such as real GDP growth, government education expenditure, new business registrations, refugee populations, and significant socio-political events.

The findings reveal that new business registrations, the refugee population, and significant events significantly impact unemployment rates, underlining the importance of entrepreneurship and the complex challenges posed by socio-political dynamics and the refugee influx. Contrarily, real GDP growth and government education expenditure are not significant determinants, suggesting that economic growth alone does not guarantee employment creation, and that there is a mismatch between the education system's output and the labour market's needs.

Predictions for 2023–2030 suggest a gradual decrease in unemployment rates, reflecting the potential effectiveness of economic recovery measures and job creation policies, yet underscoring the need for comprehensive and sustained policy-making to tackle the multifaceted nature of unemployment in Jordan. To combat these issues, the thesis proposes several practical recommendations, including fostering investments in labour-intensive sectors, reforming education and vocational training systems, supporting entrepreneurship, and enhancing public-private sector collaboration.

These strategies aim for a multifaceted approach to reducing unemployment, enhancing economic growth, and ensuring a resilient labour market capable of absorbing the country's young and rapidly growing population. The thesis can serve policymakers in Jordan and other similar economies to devise effective strategies addressing unemployment and fostering economic development.

Keywords: unemployment, economic growth, GDP, Jordan

Nezaměstnanost v Jordánsku: příčiny a možná řešení

Souhrn

Tato diplomová práce zkoumá situaci nezaměstnanosti v Jordánsku, zabývá se jejími základními příčinami, demografickými rozdíly a dopadem jak veřejného, tak soukromého sektoru na míru zaměstnanosti. Stěžejním bodem tohoto zkoumání je konstrukce a analýza ekonometrického modelu zaměřeného na identifikaci hlavních determinant ovlivňujících míru nezaměstnanosti v Jordánsku, s důrazem na proměnné jako je růst reálného HDP, výdaje na vzdělávání ze strany vlády, registrace nových podniků, populace uprchlíků a významné sociopolitické události.

Zjištění ukazují, že registrace nových podniků, populace uprchlíků a významné události mají významný dopad na míru nezaměstnanosti, což zdůrazňuje důležitost podnikání a složité výzvy, které představují sociopolitické dynamiky a příliv uprchlíků. Naopak, růst reálného HDP a výdaje na vzdělávání ze strany vlády nejsou významnými determinantami, což naznačuje, že samotný ekonomický růst nezaručuje tvorbu pracovních míst a že existuje nesoulad mezi výstupy vzdělávacího systému a potřebami trhu práce.

Předpovědi na období 2023–2030 naznačují postupný pokles míry nezaměstnanosti, což odráží potenciální účinnost opatření pro ekonomické oživení a politik zaměřených na tvorbu pracovních míst, avšak zároveň zdůrazňuje potřebu komplexního a udržitelného politického rozhodování pro řešení mnohostranné povahy nezaměstnanosti v Jordánsku. K řešení těchto problémů práce navrhuje několik praktických doporučení, včetně podpory investic do pracovně náročných sektorů, reformy vzdělávacích a odborných výcvikových systémů, podpory podnikání a zlepšení spolupráce mezi veřejným a soukromým sektorem.

Tyto strategie mají za cíl komplexní přístup k snížení nezaměstnanosti, zvýšení ekonomického růstu a zajištění odolného trhu práce schopného absorbovat mladou a rychle rostoucí populaci země. Tato práce může sloužit tvůrcům politik v Jordánsku a v dalších podobných ekonomikách k vytvoření účinných strategií řešících nezaměstnanost a podporujících ekonomický rozvoj.

Klíčová slova: nezaměstnanost, ekonomický růst, HDP, Jordánsko

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Abbreviations

GCC	Gulf Cooperation Council
GDP	Gross domestic product
FDI	Foreign direct investment
ICT	Information and communications technology
IFC	International Finance Corporation
JOD	Jordanian dinar
SMEs	Small and Medium Enterprises
TVET	Technical and Vocational Education and Training
UNDP	United Nations Development Programme
USAID	United States Agency for International Development

Definitions

Unemployed person	Individuals aged 15 or older who are jobless, can work and are seeking employment.
Unemployment rate	The total number of people who are unemployed as a proportion of the labour force.
Labour force	All economically active people, encompassing both employed individuals and job-seeking unemployed persons.

1. INTRODUCTION

Jordan is a small, open economy vulnerable to external shocks. It has one of the highest rates of population growth in the world – driven not only by the high influx of refugees but also by high fertility rates – with a sectoral structure that depends heavily on services and the public sector.[1]

Unemployment remains one of the most challenging problems facing Jordan today, presenting significant challenges for the country's economy and its society. Long-term unemployment is particularly concerning in Jordan, where individuals remain jobless for extended periods, risking skill depreciation, psychological distress, and social exclusion. The persistently high levels of unemployment rates not only signify a lack of job opportunities but also highlight deeper structural problems within the Jordanian economy. These include a notable mismatch between the skills produced by the education system and the evolving needs of the job market, and the profound impact of regional instability.[2]

The significance of unemployment in Jordan extends beyond the immediate economic implications, touching on aspects of social cohesion, and political stability. High unemployment rates, particularly among youth and women, pose an obstacle to the country's development aspirations.[3] The issue is further complicated by demographic shifts, such as a young and rapidly growing population, and external factors like the influx of refugees, which put additional pressure on the already strained job market.

In addressing these challenges, it is crucial to consider the role of both the public and private sectors. Additionally, understanding the global economic trends and their impact on Jordan's economy is essential. By examining this topic, the aim of this diploma thesis is to provide insights that can guide effective policies and strategies to address unemployment in the country.

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[1] Winkler, H., Gonzalez, A.: "Jobs Diagnostic Jordan". World Bank Group, 2019, Jobs Series, no. 18, p. 3.

[2] Ismail, L. B., Alawamleh M., Giacaman, S., Alawamleh, K. J.: "The mismatch between labour market needs and education: the example of Jordan". International Journal of Business Excellence, 2020, vol. 22, no. 2. ISSN: 1756-0047.

[3] International Labour Organization [online]: "The Jordanian Labour Market - Multiple segmentations of labour by nationality, gender, education and occupational classes". 2015 [cit. 10.1.2024], p. 5. Available at: https://www.ilo.org/wcmsp5/groups/public/---arabstates/---ro-beirut/documents/publication/wcms_471869.pdf

2. LITERARY RESEARCH

The literary research this thesis undertakes a detailed examination of unemployment, specifically within the context of Jordan, by examining its types, analyzing Jordan's labour market characteristics, and evaluating the existing body of literature on the subject. This comprehensive approach not only provides a foundational understanding of unemployment but also highlights the unique challenges and opportunities present in Jordan's labour market. In conclusion, available studies relevant to the research are listed.

2.1 Jordan's Economic Landscape

Jordan, situated at a regional migration crossroads, presents a unique demographic and economic landscape shaped by its growing population, migration patterns, and economic structure. From 2010 to 2019, Jordan's population increased from approximately 6.7 million to 10.1 million, fueled by both a high natural growth rate of 3.1% and significant immigration.[4] This demographic expansion has placed considerable pressure on the country's infrastructure and public services, necessitating substantial investments in education, health, employment, housing to accommodate a young population that constitutes roughly 63% of the total (under the age of 30).[5]

Historically, Jordan has played a dual role in regional migration dynamics. It is both a source of emigrants, with around 600,000 Jordanians living abroad primarily in Saudi Arabia and the United Arab Emirates as of 2019, and a destination for immigrants, hosting 3.29 million people predominantly from Palestine and Syria, along with Iraq and Egypt. The country's remittances in 2019 amounted to USD 4,510 million, nearly 10.2% of its GDP, highlighting the significant economic impact of its diaspora. Additionally, Jordan has become a refuge for 745,110 registered refugees by 2019, predominantly Syrians. Most Syrian refugees (80%) reside in urban areas, with a minority living in designated camps.[6]

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[4] Macrotrends [online]: "Jordan Population Growth Rate 1950-2024". 2024 [cit. 10.01.2024]. Available at: https://www.macrotrends.net/global-metrics/countries/JOR/jordan/population-growth-rate

[5] UNICEF [online]: "Jordan – Youth". 2024 [cit. 11.01.2024]. Available at: https://www.unicef.org/jordan/youth

[6] International Labour Organization [online]: "ILO Response to Syrian Refugee Crisis in Jordan". 2019 [cit. 12.01.2024]. Available at: https://www.ilo.org/beirut/areasofwork/employment-policy/syrian-refugee-crisis/jordan/lang--en/index.htm

Economically, Jordan is classified as an upper middle-income country, grappling with scarce water resources, limited natural endowments, and a high dependency on energy imports.[7] Its human capital is the cornerstone of economic activity in a context marked by modest real GDP growth, which has averaged around 3% over the long term.[8] The COVID-19 pandemic has further strained the economy due to decreased global and domestic demand and closed borders. The uncertainty in the region continues to challenge Jordan's economic prospects and trade activities.

The service sector dominates Jordan's GDP composition (61.8%), followed by the industrial sector (27.6%), with agriculture contributing a mere 5.6%. Employment patterns mirror this distribution, with a vast majority (81.9%) working in services, 16.4% in industry and construction, and a small fraction (1.7%) in agriculture.

The composition of value added by sector mirrors employment patterns. As of 2016, services contributed to 67% of the overall value added. Despite a growing focus on employment within the services sector, its contribution to the total output has decreased. The proportion of employees in the services sector rose from 74% to 80% from 2000 to 2016, yet the sector's contribution to value added dropped from 70% to 67%.[9]

Figure no. 1: Structure of Jordan's Economy
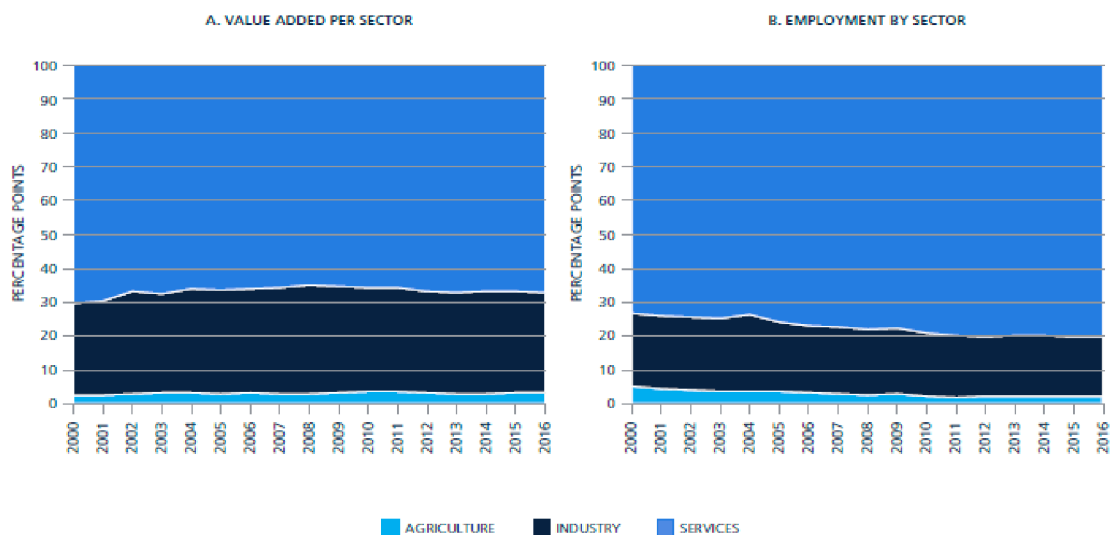
Source: Winkler, H., Gonzale, A.: "Jobs Diagnostic Jordan", 2019.

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[7] Jordan's Minister of Energy and Mineral Resources: "Summary of Jordan Energy Strategy 2020-2030". 2020, p. 5.

[8] CEIC [online]: "Jordan Real GDP Growth". 2023 [cit. 31.12.2023]. Available at:
https://www.ceicdata.com/en/indicator/jordan/real-gdp-growth

[9] Winkler, H., Gonzalez, A.: "Jobs Diagnostic Jordan". World Bank Group, 2019, Jobs Series, no. 18.

The labour market is primarily composed of microenterprises, with 88% of businesses employing fewer than five individuals in 2017. Small and medium-sized enterprises (SMEs) are crucial for the economy, accounting for over 60% of economic output and employing approximately 31% of the workforce.[10] However, SMEs encounter several growth barriers, including limited access to finance, insufficient infrastructure, and labour market inflexibilities.[11]

Jordan's recent improvement in the World Bank's "Doing Business" ranking, ascending to 75th in 2020 from 104th in 2019, signifies progress attributed to economic reforms aimed at enhancing the business environment.[12] Nonetheless, the development of SMEs remains a priority for the government, despite limited advancements since the 2014 assessment.

2.1.1 Impact of the Arab Spring

The Arab Spring's impact on Jordan represents a complex interplay of economic strain, political unrest, and socio-political dynamics within a regional context marked by widespread turmoil. Unlike its neighbours, Jordan navigated the Arab Spring without significant destabilization, attributed to a mixture of internal resilience and external support, despite facing economic challenges and a lack of natural resources. Jordan's unique social fabric, characterized by tribal loyalty and a historic bond with the monarchy, played a crucial role in maintaining stability.[13] The influx of refugees from neighbouring countries further stressed Jordan's limited resources, highlighting the kingdom's vulnerability to regional instability.

Economically, Jordan has been challenged by high unemployment rates, budget and current account deficits, and increasing government debt, exacerbated by the Arab Spring and the subsequent influx of Syrian refugees.[14]

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[10] European Training Foundation: "Jordan – Education, Training and Employment Developments 2020". European Union, 2020, p. 4.

[11] MED MSMEs Programme [online]: "MSME development policies and programmes in Jordan". 2024 [cit. 16.01.2024]. Available at: https://medmsmes.eu/jordan

[12] World Bank [online]: "Ease of Doing Business rankings". 2024 [cit. 15.01.2024]. Available at: https://archive.doingbusiness.org/en/rankings?region=middle-east-and-north-africa

[13] Hamed, N.: "The determinants of Jordan's stability case study: The arab spring (2011–2019) and the COVID-19 pandemic". Asian Journal of Comparative Politics, 2021, vol. 7, no. 3. ISSN: 2057-8911.

[14] Tobin, S. A.: "Jordan's Arab Spring: The Middle Class and Anti-Revolution". Middle East Policy, 2012, vol. 19, no. 1. ISSN: 1475-4967.

This period underscored Jordan's economic vulnerabilities and its dependence on international assistance to meet economic demands. Socially, the kingdom's demographic composition, including a significant number of refugees, adds to the complexity of its labour market and social services system.

The Jordanian government's response to the Arab Spring included a mix of political reforms and authoritarian measures to ensure stability.[15] These reforms aimed at addressing demands for political change while maintaining the monarchy's central role in governance. Internationally, Jordan's strategic alliances and reliance on foreign aid played a pivotal role in navigating the economic and political challenges posed by the Arab Spring and its aftermath.

This scenario underscores the importance of understanding Jordan's unique position within the Middle East, and balancing internal pressures with external challenges. The kingdom's ability to maintain stability amid regional upheaval speaks to the resilience of its political system, the strategic use of international aid, and the adaptability of its governance model in the face of significant threats.[16]

2.1.2 Impact of the COVID-19 Pandemic

The COVID-19 pandemic has posed significant challenges to economies worldwide, and Jordan is no exception. In Jordan, the pandemic's effects were immediate and profound, exacerbating existing economic vulnerabilities such as low growth, high unemployment, and escalating public debt. The unemployment rate reached 24.1%, marking record highs and underscoring unemployment as Jordan's most critical issue.[17]

The government of Jordan, in response to the pandemic, implemented several measures aimed at mitigating its socioeconomic impacts. These included social protection programs for vulnerable households and workers, as well as initiatives to support businesses through delayed tax payments, partial salary payments, and special loan programs for SMEs.

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[15] Elkahlout, G., Hadid, A.: "Stable Jordan: How a Monarchy Survived Disorder".
Asian Affairs, 2021, vol. 52, no. 4. ISSN: 1477-1500.
[16] Project on Middle East Democracy [online]: "Jordan: What Happened, Why, and What's Next?". 2021 [cit. 16.01.2024]. Available at: https://pomed.org/publication/jordan-what-happened-why-and-whats-next
[17] Tobin, S. A.: "Jordan's Arab Spring: The Middle Class and Anti-Revolution". Middle East Policy, 2012, vol. 19, no. 1. ISSN: 1475-4967.

A notable step was the initiation of a COVID-19 vaccination program in January 2021, ensuring equitable access to vaccines for all Jordanians, including refugees.[18]

Jordan's economy showed resilience, with a smaller contraction of 1.6% in 2020. However, the pandemic exacerbated the nation's pre-existing structural weaknesses and unaddressed social issues, putting further strain on its already fragile macroeconomic situation. Public debt surged from 95.2% of GDP in 2019 to 106.5% in 2020, and to 114.7% in 2022, highlighting the need for fiscal sustainability.[19]

Figure no. 2: Jordan's public debt to GDP ration 2008–2022
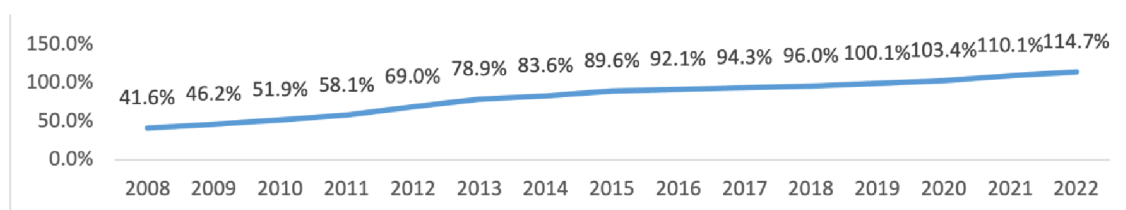
Source: Middle East Institute: "Is Jordan's public debt on a sustainable path?", 2023.

The labour market in Jordan, dominated by microenterprises, faced heightened difficulties due to the pandemic. SMEs, crucial for economic output and employment, encountered several constraints, including limited access to finance and labour-market rigidities.[20] The pandemic has notably affected Jordan's economy, especially on its crucial sectors such as services and tourism.

To navigate the challenges posed by the COVID-19 pandemic and foster economic recovery, Jordan's efforts should focus on further economic diversification, increasing resilience to economic shocks, and creating employment opportunities. Long-term economic reform and structural transformation are essential to enhance Jordan's economic performance and address the systemic issues revealed by the pandemic. [21]

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[18] Qaqish, A., Al-Omari, M., Abbas, M. M., Ghazo, M.: "Two years of COVID-19 pandemic in Jordan: A focus on epidemiology and vaccination". Journal of Global Health, 2022, vol. 12. ISSN: 2047-2986.
[19] Khaled, N., Almaaitah, A., Al-Abadi, A. F., Al Manasir, A. H.: "The Effect of Covid-19 on the Economy of Jordan". YMER Digital, 2022, vol. 21, no. 2. ISSN: 0044-0477.
[20] Qaqish, A., Al-Omari, M., Abbas, M. M., Ghazo, M.: "Two years of COVID-19 pandemic in Jordan: A focus on epidemiology and vaccination". Journal of Global Health, 2022, vol. 12. ISSN: 2047-2986.
[21] World Bank [online]: "Jordan: COVID-19 Pandemic Weighs Heavily on the Economy, as it does on the Region". 2020 [cit. 16.01.2024]. Available at: https://www.worldbank.org/en/news/press-release/2020/07/14/jordan-covid-19-pandemic-weighs-heavily-on-the-economy-as-it-does-on-the-region

2.2 Types of Unemployment

In this chapter, it is explored the different types of unemployment. There are frictional, cyclical, structural, and seasonal types of unemployment, each with its causes and impacts. Understanding these types helps us understand the complex job market in Jordan and formulate effective policies and strategies that can reduce unemployment.

2.2.1 Frictional Unemployment

Frictional unemployment refers to the short-term joblessness (less than 1 month) experienced by individuals transitioning between jobs, entering the workforce for the first time, or temporarily ceasing work to search for another job for reasons such as academic study.[22] Frictional unemployment is an inherent part of a healthy economy, reflecting the normal movement of the labour market as individuals voluntarily change jobs or new graduates seek employment.

The causes of frictional unemployment in Jordan are multifaceted, involving the time it takes for employers and job seekers to find a match, the level of economic activity, and the efficiency of the job matching process. Factors such as the speed of spreading job vacancy information, the geographic and occupational mobility of the workforce, and societal norms regarding work can all impact the duration and extent of frictional unemployment.

The impact of frictional unemployment on the Jordanian economy is generally less severe than other types of unemployment. It is often seen as a sign of a dynamic job market where individuals have the flexibility to find better matches for their skills. However, prolonged frictional unemployment indicate issues with Jordan's labour market efficiency and may necessitate policy interventions to improve job matching services and reduce barriers to workforce mobility.

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[22] Jordan Economic Forum [online]: "Unemployment in Jordan: Reality, Expectations and Proposals". 2020 [cit. 10.12.2023], p. 7. Available at: https://www.jordaneconomicforum.com/wp-content/uploads/2020/11/JEF-Unemployment-Reviewed-ENG-.docx.pdf

Based on general economic theory, addressing frictional unemployment involves enhancing the efficiency of the labour market through improved information dissemination about job opportunities, supporting workforce mobility, and ensuring that educational institutions provide skills relevant to the market demand. Policies aimed at reducing the duration of job searches and smoothing the transition between jobs can help minimize the economic and social costs associated with frictional unemployment.

2.2.2 Cyclical Unemployment

Cyclical unemployment relates to the ups and downs in the economy. It represents medium-term (1-12 months) unemployment. It is directly tied to the health of the economy – when businesses are doing well, more jobs are available, and unemployment is low. But when the economy slows down, businesses cut back, leading to job losses and higher unemployment.[23]

In Jordan, cyclical unemployment is significant due to its economy's sensitivity to regional and global economic changes. Factors such as tourism, foreign aid, and geopolitical events can have a big impact, influencing job availability. During economic downturns, sectors such as tourism and construction can be particularly hard hit, leading to increased cyclical unemployment.

Based on a research published in 2020 by Jordanian authors, the findings demonstrate that a 1% increase in Jordan's economic growth correlates with an expected 0.26% decrease in the unemployment rate.[24] The negative correlation between unemployment rates and real GDP highlights that static economic growth contributes to rising unemployment. This is because a drop in aggregate demand leads to reduced aggregate supply, consequently diminishing production levels and slowing economic growth. In response, businesses often reduce their workforce, exacerbating unemployment issues and reinforcing the cycle of long-term unemployment challenges.

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[23] Elsby, M. W. L., Michaels, R., Solon, G.: "The Ins and Outs of Cyclical Unemployment". American Economic Journal: Macroeconomics, 2009, vol. 1, no. 1. ISSN: 1945-7715.
[24] Al-Sawaiʾe, K. M., Sawaie, K.: "The Relationship between Unemployment and Economic Growth in Jordan: An Empirical Study using the ARDL Approach". International Journal of Innovation, 2020, vol. 14, no. 2. ISSN: 1757-2223.

To address cyclical unemployment in Jordan, policymakers need to employ targeted fiscal stimulus, particularly in sectors such as tourism and exports that are sensitive to economic cycles. This could involve tax breaks, increased public infrastructure spending, and subsidies for key industries. Enhancing consumer confidence might involve tax reductions for lower-income brackets and financial incentives for SMEs to promote investment and job creation. Simplifying access to credit can also stimulate spending and economic activity. A coordinated approach involving government, the private sector, and international partners is crucial for stabilizing the economy and reducing cyclical unemployment.

2.2.3 Structural Unemployment

Structural unemployment occurs when there is a fundamental mismatch between the skills that workers in the economy can offer and the skills demanded by employers. It represents long-term (over 1-2 years) unemployment. This chapter explores how structural unemployment manifests in Jordan.

In general, structural unemployment arises when industries evolve, adopting new technologies or changing business models, leading to a fundamental shift in the type of labour required. In Jordan, this is evident in sectors transitioning from traditional manufacturing to information technology, leaving a gap where the existing workforce's skills no longer match job vacancies.

Key factors contributing to structural unemployment in Jordan include technological advancement outpacing the current workforce's skill set, the rigidity of labour markets, and mismatches between education outputs and market requirements. These elements combine to create a scenario where workers find themselves inadequately equipped for available jobs, resulting in prolonged unemployment durations.

The majority of unemployed Jordanians are long-term unemployed. In the second quarter of 2022, nearly half of them (47.7%) had been seeking a job for more than one year; nearly one out of five unemployed (18%) had been in that situation for more than 2 years.[25]

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[25] Al-Tal, R., Al-Husseini, J.: "Youth Unemployment in Jordan: Failed Strategies and Deferred Promises". Arab Renaissance for Democracy and Development, 2023, p. 20. HAL ID: halshs-04362170.

A deeper analysis of Jordanian youth unemployment reveals that in 2016, the average duration for transitioning from education to stable or fulfilling employment spanned nearly 33 months, or almost three years. This transition period was significantly longer for female students, averaging 40.5 months, compared to 22.1 months for their male counterparts.[26]

Figure no. 3: Average duration of unemployment of Jordanians
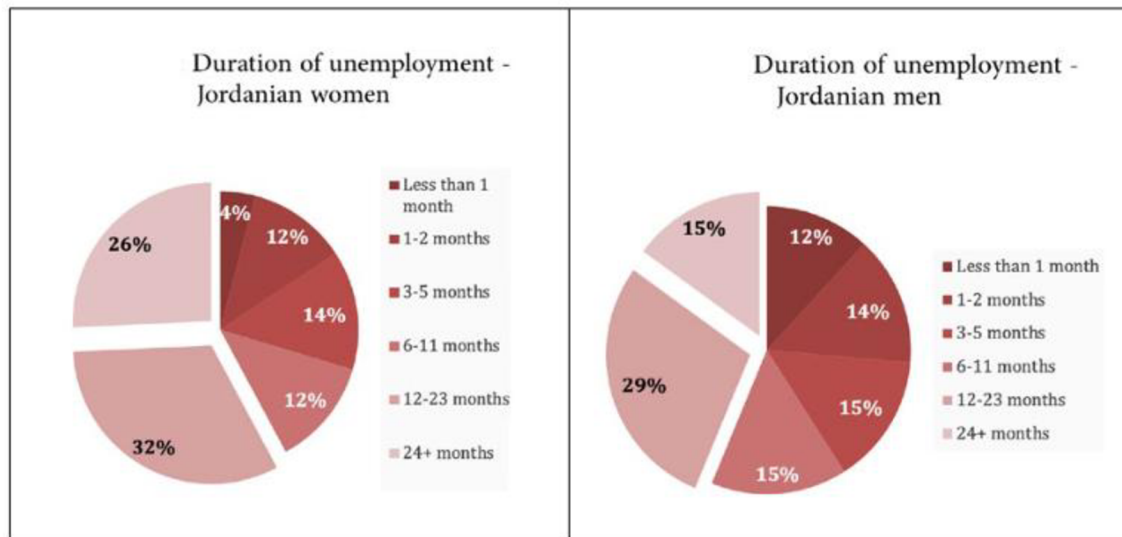
Furthermore, data from the second quarter of 2022 showed that a considerable segment (43.8%) of unemployed individuals in Jordan had never been employed before, with this phenomenon being more pronounced among women (73.9%) than men (32.2%). This underscores the persistent issue of long-term unemployment among Jordanian women and suggests that a majority of those unemployed are young individuals trying to enter the labour market for the first time. The high%age of unmarried individuals among the unemployed (75.7% for men and 79.4% for women) supports the notion that many of these job seekers are new entrants facing challenges in securing their first employment.[27]

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[26] Al-Tal, R., Al-Husseini, J.: "Youth Unemployment in Jordan: Failed Strategies and Deferred Promises". Arab Renaissance for Democracy and Development, 2023, p. 27. HAL ID: halshs-04362170.
[27] Al-Tal, R., Al-Husseini, J.: "Youth Unemployment in Jordan: Failed Strategies and Deferred Promises". Arab Renaissance for Democracy and Development, 2023, p. 20. HAL ID: halshs-04362170.

To address structural unemployment effectively, strategies must be tailored to the specific challenges faced by the youth in Jordan, as highlighted by current labour market conditions. This involves not just reforming educational curriculums but also creating targeted programs that bridge the gap between the skills acquired through education and the actual needs of the job market. Special attention should be given to the discrepancies between job qualifications and the availability of appropriate employment opportunities, particularly for women, and the issue of jobs being located in places difficult to access or offering inadequate wages.

Furthermore, the strategy should address the high unemployment rates among university graduates and those with higher education certificates, which stem from an oversupply of graduates relative to the capacity of the Jordanian economy to provide suitable employment. Enhancing vocational training and apprenticeship programs could be pivotal, aligning them more closely with market demands and focusing on sectors with growth potential. This alignment could help reduce the time young Jordanians spend transitioning from education to meaningful employment and make the workforce more adaptable to the changing economic landscape.

2.2.4 Seasonal Unemployment

Seasonal unemployment is a type of joblessness linked to industries or sectors that experience regular fluctuations in demand throughout the year, leading to periods when workers may be temporarily unemployed.

In Jordan, certain industries are notably inclined to seasonal variations. The agricultural sector, for instance, has employment peaks and troughs corresponding to planting and harvest times. Similarly, tourism – a crucial part of Jordan's economy – experiences fluctuations with tourist high and low seasons, impacting employment in hospitanty and related services. Additionally, the construction sector often sees a slowdown during extreme weather conditions, affecting labour demand.[28]

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[28] World Bank [online]: "The World Bank In Jordan". 2020 [cit. 10.12.2023]. Available at:
https://www.worldbank.org/en/country/jordan/overview#1

Seasonal unemployment in Jordan significantly affects sectors critical to its economy, such as agriculture, tourism, and construction, which experience pronounced employment fluctuations with seasonal changes. In the case of the agriculture sector, although it accounts for 5.9% of the country's GDP today, the percentage is generally estimated to be closer to 30% when considering upstream and downstream activities related to agricultural production within the value chain.[29] This variability leads to periods of income instability for workers, contributing to broader economic and social challenges. The repercussions extend to increased reliance on social services and hinder overall economic growth.

Addressing seasonal unemployment in Jordan requires a comprehensive approach. Programs offering temporary financial support to workers in sectors affected by seasonal fluctuations can help maintain financial stability during off-peak seasons. Additionally, promoting skills development during these periods can enhance workers' employability, equipping them with new abilities to diversify their employment options or progress within their current fields. For instance, training tourism workers in digital marketing or language skills could broaden their job prospects.[30]

Another strategy involves encouraging industries to diversify their activities, thereby providing more consistent employment opportunities throughout the year. In the tourism sector, for example, developing attractions that appeal to visitors during the off-season could help stabilize employment levels. Enhancing the flexibility of the labour market, by simplifying the process for workers to transition between jobs or sectors, can also mitigate the impacts of seasonal employment gaps. Moreover, creating job opportunities in sectors less vulnerable to seasonal changes, through collaourative efforts between the government and the private sector, offers a viable pathway to ensure stable employment for Jordanians.[31]

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[29] Perosino, L.: "Comprehensive Overview of the Agricultural Sector in Jordan". Agence Française de Développement, 2023, no. 72, p. 5. ISSN: 2492-2838.

[30] International Finance Corporation: "Creating Markets in Jordan: Country Private Sector Diagnostic". World Bank Group, 2021, p. 48.

[31] Al-Azzam, F., Al-Emyan, M., Abu-Hamatte, Z. S. H., Abu-Hamatte. S. S.: "Towards possible dynamic and flexible labor market: Aqaba-Jordan". Current Politics and Economics of the Middle East, 2011, vol. 1, no. 1/2. ISSN: 1939-5809.

2.3 Jordan's Labour Market

A significant portion, over half of the workforce, engages in informal employment, which has profound implications for labour legislation's reach and the general job security in the nation.[32] This high informality rate suggests that bureaucratic obstacles and inflexibility in employment regulations may be driving the workforce away from formal employment, pushing them into the informal sector.

The labour market's complexity is further underline by the prevalence of structural unemployment, indicating a persistent mismatch between the job seekers' skills and the available job opportunities. This scenario results in a labour market that fails to clear efficiently, leaving many qualified individuals jobless or underemployed.

Sector-wise, the workforce distribution shows a heavy reliance on the public sector, especially in administrative and defense roles. This suggests a likelihood of overqualification and a discrepancy in competencies relative to the qualifications of the private sector. This imbalance has led to an underutilization of the highly educated Jordanian workforce, with many resorting to low-skill jobs or seeking opportunities abroad, especially in the Arab Gulf States (GCC).

Moreover, the gap in certain sectors is often filled by non-Jordanian labour, particularly in industries less favored by Jordanian workers due to wages and working conditions, such as manufacturing and agriculture.[33] This trend highlights a distinct division in labour preferences and raises concerns about wage levels in the private sector, which may capitalize on the abundant supply of migrant labour and the surplus of local jobseekers.[34]

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[32] International Labour Organization: "School-to-work transition of young women and men in Jordan". 2023, p. 21. ISBN: 978-92-2-038882-2.

[33] International Labour Organization [online]: "The Jordanian Labour Market - Multiple segmentations of labour by nationality, gender, education and occupational classes". 2015 [cit. 10.1.2024], p. 4. Available at: https://www.ilo.org/wcmsp5/groups/public/---arabstates/---ro-beirut/documents/publication/wcms_471869.pdf

[34] Assaad, R., Krafft, C.: "The Jordanian Labor Market: Between Fragility and Resilience". 2019, p. 12, ISBN: 978-0198846079.

2.3.1 The Informal Sector and Refugee Influx

Jordan's labour market is significantly impacted by the informal sector, especially given its status as one of the world's largest hosts of refugees per capita.[35] This chapter delves into the informal employment trends within Jordan, highlighting the challenges and implications for the economy and society.

The informal sector represents a substantial part of Jordan's economy, offering employment opportunities outside the formal regulatory and taxation system. The influx of refugees, particularly from Syria since 2011, has magnified its role and the associated challenges. Recent studies, including microdata analyses from 2010 and 2016 Jordanian labour market surveys, reveal a growing trend of informal employment among men and a significant correlation between refugee status and informal employment.[36]

As of early 2018, UNHCR had registered around 670,000 Syrian refugees, a figure significantly lower than the estimates of Jordan's Department of Statistics. The latter's 2015 Census placed the total Syrian population in Jordan at about 1.265 million. These statistics suggest that Jordan's population increased by 32% between 2012 and 2016, indicating a substantial demographic shift within a relatively short period.[37] This rapid increase in population due to the influx of Syrian refugees has significantly impacted Jordan's social, economic, and environmental landscapes.

Syrian refugees have increasingly participated in Jordan's labour market, notably within the informal sector. Their presence has influenced wages and altered the employment dynamics for other non-Jordanian workers who were engaged in similar jobs before the influx. The CHF reports indicate that Syrian refugees have been working for significantly less than unskilled Jordanians and others in the informal economy.[38]

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[35] United Nations High Commissioner for Refugees [online]: "Jordan". 2024 [cit. 10.1.2024]. Available at: https://reporting.unhcr.org/operational/operations/jordan

[36] Hailat, M., Baniata, A., Magableh, S.: "Informal Employment in Era of Asylum: insights from the Second Highest Worldwide Host Country of Refugees". Migration Letters, 2023, vol. 21, no. 1. ISSN: 1741-8984.

[37] Ajluni, S.: "The Syrian Refugee Crisis and Its Impact on the Jordanian Labour Market". West Asia-North Africa Institute, 2019, p. 3.

[38] CHF International: "Syrian Refugees Crisis: Rapid Assessment". 2012, p. 6.

In 2016, the average monthly wage across various sectors for Jordanians stood at JOD 377.50, compared to JOD 147.1 for Syrians.[39] The wage gap between Jordanians and Syrians was particularly significant in the agriculture sector, where Jordanians earned an average monthly wage that was 205.2% higher than that of Syrian refugees. The wage difference between Jordanians, non-Jordanians with work permits, and Syrian refugees is visible in Table No. 1.

Table no. 1: Average monthly wages by economic activity 2016

Economic Activity	Jordanians	Non-Jordanians with work permits	Syrian refugees	Relative advantage of Jordanians to non-Jordanians	Relative advantage of Jordanians to Syrian refugees
	JOD	JOD	JOD	%	%
Agriculture	298.85	148.49	97.93	101.3	205.2
Manufacturing	344.45	146.51	231.14	135.1	49.0
Construction	328.70	173.26	179.84	89.7	82.8
Wholesale/Retail trade, repair of vehicles	337.75	194.33	184.07	73.8	83.5
Accommodation, food services	337.60	182.08	204.31	85.4	65.2
Professional, scientific,technical activities	457.80	414.46	328.94	10.5	39.2
Other service activities	317.70	162.51	116.15	95.5	173.5
Household employment activities	261.90	172.53	100.75	51.8	159.9
Overall monthly average wage	377.50	164.46	147.10	129.5	156.6

Source: Ajluni, S.: "The Syrian Refugee Crisis and Its Impact on the Jordanian Labour Market", 2019. Own editing, 2024.

The informal sector's expansion has several economic implications. Socially, the sector presents challenges for refugees and locals alike, including issues related to job security, access to social services, and working conditions.[40] Jordan's response includes frameworks aimed at transitioning towards formalization, improving employment conditions, and fostering economic growth. Initiatives like "Towards a National Framework for a Transition to Formal Economy in Jordan" reflect efforts to regulate and enhance the informal economy.

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[39] Ajluni, S.: "The Syrian Refugee Crisis and Its Impact on the Jordanian Labour Market". West Asia-North Africa Institute, 2019.
[40] Razzaz, S.: "A Challenging Market Becomes More Challenging: Jordanian Workers, Migrant Workers and Refugees in the Jordanian Labour Market." International Labour Organization, 2017, p. 36, ISBN: 97892213034.

Jordan's informal sector contributed to 17.3% of its GDP on average, with a variation observed over the years: the lowest at 14.1% in 2014 and peaking at 19.9% in 1991. Compared to the broader Middle East and North Africa region, which has an informal economy share of 24.1% within the years 2010–2017, Jordan's proportion is notably lower. The International Labour Organization's estimates reveal that the informal sector represents over half of the employment landscape in Jordan.[41]

Figure no. 4: Share of Jordan's Informal Economy in GDP
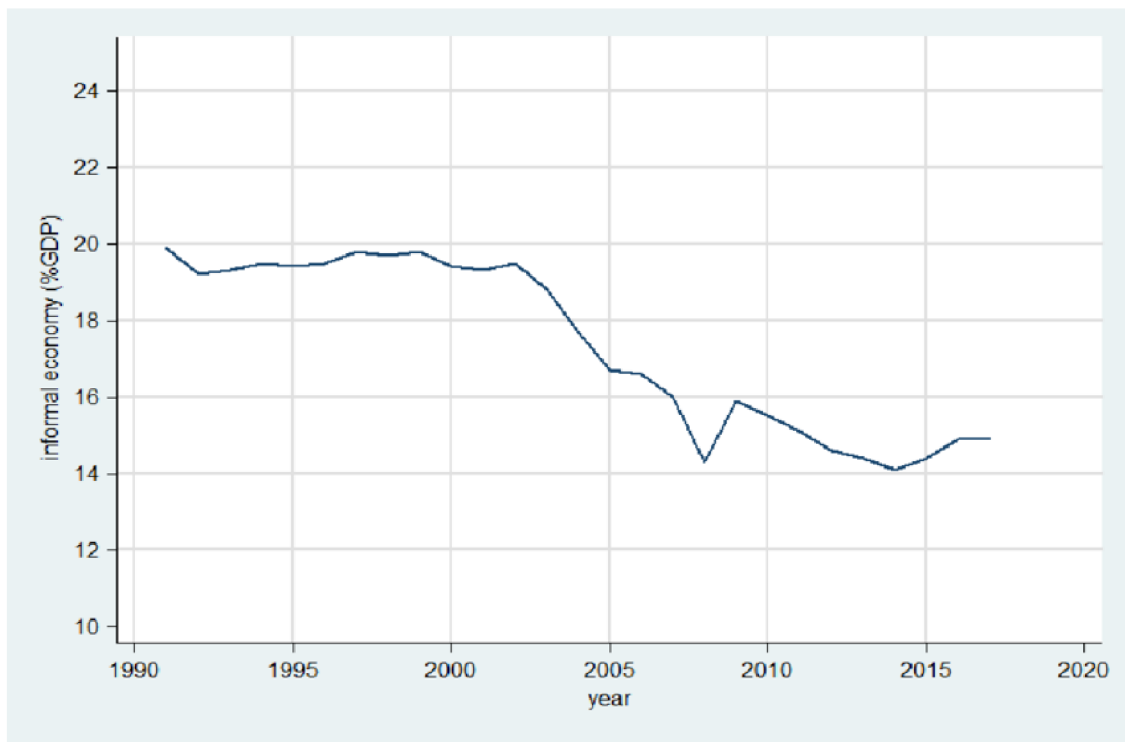
Source: Hailat, M., Baniata, A., Magableh, S.: "Informal Employment in Era of Asylum: insights from the Second Highest Worldwide Host Country of Refugees", 2023.

Employment within the informal sector is closely tied to socio-economic factors such as gender, education, and nationality, underscoring the need for targeted policy interventions. Addressing informal employment's challenges requires comprehensive strategies that encompass legal, economic, and social dimensions. Recommendations include enhancing formality, reducing informality's appeal through better regulation, and ensuring equitable labour market access for all groups, irrespective of nationality or socio-economic status.

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[41] International Labour Organization [online]: "Jordan endorses a national framework for regulating the informal economy ". 2015 [cit. 11.1.2024]. Available at: https://www.ilo.org/beirut/media-centre/news/WCMS_363990/lang--en/index.htm

2.3.2 The Youth Unemployment and Social Disparities

Youth unemployment presents a significant challenge for Jordan, mirroring a broader global issue but worsen by specific national circumstances. This chapter delves into the underlying causes of high youth unemployment rates in Jordan and explores the consequent economic and social implications.

The high rates of youth unemployment lead to the social and economic marginalization of young people, contributing to a cycle of poverty, reduced social cohesion, and wasted human capital. The frustrations of unemployed youth can culminate in political unrest, as demonstrated by the role of youth movements in the Arab Spring uprisings.

A fundamental issue driving youth unemployment in Jordan is the misalignment between the skills and knowledge imparted by the educational system and the actual demands of the job market. Many young Jordanians exit the education system with qualifications and expectations that do not match available job opportunities. A study by the UNDP found that young Jordanians lack the technical skills, work ethic, and ability to perform under pressure that the private sector needs.[42] The Jordanian economy, particularly the private sector, also struggles to create enough jobs for all the university graduates it produces. Additionally, some young people are unwilling to take lower-paying jobs they feel are beneath their qualifications, creating a situation of voluntary unemployment.[43]

Numerous academic studies have consistently identified a significant gender gap in the employment sector, underscoring that male youths have a substantially higher probability of securing employment compared to their female counterparts. This disparity is not merely a statistical observation but points to deeper societal and economic issues. Factors contributing to this imbalance may include cultural perceptions of gender roles, differences in access to education and vocational training, and systemic biases in hiring practices.[44]

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[42] United Nations Development Programme: "Labour Market: The Case of Vocational Training in Jordan". 2014, p. 48.

[43] Al-Tal, R., Al-Husseini, J.: "Youth Unemployment in Jordan: Failed Strategies and Deferred Promises". Arab Renaissance for Democracy and Development, 2023, p. 10. HAL ID: halshs-04362170

[44] International Labour Organization: "School-to-work transition of young women and men in Jordan". 2023, p. 32. ISBN: 978-92-2-038882-2

Specifically among the youth population (ages 15-24), unemployment rates were notably high in the second quarter of 2022. This issue was more pronounced among women, with a 63.8% unemployment rate, compared to 40.8% among men.

Figure no. 5: Jordan's unemployment rates within youth groups by gender
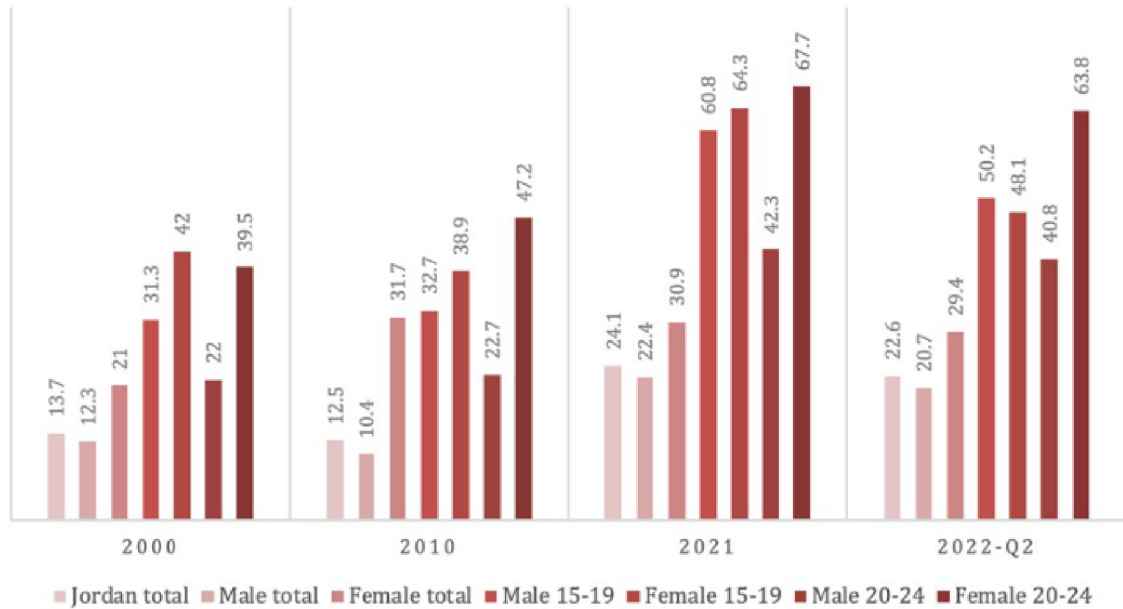
Source: Al-Tal, R., Al-Husseini, J.: "Youth Unemployment in Jordan: Failed Strategies and Deferred Promises", 2023.

Several factors contribute to the notably high unemployment rates among young people, especially young women, in Jordan. Societal and cultural norms significantly influence labour market participation, with women traditionally expected to fulfill caregiver roles and men seen as the primary earners. Despite this, surveys indicate that 60% of women who are not in the workforce in Jordan express a desire to work.[45] Constraints such as childcare responsibilities, marital duties, and household expectations limit their ability to engage in the workforce. Balancing work and family life poses the greatest barrier to women's participation in the labour force. According to interviews, 31% of women and 42% of men believe that women should prioritize family and household responsibilities over work.[46]

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[45] World Bank: "Hashemite Kingdom of Jordan Understanding How Gender Norms in MNA Impact Female Employment Outcomes". 2018, p. 4.
[46] Kasoolu, S., Hausmann, R., O'Brien, T., Santos, M. A.:: "Female Labour in Jordan: A Systematic Approach to the Exclusion Puzzle". Center for International Development at Harvard University, 2019, p. 19.

Employment prospects for Jordanian youth also vary by geographical location and marital status, with those in certain areas and married youths experiencing better employment outcomes. According to the research "Determinants of Youth Unemployment: Evidence from Jordan", marital status plays a crucial role, with married youth showing a higher probability of being employed rather than unemployed. The findings of the study further reveal that the youth people living in the southern regions are more likely to be unemployed than being employed. [47] It includes governorates such as Kerak, Maʿan and Madaba. This is visiable in the map below which is based on the total unemployment rate, however, the youth enemployment follows the same trend.

Figure no. 6: Distribution of unemployed persons in Jordan 2010

Source ; Employment and Unemployment Survey 2010, DOS.
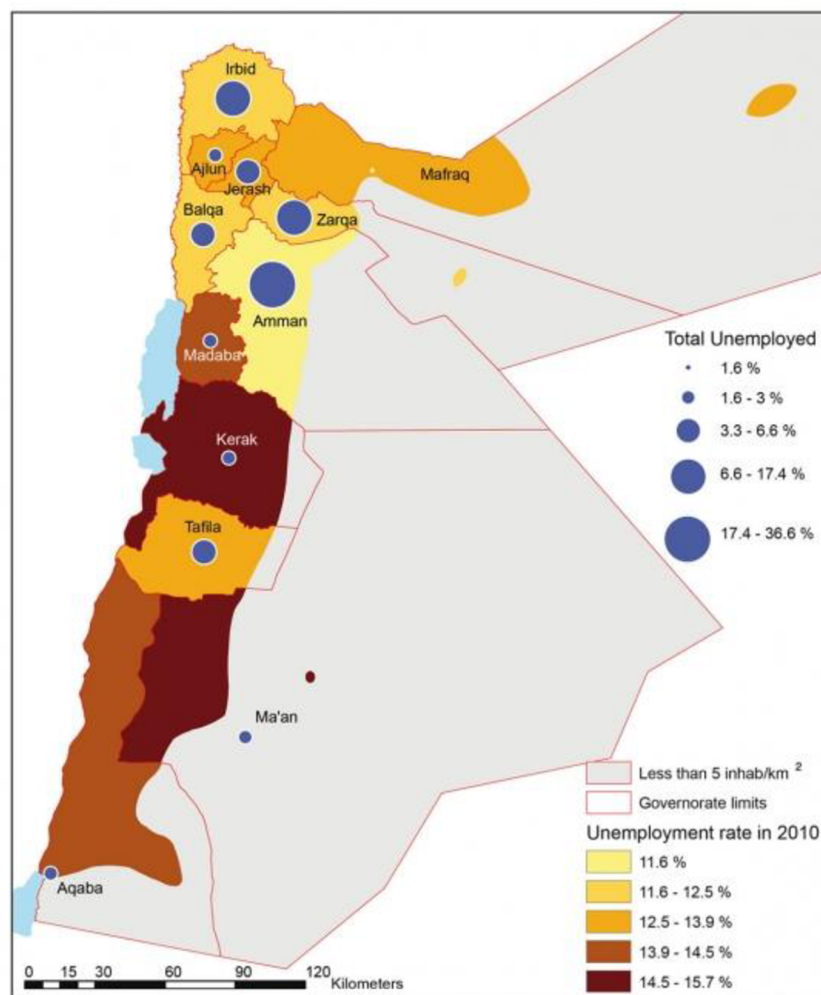
Source: Al Husseini, J.: "Challenges Facing Jordan's Labour Market", 2010.

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[47] Alawad, A., Kreishan, F., Selim, M.: "Determinants of Youth Unemployment: Evidence from Jordan". International Journal of Economics and Business Administration, 2020, vol. 4, no. 152-165. ISSN: 2241-4754.

The research further underlines that policies must tackle the mobility and cultural barriers that disproportionately affect female youth employment and address the disparities across different regions of Jordan. Strengthening vocational training and improving career guidance are critical steps towards aligning educational outputs with labour market needs. Additionally, promoting entrepreneurship among young people could open new pathways for employment.

2.3.3 Challenges and Opportunities in the Private Sector

Jordan's private sector, particularly the small and medium-sized enterprises (SMEs) that form its backbone, faces several significant challenges. Before the COVID-19 pandemic, real GDP growth in Jordan averaged about 2%, insufficient to create enough jobs for the country's young labour force. This led to a deterioration in labour market conditions, with unemployment reaching 23.3% in the last quarter of 2021, youth unemployment nearing 50%, and women's labour force participation rate at one of the lowest globally, standing at 14%.[48]

The roots of these challenges are multifaceted, tracing back to a series of external shocks, including regional conflicts and the influx of nearly 1.3 million Syrian refugees, accounting for almost 13% of the total population.[49] These factors, combined with human capital challenges, low productivity, regional instability, and poor export diversification, have limited opportunities for Jordanian firms. An unpredictable regulatory process and weak corporate governance further constrain the business environment and limit foreign investment. Despite these challenges, Jordan plays a crucial role as a beacon for regional stability, providing global public goods through its efforts in promoting cross-border regional cooperation and trade.[50]

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[48] European Bank for Reconstruction and Development [online]: "The EBRD in Jordan – Competitive private sector, SME and inclusive growth". 2022 [cit. 11.1.2024]. Available at: https://www.ebrd.com/private-sector-jordan.pdf&ved=2ahUKEwihsbi60pOFAxXIgP0HHatqCGsQFnoECBMQAQ&usg=AOvVaw1e3cbh_kK_A11Lw0x kySoC

[49] United Nations Office for the Coordination of Humanitarian Affairs [online]: "Influx of Syrian Refugees in Jordan | Effects on the Water Sector". 2021 [cit. 15.1.2024]. Available at: https://reliefweb.int/report/jordan/influx-syrian-refugees-jordan-effects-water-sector

[50] Elkahlout, G., Hadid, A.: "Stable Jordan: How a Monarchy Survived Disorder".
Asian Affairs, 2021, vol. 52, no. 4. ISSN: 1477-1500.

According to International Finance Corporation (a member of the World Bank), opportunities for growth exist in leveraging Jordan's young, educated labour force and its strategic geographic location.[51] The sectors of tourism, logistics, and information and communications technology (ICT) hold particular promise for private sector contributions. However, realizing this potential requires addressing specific constraints like policy unpredictability, labour market segmentation, and the need for more effective antitrust enforcement and competition advocacy.

The survey of employers reveals that among the enterprises sampled which employ youth, 66.5% are private companies, and 23.5% are family-run businesses. A significant majority of these enterprises, at 91.2%, are registered businesses, indicating they operate formally.

Table no. 2: Characteristics of Jordanian enterprises employing young people (%)

Formality	
Formal	91.2
Informal	8.8
Total	**100**
Business structure	
Private enterprise	66.5
Family business	23.5
Joint venture	5.6
Private company with limited liability	2.1
Branch of a foreign enterprise/company	1.5
Non-profit organization	0.6
Government/Public sector enterprise	0.3
Total	**100**

Source: International Labour Organization: "School-to-work transition of young women and men in Jordan", 2023.

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[51] International Finance Corporation: "Creating Markets in Jordan: Country Private Sector Diagnostic". World Bank Group, 2021, p. 44.

Efforts to reform the business environment in Jordan are focused on reducing operational costs and enhancing the predictability for businesses, which is vital for long-term planning and investment. These reforms are crucial and ongoing, yet their success hinges on consistent and thorough implementation across various sectors. Particularly, improving the investment climate by relaxing restrictions on foreign direct investment (FDI) and streamlining complex regulatory requirements can significantly boost the economy. This approach not only attracts international investors but also simplifies the entrepreneurial journey for local businesses. Further, promoting a competitive marketplace through the introduction of strong antitrust policies and the elimination of unnecessary regulatory hurdles is essential for invigorating private sector activities, encouraging innovation, and enhancing overall economic performance. [52]

In the tourism sector, a sector with substantial growth potential for Jordan, the focus must be on elevating service standards, effectively developing and managing tourist attractions, and tackling the challenge of unevenly distributed accommodations across the country. These measures can enhance Jordan's appeal as a global tourism destination, contributing to economic diversification and job creation. [53]

A study conducted by the Glasgow Consulting Group evaluates the progression of Jordan's tourism industry from 2015 to the present and employs various research methodologies to forecast its future trajectory. [54] Currently, Jordan, with a population slightly exceeding 10 million, welcomes approximately 2 to 3 million international tourists annually, indicating a positive growth trend in visitor numbers. This is visible in Figure No. 7 on the next page.

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[52] International Finance Corporation: "Creating Markets in Jordan: Country Private Sector Diagnostic". World Bank Group, 2021, p. 37.
[53] International Finance Corporation: "Creating Markets in Jordan: Country Private Sector Diagnostic". World Bank Group, 2021, p. 47.
[54] Consultancy-me [online]: "Jordan's tourism sector set for strong post-pandemic revival". 2021 [cit. 25.1.2024]. Available at: https://www.consultancy-me.com/news/4281/jordans-tourism-sector-set-for-strong-post-pandemic-revival

Figure no. 7: Tourist arrivals in Jordan 2015–2025

Source: Consultancy-me: "Jordan's tourism sector set for strong post-pandemic revival", 2021.

Furthermore, on average, tourists visiting Jordan stay longer and visit more tourist attractions than they did a few years ago as it is visible from figure no. 8.

Figure no. 8: Tourism expenditure in Jordan 2015–2025

Source: Consultancy-me: "Jordan's tourism sector set for strong post-pandemic revival", 2021.

The logistics sector also presents a significant opportunity for development, particularly by shifting from traditional methods to adopting modern, efficient logistics practices. Improving trade facilitation measures, coupled with capitalizing on Jordan's strategic position to become a hub for e-commerce, can drive substantial economic benefits and streamline the movement of goods regionally and globally.[55]

In the field of ICT, fostering a competitive environment is key to driving innovation and growth. This includes enhancing digital infrastructure competition, aligning digital skills training with the actual demands of the market, and creating a supportive ecosystem for digital entrepreneurs. Such steps are fundamental to leveraging ICT as a cornerstone for economic development, enabling Jordan to advance in the digital economy and providing its youth with the skills necessary for the jobs of the future.

These recommendations align with Jordan's Five-Year Reform agenda, emphasizing the need for a concerted effort to reorient the economy towards export-led growth and create a conducive business and investment environment.[56] Addressing these cross-cutting and sector-specific challenges can catalyze private sector growth, contributing to job creation and economic resilience in the face of socio-political and economic shocks.

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[55] International Finance Corporation: "Creating Markets in Jordan: Country Private Sector Diagnostic". World Bank Group, 2021, p. 56.
[56] Jordan's Ministry of Planning and International Cooperation [online]: "Five-Year Reform Matrix". 2020 [cit. 22.1.2024]. Available at: https://www.mop.gov.jo/ebv4.0/root_storage/en/eb_list_page/five_year_reform_matrix_-_midterm_progress_update_-_july_2020-0.pdf

2.4　Literature Review

The literature on unemployment in Jordan, including insights from research papers and documents provided by the International Labour Organization, the World Bank, and various policy forums, presents a multifaceted analysis of the country's unemployment issue. The studies typically employ a mixture of quantitative and qualitative approaches, employing statistical methods to assess the impact of macroeconomic variables, as well as case studies and policy analyses to provide a more nuanced understanding of the labour market.

The prevailing conclusions suggest that unemployment in Jordan is driven by a complex interplay of factors, including but not limited to educational mismatches, private sector stagnation, and the large informal sector's role within the national economy. A consistent theme across these works is the need for alignment between education and market needs, encouragement of private sector growth, and the thoughtful integration of Jordan's informal sector into the formal economy.

Additionally, the literature underscores the importance of addressing the unique socio-economic challenges faced by specific demographic groups within the labour market, particularly youth and women, who experience higher rates of unemployment. These studies advocate for targeted policies that not only foster general economic growth and labour market flexibility but also address the specific barriers these groups face.

The overview of significant publications about Unemployment in Jordan by both Jordanian and international authors is detailed in Table No. 3. This compilation is arranged according to their publication date in descending order.

Table no. 3: Overview of relevant studies

Title	Author	Date	Descripton	Conclusion
Youth Unemployment in Jordan: Failed Strategies and Deferred Promises	Al-Tal, R. Al-Husseini, J.	2023	Analysis of youth unemployment trends.	A significant mismatch between education and job market needs.
Jordan's Structural Unemployment Problem: Realigning Incentives and Improving Employment-Matching	Jordan Strategy Forum	2023	Focuses on the broader unemployment issue in Jordan, evaluating structural factors and the effects of external shocks.	Consequences of high unemployment on social stability.
School-to-work transition of young women and men in Jordan	International Labour Organization	2023	Discusses the labour market outcomes for women in Jordan.	Highlighting the low participation rates and the socio-economic factors influencing women's employment
Jordan: Selected Issues	International Monetary Fund	2022	Looks into the various economic factors influencing Jordan's labour market.	Emphasis of the tourism sector's potential in job creation.
Determinants of Youth Unemployment: Evidence from Jordan	Alawad, A. Kreishan, F. Selim, M.	2020	Identifies and analyzes the main determinants of youth unemployment in Jordan.	A pronounced gender disparity in employment outcomes, with male youths more likely to be employed than their female counterparts
Unemployment in Jordan: Reality, Expectations and Proposals	Jordan Economic Forum	2020	Presents an analysis of Jordan's unemployment.	A suggestion of economic and labour market reforms to address joblessness.
Jobs Diagnostic Jordan	Winkler, H. Gonzale, A.	2019	Examines how Jordan's economy, workforce, and external influences affect its job market.	Need for a multifaceted approach focusing on both macroeconomic policies to stimulate economic growth and specific interventions aimed at improving labour market outcomes.
The Syrian Refugee Crisis and Its Impact on the Jordanian Labour Market	Ajluni, S.	2019	Presents an analysisi of the Syrian refugee crisis and Its impact on the Jordanian labour market.	Between 2010 and 2016, while wages in the informal sector and for formalized non-Jordanian workers saw negative impacts, formalized Jordanian labour experienced consistent wage increases.
The Jordanian Labour Market: Multiple segmentations of labour by nationality, gender, education and occupational classes	International Labour Organization	2015	Analyzes the segmentation of the labour market in Jordan and the impact of nationals, migrants, and refugees on labour dynamics.	Concluding with recommendations for policy reforms to improve labour market inclusivity.
Jordan - Resolving Jordan's Labour Market Paradox of Concurrent Economic Growth and High Unemployment	World Bank	2008	Offers comprehensive insights into the complexities of Jordan's labour market dynamics.	Recommendations include encouraging mobility, and addressing the expectations of job-seekers to make them more in line with the realities of the job market.
Unemployment in Jordan	European Training Foundation	2005	Offers a perspective on the economic reforms needed in Jordan to foster employment growth.	Emphasis on macroeconomic stability and private sector development.

Source: Own editing, 2024.

2.4.1 Gaps in the Literature

The existing literature on unemployment in Jordan provides extensive insights into its dynamics, causes, and impacts. However, studies that employ longitudinal data to model unemployment trends in Jordan are limited. Developing an econometric model that analyzes time-series data could provide insights into the long-term effects of economic policies and could measure the impact of selected shock events.

By utilizing the econometric methods, the research can offer a quantitative and robust analysis of how various economic indicators influence unemployment rates. This long-term approach is beneficial for identifying trends and understanding the cyclical nature of unemployment in response to global and regional turmoils.

The employment of data for the last two decades allows to capture the effects of significant shock events such as the Arab Spring and the COVID-19 pandemic. Additionally, by integrating variables that represent key factors such as the influx of refugees, growth within the private sector, GDP fluctuations, and government expenditure on education, the analysis delves into the multifaceted nature of unemployment drivers in Jordan. This comprehensive examination aims to uncover the complex factors influencing the unemployment rate, moving beyond simple economic indicators to capture a more complete picture of the labour market's dynamics.

By focusing on these gaps, the econometric model can contribute novel insights into the unemployment situation in Jordan, providing a quantitative foundation for the formulation of targeted and effective labour market policies. This detailed analytical approach not only highlights the multifaceted nature of unemployment in the country but also serves as a critical tool for policymakers. It enables them to devise and implement labour market policies that are not only precise in their objectives but are also likely to yield significant, positive outcomes in addressing unemployment.

3. AIMS

The primary target of this diploma thesis is to explore the unemployment situation in Jordan. It aims to analyze the root causes, looking closely at various elements – with a focus on socioeconomic trends – that may have significantly influenced the current situation.

A significant portion of the study will be dedicated to analyzing the implications of prolonged unemployment, particularly focusing on demographic disparities such as youth unemployment, gender-based differences, and regional variations within Jordan. This will provide a comprehensive picture of the affected groups and the unique challenges they face. In addition, the role of the private sector will be explored to determine its influence on employment rates and its potential to drive future job creation.

The main aim is to construct an econometric model that will examine the unemployment situation in Jordan, specifically focusing on the influence of variables such as GDP growth, government education expenditure, the number of new businesses, the refugee population, and the impact of significant events such as the Arab Spring and COVID-19 pandemic. This model analyses how these factors impact Jordan's unemployment rates.

Lastly, this thesis will not just highlight problems but also propose actionable, evidence-based solutions. The aim is to find a long-term solution to reduce unemployment and boost economic growth in Jordan.

The stated objectives can be divided into the following aims:

I. Construct an econometric model that identifies the main factors determining Jordan's unemployment rate.

II. Based on the constructed econometric model, conduct a prediction of the unemployment rate for the period 2023–2030.

III. Following the research conducted, propose specific recommendations to reduce unemployment in Jordan.

3.1 Hypotheses

The set of hypotheses below was created to direct the research. These hypotheses aim to explore different factors influencing Jordan's unemployment rate. By adopting this systematic approach, it is aimed to examine the complex interactions between economic growth, societal changes, and employment trends, offering a deeper insight into the labour market's mechanics.

- H_1: Real GDP growth is negatively correlated with the unemployment rate, with higher economic growth leading to job creation and lower unemployment.

- H_2: Higher government education expenditure is expected to correlate with lower unemployment rates, under the assumption that better-funded education systems improve job readiness and economic participation.

- H_3: An increase in the number of new businesses registered indicates private sector growth and is expected to be negatively correlated with the unemployment rate, as new businesses can create new job opportunities.

- H_4: An increase in the refugee population in Jordan is posited to correlate with a rise in the unemployment rate due to additional pressures on the job market, potentially worsen by a parallel increase in informal employment, as refugees may seek work outside the formal job market.

- H_5: Events such as the Arab Spring and the COVID-19 pandemic are expected to show a positive correlation with the unemployment rate, reflecting the negative impact these events had on the economy, particularly through the downturn in certain sectors such as tourism, which is a significant source of employment in Jordan.

4 METHODOLOGY

The diploma thesis is divided into two parts; a theoretical one in the form of a literature review and an analytical one containing conducted analyses. The research draws from the theoretical foundations of economic theory with a focus on unemployment issues.

To gain a comprehensive understanding of the unemployment landscape in Jordan, a range of econometric and statistical methods are employed. These methods are critical in interpreting data, which are primarily sourced from reputable institutions such as the International Labour Organization and the World Bank.

The focus is on Jordan's unemployment rate, and how it is impacted by factors such as real GDP growth, government education expenditure (% of budget), growth of the private sector (new businesses registered), size of the refugee population, and shocks represented by the Arab Spring and the COVID-19 pandemic. All indicators are collected for the period 2006–2022.

4.1 Limitation

Relying solely on official unemployment figures may not provide a complete understanding of the job market, particularly considering the substantial informal sector and the notable number of refugees who often find themselves in unregulated types of employment. This reliance could lead to an underestimation of the actual unemployment and underemployment rates, as these statistics typically do not account for those working in less formal conditions, doing jobs that are not officially recognized, or those who have ceased seeking employment due to discouragement or lack of opportunities.

Furthermore, an evaluation of government policies is not included in the econometric model due to the complexity of such policies and the lack of comprehensive data. Furthermore, representing these policies with a dummy variable is unsuitable, as multiple policies may overlap within the timeframe under study, making it difficult to isolate their individual effects accurately.

Additionally, the model does not include a variable representing foreign direct investment due to operational challenges. The inclusion of an FDI variable was found to disrupt the model's efficacy, due to multicollinearity issues and the complexity of FDI's impact on the unemployment rate.

4.2 Econometric Modeling

This chapter describes a econometric model developed in the analytical part of the thesis. It includes a dependent (explained) variable and several independent (explanatory) variables, including a unit vector used to create a constant.

The economic model can be written as follows:

$$y_1 = \text{fce} \, (x_2, x_3, x_4, x_5. x_6) \qquad \text{/1/}$$

It includes:

y_1 – unemployment rate
x_1 – constant
x_2 – real GDP growth
x_3 – government education expenditure (% of budget)
x_4 – new businesses registered (number)
x_5 – refugee population (number)
x_6 – dummy variable (representing shock events)

Based on assumptions derived from economic theory and the economic model, a one equation linear model is constructed:

$$\beta_1 y_1 = \gamma_{11} x_1 + \gamma_{12} x_2 + \gamma_{13} x_3 + \gamma_{14} x_4 + \gamma_{15} x_5 + \gamma_{16} x_6 + u_1 \qquad \text{/2/}$$

It adds:

β_1 – parameter of dependent variable
$\gamma_{11...}\gamma_{16}$ – parameters of independent variables
u_1 – random variable

Parameters are estimated using the least squares regression method, providing objective and consistent parameter estimates. The random variable represents the error term – measurement errors, omitted independent variables, and unmeasurable factors affecting the dependent variable.[57] Along with model quantification, economic, statistical, and econometric verification is also performed.

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[57] Introduction to Econometrics with R [online]: "Random Variables and Probability Distributions". 2023 [cit. 15.12.2023]. Available at: https://www.econometrics-with-r.org/2.1-random-variables-and-probability-distributions.html

4.2.1 Construction of an Econometric Model

This chapter focuses on the theoretical aspects of econometric analysis, employing methods used in scenarios where it is necessary to determine the dependence of a certain variable on one or more other variables. It is predefined which variable is independent and which is dependent.

To create an econometric model, it is crucial first to define the dependent variable, then select appropriate independent variables. Given that each dependent variable is influenced by numerous independent variables, it is impossible to identify and collect every single one. Identifying suitable independent variables is not straightforward; the constructed model should reflect a simplified picture of the real situation, keeping in mind the extensive number of influencing factors.[58]

The simplest form of regression is linear regression, assuming a linear relationship between two variables. The linear regression model operates under several key assumptions:[59]

- The regression model is linear in the coefficients and the error term.

- The error term has a population mean of zero.

- All independent variables are uncorrelated with the error term.

- Observations of the error term are uncorrelated with each other.

- The error term has a constant variance.

- No independent variable is a perfect linear function of other independent variables.

- The error term is normally distributed.

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[58] International Monetary Fund [online]: "Economic Models: Simulations of Reality". 2023 [cit. 16.12.2023]. Available at: https://www.imf.org/external/pubs/ft/fandd/basics/models.htm

[59] Statistics By Jim [online]: "7 Classical Assumptions of Ordinary Least Squares (OLS) Linear Regression". 2018 [cit. 17.12.2023]. Available at: https://statisticsbyjim.com/regression/ols-linear-regression-assumptions

If any of the assumptions are not met, it could compromise the reliability of the estimates calculated. Therefore, necessary verifications must be conducted to address any issues. An econometric model is initially formulated from an economic perspective, followed by mathematical and econometric formulation. This process is part of the model specification. The model is then quantified and ultimately verified.

4.1.1.1 Economic Formulation

An economic model serves as a simplified representation of economic theory, starting with a set of hypotheses about a specific aspect of the economy.[60] The process begins by defining the subject of investigation and characterizing the economic variables involved. It then explores the relationships between these variables, determining whether they are positive or negative – indicating whether a dependent variable increase or decrease with the independent variables.[61] This hypothesized relationship can also be expressed mathematically.

$$y_t = f\ (x_1, x_2, ..., x_i) \hspace{4cm} /3/$$

It includes:

y_t – dependent variable

x_i – independent variables

4.1.1.2 Mathematical Formulation

The economic model transitions into a mathematical model by converting it from a conceptual or theoretical economic formula into a structured, quantifiable formula. In this mathematical framework, key variables are defined, and their interrelationships are established. The outcome is a simple linear model, which can be expressed through an equation:

$$\beta_1 y_1 = \gamma_{11} x_1 + \gamma_{12} x_2 \hspace{4cm} /4/$$

It adds:

β_1 – parameter of dependent variable

$\gamma_{11}...\gamma_{12}$ – parameters of independent variables

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[60] International Monetary Fund [online]: "What Is Econometrics?". 2023 [cit. 18.12.2023]. Available at: https://www.imf.org/external/pubs/ft/fandd/2011/12/basics.htm

[61] International Monetary Fund [online]: "Econometrics: Making Theory Count". 2023 [cit. 18.12.2023]. Available at: https://www.imf.org/external/pubs/ft/fandd/basics/econometric.htm

4.1.1.3   Econometric Formulation

While an economic model simplifies relationships between variables, an econometric model quantifies these relationships by adding a random component to the original mathematical model. This can be expressed as:

$$\beta_1 y_1 = \gamma_{11} x_1 + \gamma_{12} x_2 + u_1 \qquad\qquad /5/$$

It adds:

$\qquad$ u_1 – random variable

Every econometric model includes three types of variables. The first type, the dependent variable labeled as "y", is defined within the model. The second type, independent variables labeled as "x", are manipulated according to the research objective to determine their impact on the dependent variable. The third type, the random variable labeled as "u", accounts for measurement errors, omitted independet variables, and unmeasurable quantities affecting the model.

4.1.1.4   Parameter Estimation

Regression analysis stands as the cornerstone of econometric analysis, serving to quantify the unknown parameters within an econometric model. Its primary function is to explain the variations in one variable through the changes in other variables, offering a mathematical basis to understand the dynamic relationships within the data being analyzed.

The least squares method is used for estimating the parameters of a linear regression model. It operates on minimizing the sum of the squares of the residuals.[62] This technique allows for the estimation of both the unknown regression coefficients and the parameters of the random components within the model, providing a solid foundation for understanding the relationship between variables.

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[62] XLSTAT [online]: "Ordinary Least Squares regression (OLS)". 2023 [cit. 18.12.2023]. Available at: https://www.xlstat.com/en/solutions/features/ordinary-least-squares-regression-ols

4.1.1.5 Model Verification

Verification is a crucial phase in econometric modeling, involving multiple assessments of the model post-parameter quantification. This process includes economic, statistical, and econometric verification to ensure the model's validity across various dimensions:

- In economic verification, the calculated parameter estimates are examined to ensure they align with established theories, exploring how well the model's outcomes match theoretical expectations. This step verifies the model's economic soundness and theoretical consistency.

- In statistical verification, the focus is on evaluating the determination coefficient, which indicates how well independent variables explain the dependent variable. Additionally, the p-value is assessed to determine if the relationship between variables is statistically significant, ensuring the model's reliability in predicting outcomes based on the data.[63]

- In econometric verification, the model is tested against the assumptions of classical linear regression to ensure its applicability. This involves addressing potential issues like heteroskedasticity, autocorrelation, and checking the normality of residuals, which are crucial steps to validate the model's accuracy and reliability before its practical application.[64]

If faults based on the verification, it's necessary to revisit previous modeling stages and make corrections. This process ensures the model's accuracy and reliability by addressing and resolving any identified issues.

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[63] Statistics By Jim [online]: "How to Interpret P-values and Coefficients in Regression Analysis". 2018 [cit. 22.12.2023]. Available at: https://statisticsbyjim.com/regression/interpret-coefficients-p-values-regression

[64] Harvard University [online]: "Econometrics". 2023 [cit. 21.12.2023]. Available at: https://economics.harvard.edu/files/economics/files/honor_review_1123.pdf

4.1.1.6   Application For Prediction

Assuming that all prior stages of modeling have been carried out successfully, we transition to the final stage of the modeling process, which involves the application of the constructed model for predictive purposes. This stage is pivotal as it allows for the extrapolation of future values based on the model's parameters. The primary objective here is to estimate the future values of a dependent variable for periods not covered in the initial observational dataset, thereby extending the utility of the model beyond the confines of the historical data.

To achieve this, we employ a dynamic prediction method, a technique that incorporates the lags of dependent variables as regressors within the model.[65] This method leverages the intertemporal relationships among the data points, utilizing the forecasted values of these lagged variables to generate more accurate and meaningful predictions for future periods. By doing so, dynamic prediction not only harnesses the inherent temporal structure of the dataset but also adapts to the evolving nature of the dependent variable over time.

This approach to prediction underscores the importance of understanding and capturing the temporal dynamics within the data. It ensures that the model remains responsive to changes over time, enabling it to provide forecasts that reflect potential future states of the dependent variable with a degree of reliability and precision. Thus, by meticulously applying this dynamic method for prediction, the model can offer insightful forecasts that aid in planning, decision-making, and policy formulation for future periods, marking a significant step toward the practical application of econometric modeling in real-world scenarios.[66]

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[65] Chandorkar, M., Furtlehner, C., Poduval, B., Camporeale, E., Sebag, M.: "Dynamic Time Lag Regression: Predicting What and When". ICLR 2020 - 8th International Conference on Learning Representations, 2020, p. 2. HAL ID: hal-02422148.
[66] Matta, C. E., Bianchesi, N. M. P., Oliveira, M. S., Balestrassi, P. P., Leal, F.: "A comparative study of forecasting methods using real-life econometric series data". Production, 2021, vol. 31, no. 17. ISSN: 1980-5411.

5 ANALYTICAL PART

In the analytical part of the work, an econometric model is constructed with one dependent variable and five independent variables to determine the determinants of the unemployment rates in Jordan. For this purpose, the primary software used was Gretl, offering comprehensive data analysis tools. The data, sourced from databases and reports by the Jordan Department of Statistics and the World Bank, consists of time series on an annual basis, specifically covering the period from 2006 to 2022.

In the constructed econometric model, a dummy variable was created to capture the effects of shock events, specifically the Arab Spring and the COVID-19 pandemic. highlighting downturns in sectors such as tourism, a key employment area in Jordan. It aims to highlight inclusion and helps quantify how these significant events disrupted economic activities and employment trends within the country.

The constructed econometric model tests the following hypotheses:

- H_1: Real GDP growth is negatively correlated with the unemployment rate.

- H_2: Higher government education expenditure is negatively correlated with the unemployment rate.

- H_3: An increase in the number of new businesses registered is negatively correlated with the unemployment rate.

- H_4: An increase in the refugee population is positively correlated with the unemployment rate.

- H_5: Events the Arab Spring and the COVID-19 pandemic are positively correlated with the unemployment rate.

5.1   Formulation of the Econometric Model

The individual variables, including their units that together comprise the econometric model, are listed in Table No. 4. The dummy variable in the dataset contains only values of 0 or 1. The value 1 indicates the periods of the selected shock events.

Table no. 4: The econometric model dataset

	Unemployment rate	Real GDP growth	Government education expenditure	New businesses registered	Refugee population	Shock events
	%	%	% of budget	total	total	dummy
	y_1	x_2	x_3	x_4	x_5	x_6
2006	14.10	8,50	13,29	2 387	2 358 587	0
2007	12.70	8,40	13,90	2 191	2 403 763	0
2008	12.70	7,40	11,63	2 513	2 452 009	0
2009	12.90	5,00	10,37	2 895	2 434 485	0
2010	12.50	2,30	8,10	3 286	2 393 339	0
2011	12.90	2,70	8,20	3 759	2 430 580	1
2012	12.20	2,40	9,00	4 141	2 337 341	1
2013	12.60	2,60	9,70	4 442	2 712 877	0
2014	11.90	3,40	11,09	4 356	2 771 492	0
2015	13.10	2,50	11,34	3 654	2 808 343	0
2016	15.30	2,00	12,15	3 659	2 860 679	0
2017	18.30	2,50	11,20	4 175	2 897 751	0
2018	18.60	1,90	9,83	3 499	2 957 875	0
2019	19.10	1,80	9,86	3 078	2 966 079	0
2020	22.70	-1,60	12,37	2 778	3 009 472	1
2021	24.10	2,20	9,66	3 261	3 047 612	1
2022	22.90	2,50	12,00	3 822	3 062 851	0

Source: Department of Statistics, World Bank. Own editing, 2024.

Based on economic theory and the formulated hypotheses, relationships between variables are assumed as follows:

- If Jordan's real GDP growth increases, the unemployment rate decreases.

- If Jordan's government education expenditure (% of budget) increases, the unemployment rate decreases.

- If Jordan's number of new businesses registered increases, the unemployment rate decreases.

- If Jordan's refugee population increases, the unemployment rate increases.

- If a shock event such as the Arab Spring or the COVID-19 pandemic takes place, the unemployment rate increases.

Descriptive statistics summarize the basic features of selected variables. Basic statistical tools such as mean, median, minimum, maximum, and standard deviation were used to verify the data. The resulting values (excluding the dummy variable) are presented in Table No. 5.

Table no. 5: Descriptive statistics of the selected variables

	Unemployment rate	Real GDP growth	Government education expenditure	New businesses registered	Refugee population
	%	%	% of budget	total	total
	y_1	x_2	x_3	x_4	x_5
Average	15.80	3.32	10.81	3 406	2 700 302
Median	13.10	2.50	11.09	3 499	2 771 492
Minimum	11.90	-1.60	8.10	2 191	2 337 341
Maximum	24.10	8.50	13.90	4 442	3 062 851
Standard deviation	4.24	2.60	1.67	691	274 086

Source: Own calculation, 2024.

As evident from the table, there are no extreme values in the data, which allows for further continuation in econometric modeling.

Before quantifying the model, it is necessary to exclude the possibility of multicollinearity. Multicollinearity means a medium or high dependency between independent variables. This can lead to misleading results and limitations on the conclusions of the research. Multicollinearity can be observed when the correlation coefficient is higher than or equal to 0.85 in absolute value. The following correlation matrice presented in table no. 6 contain the correlation coefficients.

Table no. 6: Correlation coefficients of the independent variables

Real GDP growth	Government education expenditure	New businesses registered	Refugee population	Shock events	
x_2	x_3	x_4	x_5	x_6	
1.0000	0.4454	-0.5307	-0.6450	-0.4170	x_2
	1.0000	-0.4834	0.0966	-0.3418	x_3
		1.0000	0.2915	0.0654	x_4
			1.0000	0.0124	x_5
				1.0000	x_6

Source: Own calculation, 2024.

As evident from the table, multicollinearity does not occur in the data since all values are less than $|0.85|$. Therefore, it is not necessary to adjust the data, and a linear regression analysis can be conducted to study the relationships between variables.

5.2   The Model Quantification

The primary objective of quantifying an econometric model is to accurately estimate the values of its parameters. These parameters are crucial as they offer insights into the strength and nature of the relationships between the variables within the model. This statistical technique is centered around the principle of minimizing the sum of the squares of the differences (or deviations) between the observed values and those predicted by the model. The outputs of the model quantification are displayed in Table No. 7.

Table no. 7: The regression results

Variable	Coefficient	Std. error	T-ratio	P-value	Significance
const.	18.4413	8.85246	2.083	0.0614	*
x_2	0.265611	0.372935	0.7122	0.4912	
x_3	−0.281179	0.412406	−0.6818	0.5095	
x_4	−0.00213634	0.000901443	−2.370	0.0372	**
x_5	1.58913e-05	2.91715e-06	5.448	0.0002	***
x_6	3.23414	1.34077	2.412	0.0345	**
Mean dependent var	23058.14	S.D. dependent var	2235.163		
Sum squared resid	656657.0	S.E. of regression	168.9684		
R-squared	0.816421	Adjusted R-squared	0.723450		
F(5, 23)	975.3316	P-value(F)	5.68e-26		
Log-likelihood	−186.5497	Akaike criterion	385.0995		
Schwarz criterion	393.3032	Hannan-Quinn	387.6688		

Source: Own calculation, 2024.

The final equation of the econometric model as follows:

$$y_1 = 18.4413 + 0.265611x_2 - 0.281179x_3 - 0.00213634x_4 + 1.58913\text{e-}05x_5 + 3.23414x_6$$

5.3   The Model Verification

The purpose of verification is to confirm the model's realism and applicability to real-world scenarios. The verification process is systematically divided into three distinct phases to ensure examination from multiple perspectives. In the first phase, the constructed model is verified against economic theory to determine its theoretical validity and coherence with established economic principles. This step ensures that the model's foundation is solidly rooted in economic theory.

In the subsequent phase, the model undergoes a statistical verification. This involves assessing the statistical significance of the variables included in the model, ensuring that they contribute meaningfully to the model's predictive power and overall reliability. This statistical examination is crucial for establishing the model's empirical credibility and ensuring that its findings can be confidently interpreted.

The final phase of the verification process involves checking whether the model adheres to the assumptions underlying classical linear regression analysis. This includes examining the model for linearity, homoscedasticity (constant variance of error terms), and the normal distribution of residuals. Ensuring compliance with these assumptions is critical for the validity of the regression results.

In short, the significance of the variables, the validity of the model, and the fulfillment of conditions for using testing methods are verified. The conducted tests use a 95% confidence interval.

5.3.1 The Economic Verification

In the economic verification, it is checked whether the parameter values agree with the established theory and hypotheses and match the expected values according to the model's specification. Based on the model's quantification and under the conditions of ceteris paribus (other variables are constant), the estimated parameters can be interpreted as follows:

- If Jordan's real GDP growth increases by 1%, the unemployment rate increases by 0.27%.

- If Jordan's government education expenditure (% of budget) increases by 1%, the unemployment rate decreases by 0.28%.

- If Jordan's number of new businesses registered increases by 1,000, the unemployment rate decreases by 2.14%.

- If Jordan's refugee population increases by 100,000, the unemployment rate increases by 1,59%.

- If a shock event such as the Arab Spring or the COVID-19 pandemic takes place, the unemployment rate increases by 3.23%.

The economic verification confirms the set hypotheses, with the exception of the relationship between Jordan's real GDP growth and the unemployment rate. Contrary to the expectation (H_1) of a negative correlation, the data shows that real GDP growth actually correlates with an increase in unemployment. Jordan's real GDP growth not leading to a reduction in unemployment could be due to a mix of structural unemployment, where economic expansion occurs in sectors that do not heavily employ the general workforce, and a skills mismatch between job seekers and the needs of growing industries.

On the other hand, results for higher government education expenditure (H_2), an increase in new businesses (H_3), a rise in the refugee population (H_4), and the impact of significant events like the Arab Spring and COVID-19 pandemic (H_5) align with the set hypotheses, suggesting these factors influence unemployment as predicted.

5.3.2 The Statistical Verification

Statistical verification involves the statistical assessment of the realism of both the parameters and the entire model. The coefficient of determination (denoted as R^2) represents the quality measure of the regression model. The calculated value indicates the proportion of variability in the dependent variable that the constructed model explains, with the coefficient ranging from 0 to 1. It holds that the higher the R^2, the more of the dependent variable is explained by the independent variables.

The calculated R^2 is displayed in Table No. 7. R^2 is equal to 0.860054, meaning that 86% of Jordan's unemployment rate is explained by the selected variables. This suggests that significant variables are included in the model. Thus, this constructed one-equation linear model can be considered statistically significant, indicating an appropriate structure of the input data.

5.3.2.1   Statistical Significance of The Parameters

While the coefficient of determination provides an estimate of the relationship's strength between the model and independent variables, it does not indicate the significance of the calculated parameters. The statistical significance (denoted as α) of individual parameters is assessed based on the calculated p-value, which is displayed in Table No. 8. The null hypothesis states that the parameter is not statistically significant at the chosen significance level. If the calculated p-value is less than or equal to the selected significance level, the null hypothesis is rejected. Thus, the smaller the p-value, the less credible the null hypothesis appears.

Table no. 8: Significance of the calculated parameters

	Real GDP growth	Government education expenditure	New businesses registered	Refugee population	Shock events
	x_2	x_3	x_4	x_5	x_6
P-value	0.4912	0.5095	0.0372	0.0002	0.0345
Significance level	0.05	0.05	0.05	0.05	0.05
Null hypothesis	Accepted	Accepted	Rejected	Rejected	Rejected

Source: Own calculation, 2024.

The p-value indicates that the variables real GDP growth and government education expenditure have p-values (0.4912 and 0.5095 respectively) above the significance level of 0.05, leading to the acceptance of the null hypothesis for these variables. This suggests that, within the context of this model, changes in these variables do not have a statistically significant effect on the dependent variable.

For the variable real GDP growth, one possible explanation for the lack of significance could be that the benefits of economic growth are not evenly distributed across the economy, and thus, the effect on employment is not strong enough to be captured in the model. It could also indicate that GDP growth is occurring in sectors that do not translate into large-scale employment or that other variables not included in the model are obscuring its impact.

For the variable government education expenditure, the absence of significance might suggest that while investment in education is critical, its effect on the labour market may be long-term and not immediately apparent. It may also reflect inefficiencies in how such investments translate into employable skills or mismatches between the types of education provided and the needs of the job market.

On the other hand, the variables new businesses registered, refugee population, and shock events are significant (with p-values of 0.0372, 0.0002, and 0.0345, respectively), as their p-values are below the significance level. This indicates a rejection of the null hypothesis, meaning that there's a statistically significant relationship between these variables and the dependent variable.

The significance of the variable new businesses registered suggests that entrepreneurship and the creation of new companies are impactful factors, likely contributing to job creation and thus influencing the unemployment rate. The significance of the refugee population points to the demographic impact on the labour market, which may affect supply and demand for jobs, especially in sectors where refugees find employment. The significance of the shock events reflects the substantial impact that significant disruptions, such as the Arab Spring and the COVID-19 pandemic, have on economic conditions, which may include direct effects on employment, industry performance, and overall economic stability.

5.3.3 The Econometric Verification

Econometric verification involves checking the conditions necessary for the successful application of the econometric model. During econometric verification, several aspects of the model are tested:

- Autocorrelation

- Heteroskedasticity

- Normality of residuals

For this purpose, several tests were conducted, and their results are displayed in Table No. 9.

Table no. 9: Results of the econometric tests

	Breusch-Godfrey test	Breusch-Pagan test	White's test	Normality of residuals
P-value	0.631	0.354790	0.285160	0.52066
Significance level	0.05	0.05	0.05	0.05
Null hypothesis	Accepted	Accepted	Accepted	Accepted

Source: Own calculation, 2024.

5.3.3.1 Autocorrelation of Residuals

Autocorrelation of residuals refers to a situation where the model's residual component is correlated with its previous values, meaning, for example, that errors in previous years affect errors in subsequent years.[67] The Durbin-Watson statistical test is used to detect the presence of autocorrelation. The value always falls between 0 and 4. The null hypothesis assumes the absence of autocorrelation. The value is equal to 1.39833, which indicates no correlation exists.

To confirm the absence of autocorrelation, the Breusch-Godfrey test was conducted. The results are presented displayed in Table No. 9. The null hypothesis states that there is no autocorrelation in the model. The p-value is higher than the significance level $\alpha = 0.05$ (0.631 respectively), leading to the acceptance of the null hypothesis. Therefore, the assumption of no autocorrelation in the model is not violated.

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[67] Statistics How To [online]: "Durbin Watson Test & Test Statistic". 2024 [cit. 9.02.2024]. Available at: https://www.statisticshowto.com/durbin-watson-test-coefficient

5.3.3.2   Heteroskedasticity

Heteroskedasticity denotes the condition where the variance of the random components, including the residuals, is not constant. This phenomenon can occur when there are significant changes in the values of the independent variables or if an important variable has been omitted from the model. The opposite condition, where the variance of the random components is constant, is known as homoskedasticity.[68]

To detect heteroskedasticity, the Breusch-Pagan test was initially used, followed by the White test for confirmation. In both cases, the null hypothesis assumes homoskedasticity of the random component. As can be seen in Table No. 9, the p-value is higher than the significance level $\alpha = 0.05$ (0.354790 and 0.285160 respectively), thus the null hypothesis is accepted. This confirms the homoskedasticity of the model.

5.3.3.3   Normality of Residuals

The assumption that residuals follow a normal distribution is crucial in regression analysis for valid statistical inference. To check this in the study, it is used the Jarque-Bera test, which assesses if the residuals' skewness and kurtosis match those of a normal distribution.[69] The null hypothesis of the Jarque-Bera test posits that the residuals are normally distributed. Passing this test indicates that the model's residuals align with normality, supporting the model's statistical validity. If the test suggests deviations from normality, it may require adjustments to the model. This step ensures the model's findings are robust and reliable.

The results of this test are also presented in Table No. 9. It can be seen there that the resulting p-value is higher than the significance level $\alpha = 0.05$, confirming the normal distribution of the random component.

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[68] Statistics How To [online]: "Breusch-Pagan-Godfrey Test: Definition". 2024 [cit. 10.02.2024]. Available at: https://www.statisticshowto.com/breusch-pagan-godfrey-test
[69] Statistics How To [online]: "Jarque-Bera Test". 2024 [cit. 11.02.2024]. Available at: https://www.statisticshowto.com/jarque-bera-test

The normality of residuals can also be observed from a histogram, which is constructed by plotting the values of the observed variable on the horizontal axis and their frequencies on the vertical axis. If the random component is normally distributed, the histogram should resemble the Gaussian curve.[70] The corresponding histogram is displayed in Figure No. 9.

Figure no. 9: Histogram of the residuals
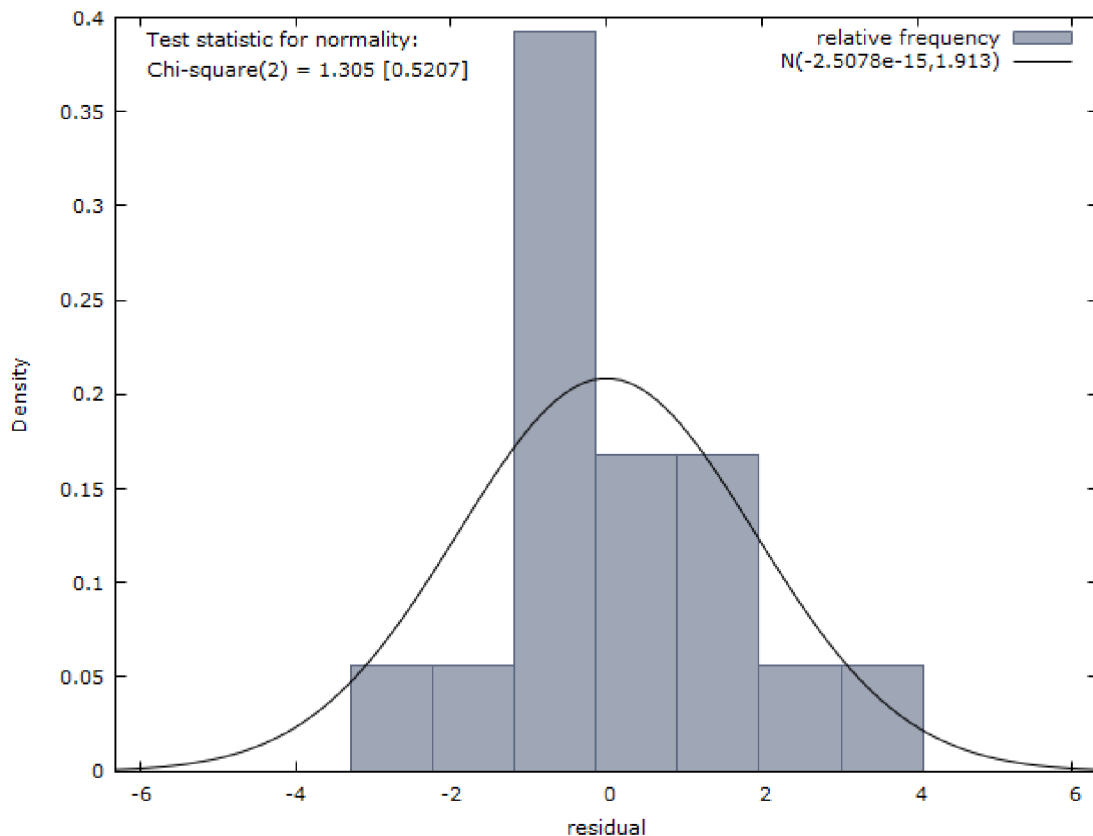
Source: Own calculation, 2024.

The shape of the histogram resembles the Gaussian curve, which suggests that the residuals are normally distributed. This normal distribution of residuals is further supported by the overlay of a normal distribution curve, which matches closely with the histogram's bars.

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[70] All About Circuits [online]: "The Normal Distribution: Understanding Histograms and Probability". 2020 [cit. 21.02.2024]. Available at: https://www.allaboutcircuits.com/technical-articles/normal-distribution-understanding-histograms-probability

5.3.4 Jordan's Unemployment Rate Prediction

All verifications have confirmed the correctness of the methods used, making the model suitable for practical application in the form of creating predictions. The purpose is to forecast the value of the independent variable beyond the observed period. In the case of the constructed model, the unemployment rate is predicted up to the year 2030. From a statistical standpoint, this is considered a long-term prediction (8 or more years). The calculated values are presented in Table No. 10.

Table no. 10: Predicted values of Jordan's unemployment rate until 2030

	Unemployment rate
	%
	y_1
2006	14,10
2007	12,70
2008	12,70
2009	12,90
2010	12,50
2011	12,90
2012	12,20
2013	12,60
2014	11,90
2015	13,10
2016	15,30
2017	18,30
2018	18,60
2019	19,10
2020	22,70
2021	24,10
2022	22,90
2023	21,22
2024	20,33
2025	17,63
2026	18,70
2027	19,30
2028	15,24
2029	16,30
2030	15,10

Source: Own calculation, 2024.

In Figure No. 10, Jordan's unemployment rate till between 2006 and 2022 is illustrated in grey color, and its predicted value for the years 2023–2030 is shown in light blue.

Figure no. 10: Evolution of Jordan's unemployment rate 2023–2030
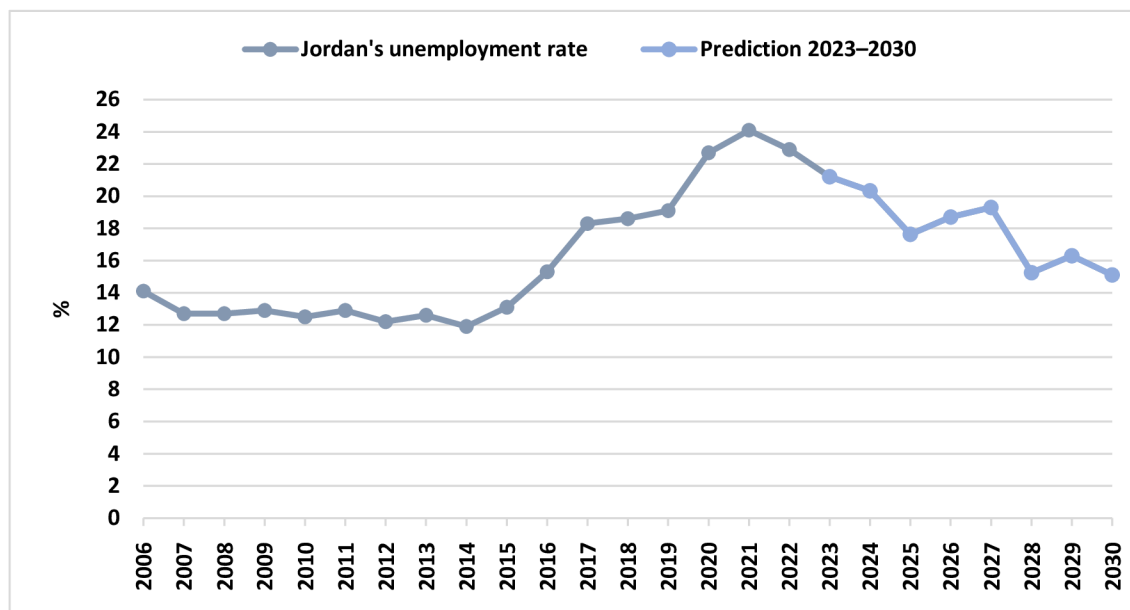
The historical data for Jordan's unemployment rate from 2006 to 2022 show considerable fluctuations, with a notable upward trend starting in 2016 and peaking in 2021 at 24.1%. The prediction extending from 2023 to 2030 suggests a gradual decrease after an initial rise in the years immediately following 2022.

The predicted unemployment rates from 2023 to 2030 indicate an overall downward trend in unemployment, though with some year-to-year variability. In the years immediately following 2022 the prediction indicates a modest decrease in the unemployment rate, hinting at an early stage of recovery. By 2025, the model predicts a more substantial decrease to 17.63%, which could imply expected economic recovery or effective job creation policies coming to fruition.

However, in 2026 and 2027, there's a predicted increase again, which could reflect economic uncertainties or challenges in sustaining the job growth momentum. Notably, the predictions for 2028 to 2030 show a decrease to levels that are similar to or lower than those seen in the years before 2016. That would represent a decrease of approximately 34% compared to the values in 2022. This could suggest optimism about the long-term economic policies and structural reforms that may positively impact the labour market.

6   RESULTS AND DISCUSSION

Aim I. Construct an econometric model that identifies the main factors determining Jordan's unemployment rate.

The development of this econometric model was guided by several hypotheses, including the influence of real GDP growth (H_1), government education expenditure (H_2), the number of new businesses registered (H_3), the refugee population (H_4), and significant events such as the Arab Spring and COVID-19 pandemic (H_5) on the unemployment rate. Through linear regression analysis and statistical testing, the model has identified the significant determinants of unemployment in Jordan.

The variables representing new businesses registered, the refugee population, and shock events demonstrated a significant impact on unemployment rates, aligning with the set hypotheses H_3, H_4, and H_5. This indicates that the creation of new businesses is crucial for job creation and reducing unemployment, while the influx of refugees and occurrences of significant socio-political events exacerbate unemployment challenges in Jordan.

Contrary to hypotheses H_1 and H_2, the variables of real GDP growth and government education expenditure do not appear as significant determinants. For real GDP growth, the lack of significance could imply that while Jordan's economy is growing, the nature of this growth might not be sufficient to generate employment opportunities across various sectors. Economic growth could be concentrated in non-labour-intensive sectors, such as certain types of manufacturing and services, which do not create substantial job opportunities for the broader population. Additionally, the benefits of economic growth may be accruing to capital rather than labour, leading to increased productivity without corresponding increases in employment.

These results can be compared with the conclusions of research papers published on this topic. The Middle East Institute's research published in 2021 highlights that Jordan's unemployment is deeply rooted in structural challenges within the economy, persisting through times of economic prosperity.[71] Specifically, during the years 2005 to 2009, despite Jordan's real GDP growing at a rate exceeding 5%, the unemployment rates firmly hovered around an average of 13.5%. This scenario strongly illustrates that economic expansion, by itself, fails to mitigate unemployment effectively and the unemployment rate is particularly sluggish in its response to economic growth.[72]

Furthermore, according to the World Bank's "Jobs Diagnostic Jordan" report published in 2019, the Jordanian economy needs to grow by at least 6% annually to create sufficient jobs.[73] These rates are hard to achieve given the current circumstances. Another analysis by the World Bank in their report "Resolving Jordan's Labour Market Paradox of Concurrent Economic Growth and High Unemployment" explains that the economic growth being concentrated in sectors that do not employ a large portion of Jordan's workforce.[74] The sectors contributing high economic growth are ones that mainly create jobs for low-skilled labourers (real estate, manufacturing), or sectors that cannot absorb more employment (producers of government services).[75]

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[71] Middle East Institute [online]: "Overcoming unemployment in Jordan: The need for evidence-based policies". 2021 [cit. 21.02.2024]. Available at: https://www.mei.edu/publications/overcoming-unemployment-jordan-need-evidence-based-policies

[72] Assaad, R.: "The Jordanian Labor Market in the New Millennium". 2014, p. 4, ISBN: 978-0198702054.

[73] Winkler, H., Gonzalez, A.: "Jobs Diagnostic Jordan". World Bank Group, 2019, Jobs Series, no. 18, p. 1.

[74] World Bank: "Jordan - Resolving Jordan's Labour Market Paradox of Concurrent Economic Growth and High Unemployment". 2008, p. 3.

[75] Jordan's Department of Statistics [online]: "Gross Domestic Product At current Prices ". 2021 [cit. 18.02.2024]. Available at: http://www.dos.gov.jo/dos_home_a/main/economic/nat_account/sel2/nat_6/3.pdf

Regarding government education expenditure, its insignificance in impacting unemployment rates suggests that simply spending more on education may not automatically translate into lower unemployment. This could be due to several factors, such as a mismatch between the skills taught in educational institutions and those demanded by the job market. It suggests that the education systém is not aligned with the economic needs of the country, resulting in graduates who are not equipped with the skills or qualifications required by employers.

The findings from the UNDP study "Labour Market: The Case of Vocational Training in Jordan" published in 2014 closely align with the results of the constructed econometric model.[76] This study underscores a crucial issue: the disconnect between what young Jordanians learn in the education system and what the job market actually requires. It highlights that many young individuals in Jordan graduate with qualifications and expectations not matched by the available job opportunities, specifically pointing out a lack of technical skills, work ethic, and resilience needed in the private sector. This misalignment between education outputs and labour market needs corroborates the findings, suggesting that merely increasing government spending on education without addressing the quality and relevance of the education provided may not effectively reduce unemployment rates.

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[76] United Nations Development Programme: "Labour Market: The Case of Vocational Training in Jordan". 2014, p. 48.

Aim II. Based on the constructed econometric model, conduct a prediction of the unemployment rate for the period 2023–2030.

The historical trajectory of unemployment rates from 2006 to 2022 has shown significant volatility, with a noticeable increase post-2016, peaking in 2021. This trend underscores the challenges within Jordan's labour market and economy. The predictions for 2023 onwards suggest a complex path towards stabilization and reduction in unemployment rates.

The initial period after 2022 projects a slight decrease in unemployment rates, indicating an early recovery phase. Comparing the forecasted unemployment rate of 21.22% for 2023 with the actual reported rate of 21.4% in Q4 of 2023 by the Department of Statistics shows a close match.[77] This near alignment indicates the model's accuracy in predicting economic trends within Jordan's labour market.

By 2025, the model anticipates a more significant drop in unemployment rates to 17.63%, suggesting the potential effectiveness of economic recovery measures or job creation policies. However, the uptick in rates forecasted for 2026 and 2027 highlights the potential volatility and uncertainty in the economy, emphasizing the difficulty of sustaining job growth over the long term.

The subsequent decrease forecasted for 2028 through 2030, bringing unemployment rates down to levels comparable to or lower than those before the 2016 surge, implies a long-term optimistic outlook. This optimism may be predicated on the successful implementation of economic policies and structural reforms aimed at revitalizing the labour market. The fluctuating predictions underscore the multifaceted nature of unemployment challenges in Jordan, highlighting the need for a comprehensive, sustained approach to policy-making to achieve a lasting reduction in unemployment rates.

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[77] The Jordan Times [online]: "Unemployment rate declines to 21.4% in Q4 2023 – DoS". 2024 [cit. 29.02.2024]. Available at: https://jordantimes.com/news/local/unemployment-rate-declines-214-q4-2023-%E2%80%94-dos

Aim III. Following the research conducted, propose practical recommendations to reduce unemployment in Jordan.

Based on economic theory and the insights derived from the constructed econometric model, several recommendations are formulated below to tackle the unemployment issue in Jordan. The econometric model revealed that new business registrations, refugee populations, and shock events significantly impact unemployment rates, suggesting areas where targeted interventions could yield tangible improvements. On the other hand, the lack of significance of real GDP growth and government education expenditure as determinants underscores the complexity of the unemployment challenge, highlighting areas where traditional approaches may not suffice.

To address these findings, the following recommendations are proposed:

- Encourage investment in sectors that are labour-intensive and have the potential to employ large numbers of people. Specifically, the Jordanian industry, as the largest private sector employer, offers significant investment opportunities, especially in labour-intensive sectors such as the food and catering industry, leather, and textiles. The industrial sector's workforce grew by 28.2% from 2011 to 2021, showcasing its resilience and job creation potential despite global and regional challenges.[78] Investment in these sectors could stimulate economic growth and employment, particularly in areas with high labour intensity.

- Reform the education and vocational training systems to better match the skills imparted with market demands. This involves updating curricula, enhancing the quality of vocational training, and fostering closer collaboration between educational institutions and the private sector. Specifically, audit current Technical and Vocational Education and Training (TVET) curriculums to ensure they are up-to-date and aligned with market demands. This could involve a comprehensive review with input from industry stakeholders. The goal is to bridge the gap between the skills taught and those sought by employers, particularly in growing sectors like renewable energy, technology, and healthcare.

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[78] Jordan News [online]: "Survey shows industry biggest private sector employer". 2022 [cit. 1.03.2024]. Available at: https://www.jordannews.jo/Section-113/All/Survey-shows-industry-biggest-private-sector-employer-21963

- Support the creation and growth of new businesses through incentives, easier access to finance, and simplification of regulatory processes. Entrepreneurship can be a vital engine for job creation, particularly for the youth and women, who are disproportionately affected by unemployment. Specifically, according to the World Bank, microfinance institutions have been pivotal in supporting small businesses in developing economies.[79] Expanding microfinance loans could align with the World Bank's findings that access to small loans increases entrepreneurship rates, especially among women and youth.

- Foster a closer collaboration between the public and private sectors to create job opportunities. This includes leveraging public investments to stimulate private sector growth and job creation. Drawing inspiration from the International Finance Corporation's (IFC) expansion in Amman, which aims to advance public-private partnerships and foster Jordan's entrepreneurial ecosystem, it is clear that enhancing the strategic role of Jordan in the region through similar initiatives can stimulate private sector growth.[80]

- Develop targeted training and employment programs for refugees to integrate them into the labour market without displacing local workers. Encouraging entrepreneurship within refugee communities could also mitigate their impact on the unemployment rate. Specifically, create dedicated entrepreneurship incubation centres for refugees. These centres should provide comprehensive support, including business training, mentorship, access to finance, and legal advice. It would be based on successful models such as the "Spark", which offers support to entrepreneurs around the world, emphasizing skill development and business support.[81]

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[79] Cull, R., Morduch, J.: "Microfinance and Economic Development". World Bank Group, 2017, Policy Research Working Paper, no. 8252, p. 10.

[80] The Jordan Times [online]: "IFC's Amman office becomes regional hub". 2023 [cit. 1.03.2024]. Available at: https://www.jordantimes.com/news/local/ifcs-amman-office-becomes-regional-hub

[81] U.S. Department of State [online]: "Spark Initiative: Promoting Global Entrepreneurship". 2017 [cit. 5.03.2024]. Available at: https://2009-2017.state.gov/e/eb/cba/entrepreneurship/spark/index.htm

- Implement policies and programs that enhance the economy's resilience to socio-political and economic shocks. This could include diversifying the economy, investing in sectors less susceptible to external shocks. That would be achieved by reducing dependency on imported energy by investing in domestic renewable energy sources, thereby enhancing energy security and creating job opportunities. Specifically, implement incentive programs for both large-scale renewable energy projects and small, community-based initiatives. This could involve tax incentives, feed-in tariffs, and public-private partnerships to finance solar and wind energy projects.

In conclusion, the provided evidence-based recommendations highlight the necessity of a multifaceted approach that targets the roots of unemployment identified by the econometric model. These recommendations include stimulating investments in labour-intensive industries, overhauling the educational and vocational training systems to align with market needs, fostering entrepreneurship with supportive measures, enhancing public-private partnerships for job creation, and integrating refugees into the workforce through targeted training and support. These strategies underscore the importance of adapting to the complexities of Jordan's unemployment issue, moving beyond traditional economic growth models and educational outputs to create a more resilient and dynamic labour market.

7 CONCLUSION

This thesis embarked on a detailed exploration to understand the complex dynamics of unemployment in Jordan, examining its roots, impacts, and viable solutions through a methodical econometric model. The research aimed to construct a detailed model to find out the key determinants impacting Jordan's unemployment rates, predict future unemployment trends, and propose actionable strategies to tackle this long-term issue.

The econometric analysis revealed significant insights into the determinants of unemployment in Jordan. It highlighted the critical role of new business registrations, the refugee population, and significant socio-political events such as the Arab Spring and the COVID-19 pandemic in shaping the unemployment landscape. These findings underscore the importance of fostering an environment encouraging entrepreneurship, effectively managing the integration of refugees into the labour market, and preparing for the economic consequences of unpredicted global and regional crises.

Contrary to the initial hypotheses, the research found that real GDP growth and government education expenditure do not significantly influence unemployment rates. This suggests that while Jordan has experienced economic growth, it has not been adequately labour-intensive to substantially reduce unemployment. Additionally, the insignificance of government education expenditure as a determinant points to a disconnect between the skills provided by the education system and the demands of the job market. This misalignment emphasizes the need for a substantial reform in education and vocational training systems to equip young Jordanians with the skills required in the contemporary labour market.

The data presented above fulfilled the first aim; construct an econometric model that identifies the main factors determining Jordan's unemployment rate.

The projections for unemployment rates between 2023 and 2030 highlight a path filled with challenges and opportunities. The expected gradual decrease in unemployment rates suggests an emerging phase of economic recovery and the potential effectiveness of job creation policies. This outlook, however, is tempered by the unpredictability of future trends. The near match between the predicted unemployment rate for 2023 and the actual rate suggests the model's reliability in forecasting economic conditions within Jordan's labour market.

By 2025, a noticeable decline in unemployment to 17.63% suggests positive effects of economic recovery or job creation efforts. Yet, the forecasted rise in rates for 2026 and 2027 signals possible economic instability or challenges in maintaining job growth momentum. The predictions for 2028 to 2030, with unemployment rates expected to drop to pre-2016 levels, reflect an optimistic view of Jordan's economic policies and structural reforms positively influencing the labour market.

These forecasts underline the complexity of addressing unemployment in Jordan and the need for a sustained policy approach to achieve long-lasting reductions in unemployment rates. The anticipated fluctuations in unemployment rates underscore the critical need for resilient economic and labour market policies.

The data presented above fulfilled the second aim; based on the constructed econometric model, conduct a prediction of the unemployment rate for the period 2023–2030.

The results and conclusions presented in this diploma thesis can serve officials of Jordan, or other authorized persons addressing the issue of unemployment. Based on the analysis and findings, a set of recommendations emerges to combat unemployment in Jordan. These suggestions aim to stimulate job creation, enhance skills alignment, and boost economic resilience.

First, investment in labour-intensive industries such as catering, leather, and textiles should be encouraged to capitalize on their employment generation potential. The industrial sector's significant workforce growth from 2011 to 2021 underscores this opportunity.

Second, reforms in education and vocational training are needed to better align with job market demands. This includes curriculum updates and quality improvements in vocational training, emphasizing the collaboration between educational institutions and the private sector.

Third, supporting entrepreneurship through better access to finance, regulatory simplification, and incentives, especially for youth and women, can drive job creation. Expanding microfinance, as evidenced by World Bank findings, could significantly empower entrepreneurs.

Fourth, enhancing public-private partnerships to stimulate private sector growth and job creation is critical. Drawing on successful models such as the IFC's initiatives can provide a blueprint for fostering economic development.

Lastly, developing programs for refugee integration into the labour market, without displacing local workers, is essential. Encouraging refugee entrepreneurship, through dedicated support centres, can mitigate unemployment impacts and contribute to the economy.

Implementing these strategies requires collabourative efforts from the government, the private sector, educational institutions, and international organizations to achieve a meaningful reduction in unemployment rates in Jordan.

The data presented above fulfilled the third aim; following the research conducted, propose specific recommendations to reduce unemployment in Jordan.

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9. APPENDIX

Appendix n. 1: Results of Breusch-Godfrey test for autocorrelation

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Breusch-Godfrey test for first-order autocorrelation
OLS, using observations 2006-2022 (T = 17)
Dependent variable: uhat

                      coefficient   std. error    t-ratio   p-value
   ------------------------------------------------------------------
   const              -0.0488046    9.17347      -0.005320  0.9959
   Real_GDP_Growth    -0.0670481    0.409507     -0.1637    0.8732
   Government_Educa~    0.0971001    0.470244      0.2065    0.8406
   New_Businesses_R~    7.17323e-05  0.000945261   0.07589   0.9410
   Refugee_Populati~  -3.53571e-07  3.10608e-06  -0.1138    0.9116
   Dummy_Variable_S~  -0.0953189    1.40261      -0.06796   0.9472
   uhat_1              0.214300     0.433121      0.4948    0.6314

   Unadjusted R-squared = 0.023896


Test statistic: LMF = 0.244808,
with p-value = P(F(1,10) > 0.244808) = 0.631


Alternative statistic: TR^2 = 0.406229,
with p-value = P(Chi-square(1) > 0.406229) = 0.524


Ljung-Box Q' = 0.251004,
with p-value = P(Chi-square(1) > 0.251004) = 0.616
```
Source: Own calculation, 2024.

Appendix n. 2: Results of Breusch-Pagan test for heteroskedasticity

```
Breusch-Pagan test for heteroskedasticity
OLS, using observations 2006-2022 (T = 17)
Dependent variable: scaled uhat^2

                      coefficient   std. error    t-ratio   p-value
   ------------------------------------------------------------------
   const              -8.09801      6.42204      -1.261     0.2334
   Real_GDP_Growth     0.0609879    0.270547      0.2254    0.8258
   Government_Educa~    0.289466     0.299181      0.9675    0.3541
   New_Businesses_R~    0.00101748   0.000653955   1.556     0.1480
   Refugee_Populati~    9.08348e-07  2.11626e-06   0.4292    0.6760
   Dummy_Variable_S~  -0.639365     0.972668     -0.6573    0.5245

   Explained sum of squares = 11.0578


Test statistic: LM = 5.528877,
with p-value = P(Chi-square(5) > 5.528877) = 0.354790
```
Source: Own calculation, 2024.

Appendix n. 3: Results of White's test for heteroskedasticity

```
White's test for heteroskedasticity
OLS, using observations 2006-2022 (T = 17)
Dependent variable: uhat^2

                        coefficient     std. error     t-ratio    p-value
      -----------------------------------------------------------------------
      const              190.046        201.567        0.9428     0.3772
      Real_GDP_Growth     -0.101426       1.89216      -0.05360    0.9587
      Government_Educa~    -0.422553       8.24919      -0.05122    0.9606
      New_Businesses_R~    0.0377501      0.0333435     1.132      0.2949
      Refugee_Populati~   -0.000198044    0.000140187  -1.413      0.2006
      Dummy_Variable_S~   -3.15376        2.72343      -1.158      0.2848
      sq_Real_GDP_Grow~    0.0823826      0.340480      0.2420     0.8157
      sq_Government_Ed~    0.0796936      0.382122      0.2086     0.8407
      sq_New_Businesse~   -4.74235e-06    4.45361e-06  -1.065      0.3223
      sq_Refugee_Popul~    3.67237e-011   2.57234e-011  1.428      0.1964


      Unadjusted R-squared = 0.639047


Test statistic: TR^2 = 10.863800,
with p-value = P(Chi-square(9) > 10.863800) = 0.285160
```
Source: Own calculation, 2024.

Appendix n. 4: Frequency distribution for residual

```
Frequency distribution for residual, obs 1-17
number of bins = 7, mean = -2.5078e-015, sd = 1.91304

         interval          midpt    frequency    rel.      cum.

             < -2.2313   -2.7563       1       5.88%    5.88% **
     -2.2313 - -1.1813   -1.7063       1       5.88%   11.76% **
     -1.1813 - -0.13128  -0.65629      7      41.18%   52.94% ***************
     -0.13128 -  0.91872  0.39372      3      17.65%   70.59% ******
      0.91872 -  1.9687   1.4437       3      17.65%   88.24% ******
       1.9687 -  3.0187   2.4937       1       5.88%   94.12% **
           >=  3.0187     3.5437       1       5.88%  100.00% **


Test for null hypothesis of normal distribution:
Chi-square(2) = 1.305 with p-value 0.52066
```
Source: Own calculation, 2024.