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**THE DETERMINANTS OF YOUTH UNEMPLOYMENT:
EVIDENCE FROM THE ARAB WORLD**

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INTRODUCTION

The first question that can come to mind is why to study youth unemployment? Youth unemployment is a great challenge among many countries around the world. The youth unemployment rate is defined as the percentage of unemployed people aged (15 to 24 years old) from the labour force (ILO, 2019A). Youth unemployment is a serious concern for many countries of the world and the reasons behind this that youth unemployment has several consequences on society as it can be a waste in human resources and on the individual side, it can have many consequences in term of health, and in addition to crimes as FOUGÈRE et al. (2009) found and sociological problems as well. All these consequences show how youth unemployment is important to be highlighted.

The second important reason for studying youth unemployment is the youth migrations from some of these countries as unemployment can be the main reason for youth migration to other countries. The unemployment among youth pushes them to find new opportunities in other countries and these youth migration impact on the productivity of the base countries in term of waste of human resources and therefore impact on the economic development in these countries. To address the youth unemployment problem, we need to look for determinants of youth unemployment and further the solution can be introduced. Youth unemployment determinants are not highly researched in the Arabic region jointly, for that this study will address the determinants of youth unemployment in the Arab world. Besides that, we need to uncover the impact of the financial crisis of 2008 on youth unemployment in the Arabic world.

Many researchers address the topic globally, for example, recently, BAYRAK–TATLI (2018) examined the youth unemployment determinants in OECD countries. In the case of the Arabic world and according to our knowledge, we did not find that it addressed before in terms of the Arabic region jointly, for that this dissertation will address the determinants of youth unemployment in the Arab world to fill this gap. In addition to that this dissertation will address the difference between genders in terms of determinants of youth unemployment. Moreover, the study will explore the determinants of total unemployment and adult unemployment and how they are different from determinants of youth unemployment which contribute new findings on the topic in the Arab world.

On another side, the impact of financial crises on youth unemployment studied by many scholars, for example recently BRUNO et al. (2016) studied the financial crisis short and long-run impacts on unemployment of youth in OECD countries. The impact of financial crises on youth

unemployment is not highly researched in the Arabic regions jointly according to my search. This dissertation will address the impact of financial crises on youth unemployment in Arabic countries to fill this gap. In addition to that, this dissertation will address the difference between genders in terms of the impact of financial crises on youth unemployment. Moreover, the dissertation will explore the impact of financial crises on total unemployment and adult unemployment and how they are different from the impact of financial crises on youth unemployment which contribute new findings on the topic in the Arab world.

Economic freedom has a very important impact on unemployment, for example, FELDMANN (2007) found that in particular, among young people and women, economic freedom can ultimately decrease unemployment. The impact of economic freedom on youth unemployment is not highly researched in the Arabic region jointly according to our search. This dissertation will address the impact of economic freedom on youth unemployment in Arabic countries to fill this gap. In addition to that, this dissertation will address the difference between genders in terms of the impact of economic freedom on youth unemployment. Moreover, the dissertation will explore the impact of economic freedom on total unemployment and adult unemployment and how they are different from the impact of economic freedom on youth unemployment which contributes to new findings on the topic in the Arab world.

Minimum wages as an example of institutional variables have a very important impact on unemployment and youth unemployment, for example, GORRY (2013) found that the minimum wages impacted on the unemployment rate and youth unemployment as well. Moreover, he found that youth unemployment will be increased more than the unemployment rate by the minimum wage. The impact of minimum wages on youth unemployment is not researched in the Arabic regions jointly according to my search. This dissertation will study the impact of minimum wages on youth unemployment in Arabic countries to fill this gap. In addition to that, this dissertation will study the difference between genders in terms of the impact of minimum wages on youth unemployment. Moreover, the dissertation will investigate the impact of minimum wages on total unemployment and adult unemployment and how they are different from the impact of minimum wages on youth unemployment which contribute new findings on the topic in the Arab world.

1. TOPICS AND OBJECTIVES

1.1. The rationale, objectives, and questions of the study

All Arabic countries connected to each other's by the Arab League and studying this topic for many Arabic countries will be more beneficial than the study of each country separated. For this reason, we conduct our study for many Arabic countries so our results and conclusions in terms of recommendations and policies can be used easily.

The study will focus on analyzing the factors that impact on youth unemployment in the Arab world starting from economic factors and goes to reach financial crisis and economic freedom factors to build a complete macro perspective evaluation for what determines youth unemployment in the Arab world. The study designed to address the determinants of youth and not focusing only on macroeconomics variables but address the other variables including economic freedom variables such as labour market regulations. Besides that, the study addresses the males and females unemployment determinants among youth.

More specifically the objective of this study is to explore the determinants of youth unemployment in the Arabic world. To address the challenge of youth unemployment, we need to look for determinants of youth unemployment and further the solution can be introduced. Youth unemployment determinants are not highly researched in the Arabic region jointly, for that this study will address the determinants of youth unemployment in Arabic countries. Besides that, we need to uncover the impact of the financial crisis of 2008 on youth unemployment in the Arabic world. For that, the study will attempt to answer the following questions:

Question1: What are the determinants of youth unemployment in the Arabic world?

Question 2: What is the impact of the financial crisis on youth unemployment in the Arabic world?

Question 3: What is the impact of economic freedom on youth unemployment in the Arabic world?

1.2. Hypotheses of the study

Economic growth and its impact either on total unemployment or youth unemployment are addressed by many researchers to understand the effect of the economic growth on unemployment and youth unemployment, for example, AGHION–HOWITT (1994) found that the growth can impact on unemployment in two impacts “capitalization and creative destruction”. In terms of capitalization impact, the growth increase leads to a decrease in the rate of unemployment. On the other hand, in the term of creative destruction impact, the growth increase leads to increasing the balance of unemployment either by increasing the job separation rate or by job creation discourage.

MAQBOOL et al. (2013) concluded that in the short-run and long-run, GDP is among the significant determinants of unemployment in Pakistan. ABBAS (2014) revealed that there is a negative long term impact done by economic growth on the level of unemployment. BAYAR (2014) pointed out that economic growth and unemployment have long term relationships and the relationship between economic growth and unemployment is negative. ARSLAN–ZAMAN (2014) reported that gross domestic product rate affects negatively on unemployment. CHOWDHURY–HOSSAIN (2014) presented that there is a negative effect of GDP growth rate on unemployment. OGBEIDE et al. (2015) obtained that GDP is among the factors that help in the repression of unemployment. ŞAHIN (2016) proved that in the case of the long run, the relationship between GDP and unemployment is negative and significant. The relationship between unemployment and GDP is negative but insignificant in the case of the short-run. FOLAWEWO–ADEBOJE (2017) deduced that the gross domestic product (GDP) growth has a negative effect on unemployment. AKHTAR–SHAHNAZ (2006) provided that the GDP growth has impacted on youth unemployment started from a certain growth.

DIETRICH (2013) confirmed that GDP growth has an impact on the unemployment rate of youth in which the relationships between GDP growth and youth unemployment are negative. ANYANWU (2014) summarized that the economic growth impacted on total youth unemployment, female and male youth unemployment and decrease them. CAPORALE–GIL-ALANA (2014) proposed that the main macroeconomic determinants of youth unemployment are GDP and inflation. Besides that their results prove that there is a long term relationship between GDP and inflation and youth unemployment.

GÖÇER–ERDAL (2015) stated that the relationship between economic growth and youth unemployment is negative and economic growth above the average can impact on youth unemployment and led to a decrease in youth unemployment. BAYRAK–TATLI (2016) informed that the GDP growth rate has a significant impact on decreasing youth unemployment in the short term. EBADALLA (2016) discovered that among determinants of youth unemployment in “Organization of Islamic Cooperation” (OIC) countries is GDP growth. For that and for the study to address the impact of economic growth on youth unemployment, the study will use the following hypothesis:

H1: Economic growth impact positively on youth unemployment in the Arab world.

The financial crisis and its impact either on total unemployment or youth unemployment are studied by many researchers to understand the effect of the financial crisis on unemployment and youth unemployment. Among the studies which study the impact of the crisis on unemployment and

youth unemployment, for example, VERICK (2009) who studied the impact of the recent crisis on the labour market by evaluate the impact of past 'Big 5 Crises' on unemployment and found that the young people got the hardest impact of the crises.

Moreover, ARPAIA–CURCI (2010) found that the "great recession" had impacted on workers and increased youth unemployment greatly. CHOUDHRY et al. (2010A) acknowledged that that financial crisis impacted on the youth unemployment rate and the impact on the youth unemployment rate is more than the impact on overall unemployment. CHOUDHRY et al. (2010B) studied the impact of financial crises on youth unemployment and found that the financial crisis has a significant effect on the unemployment rate among youth. BRUNO et al. (2016) illustrated that the financial crisis has a great impact and significant on youth unemployment in the short and long run but the impact is larger on youth unemployment than the impact on total unemployment. FURCERI–MOURUGANE (2012) determined that a financial crisis has a negative and permanent impact on potential output. They mentioned that on average, the financial crises can decrease the potential output by around 1.5-2.4%. For that and for the study to address the impact of the financial crisis on youth unemployment, the study will use the following hypothesis:

H2: The financial crisis impact negatively on youth unemployment and higher than its impact on older in the Arab world.

Economic freedom is playing a role and impact on unemployment in general and unemployment among young as well. Few studies conducted on addressing the impact of economic freedom on unemployment, for example, FELDMANN (2007) recognized that in particular, among young people and women, economic freedom can ultimately decrease unemployment. In addition to that, he concluded that the size of the government has an impact on youth persons and the labour force in which the smaller size of the government possibly decreasing unemployment. Regarding property rights, the more secure and strong law, the more favourable the impact on unemployment and decreasing youth unemployment and total unemployment as well. On the other hand regarding regulation, his study found that more flexibility in regulation is correlated with youth unemployment decline. The more liberal of international trade is correlated with youth unemployment decline as well. For that and for the study to address the impact of economic freedom on youth unemployment, the study will use the following hypothesis:

H3: Economic freedom impact positively on youth unemployment in the Arab world.

2. LITERATURE REVIEW

2.1. The labour market in Arabic countries

Unemployment is a challenge that many countries facing around the world. Arabic countries as other countries are facing the challenges of unemployment in their regions. On the other hand, in general, these countries have high percentages of youth among their population besides the growth of the population. The growth of the population is a very important indicator to explain the situation of the labour market in Arabic countries. Moreover, participation in the labour market, the total unemployment, and youth unemployment play a role in the illustrating status of the labour market in the Arab world. Besides that, the direction of economic growth and employment among sectors is critical for explaining the labour market in the Arab world.

2.1.1. Trends of population growth

Figure 1 shows that the population growth rate is over percentage (1%) growth among most of the Arabic countries in 2017. The population growth rate is critical because the population of a country is playing a role in the supply for the labour market which impacts on the size of the labour force in a country. Moreover, *Figure 1* shows that the highest population growth rate in 2017 was in Bahrain and the lowest one in Syria. Most of the Arabic countries' population growth rate is between one to four percentages in 2017. In the case of the Arab countries in Africa which includes Algeria, Egypt, Libya, Morocco, Sudan, and Tunisia. The highest population growth rate among these countries found in Sudan with 2.4% and the lowest population growth rate among these countries found in Tunisia with 1.1%.

Most of these countries have various population growth rates, for example, Algeria (2%), Egypt (2.1%), Libya (1.4%), Morocco (1.3%), Sudan (2.4%), and Tunisia (1.1%). On another hand, In the case of the Arab countries located in Asia, which includes Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, the United Arab Emirates, and Yemen. The highest population growth rate among these countries found in Bahrain with 4.7% and the lowest population growth rate among these countries found in the United Arab Emirates with 1.3%. Population growth rates among these countries varied for example, Bahrain (4.7%), Iraq (2.5%), Jordan (2.4%), Kuwait (2.5%), Lebanon (1.5%), Oman (4.1%), Qatar (2.6%), Saudi Arabia (2%), Syria (-2.2%), the United Arab Emirates (1.3%), and Yemen(2.4%). Moreover, the higher population growth rate appeared in Arabic countries located in Asia, in which Bahrain (4.7%) and Oman (4.1%) can be an example of the higher population growth rate of Arab countries situated in Asia.

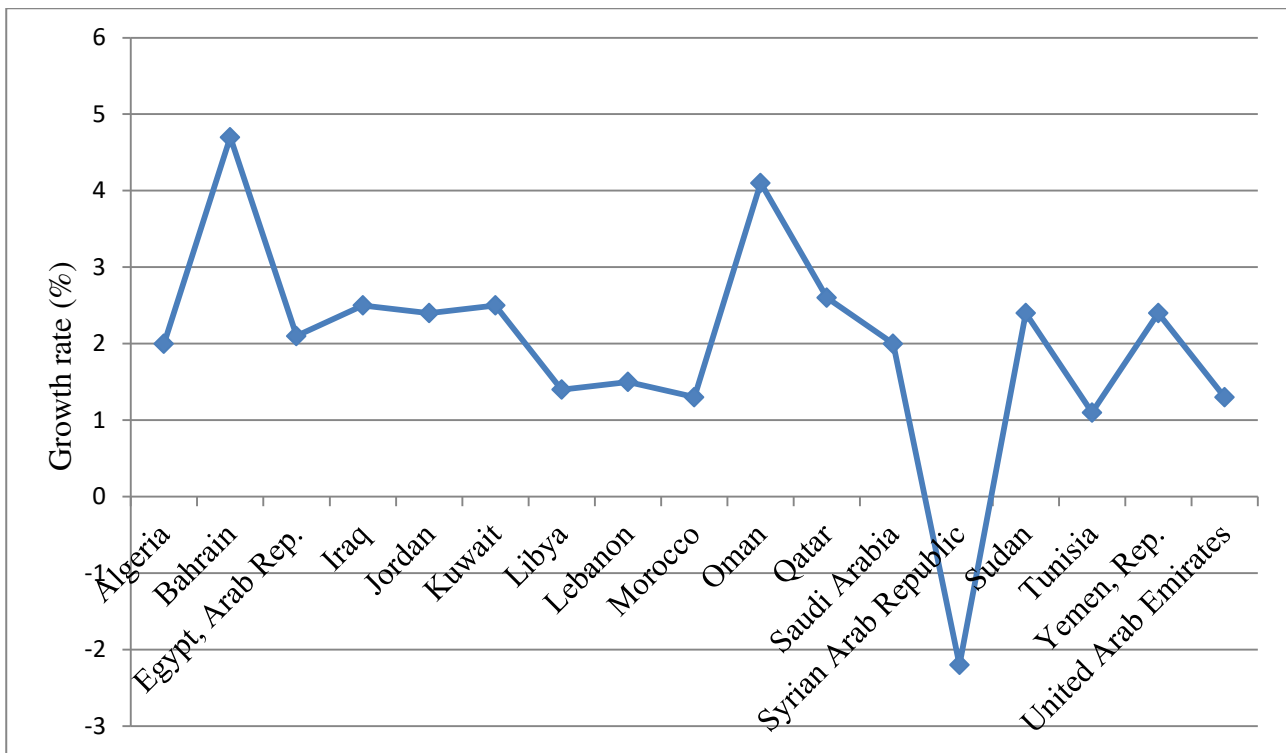


Figure 1: Population growth rate (%) in some Arabic countries in 2017

Source: The World Bank, World Development Indicators database

2.1.2. Trends in labour force participation, total and youth unemployment

On the other side, *Figure 2* shows the labour force participation rate, age group 15+ in Arabic countries in 2017. The lowest participation rate was in Yemen with 38.5% and the highest rate was Qatar with 86.9%. Most of Gulf countries like Bahrain, Kuwait, Oman, Qatar and the United Arab Emirates (UAE) have a high labour force participation rate with more than 70% in 2017. Most of the Arabic countries labour force participation rate is between 40% to 80% in 2017. In the case of the Arab countries located in Africa, which includes Algeria, Comoros, Djibouti, Egypt, Libya, Mauritania, Morocco, Somalia, Sudan, Tunisia. The highest labour force participation rate among these countries found in Djibouti with 62.9% and the lowest labour force participation rate among these countries found in Algeria with 41.4%.

Most of these countries have labour force participation rate located over 45% which includes Djibouti (62.9%), Egypt (48%), Libya (52.4%), Mauritania (46.3%), Morocco (45.5%), Somalia (46.3%), Sudan (47.2%), and Tunisia (46.6%) with the exception of Algeria (41.4%), Comoros (43.9%). On another hand, In the case of the Arab countries located in Asia, which includes Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syria, the United Arab Emirates, and Yemen. The highest labour force participation rate among these countries found

in Qatar with 86.9% and the lowest labour force participation rate among these countries found in Yemen with 38.5%. Labour force participation rate among these countries varied for example, Bahrain (72.4%), Iraq (42.5%), Jordan (39.4%), Kuwait (74.1%), Lebanon (47.2%), Oman (71%), Palestine (45.1%), Qatar (86.9%), Saudi Arabia (56.3%), Syria (41.5%), the United Arab Emirates (83.4%) and Yemen (38.5%). Furthermore, the higher labour force participation rate showed in Arabic countries located in Asia, in which Bahrain (72.4%), Kuwait (74.1%), Oman (71%), Qatar (86.9%), the United Arab Emirates (83.4%) can be an example for the higher labour force participation rate of Arab countries in Asia.

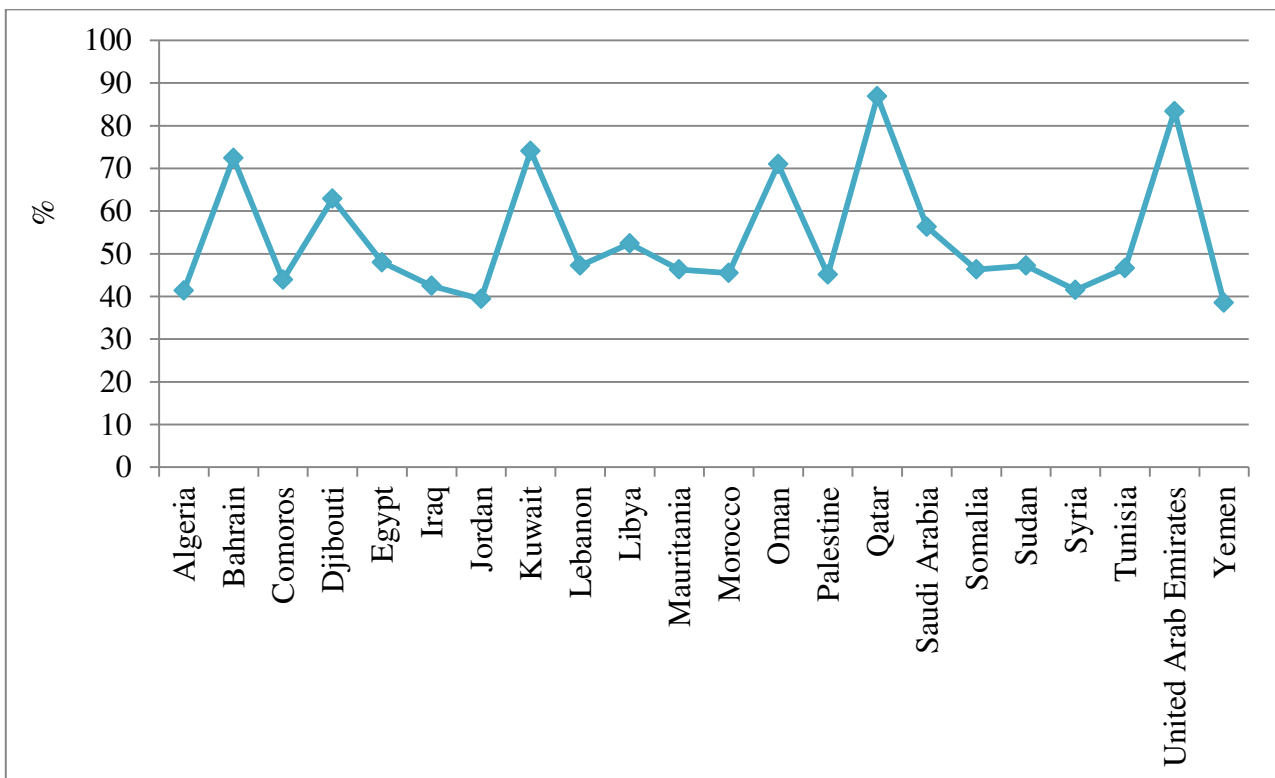


Figure 2: Total labour force participation rate (%) in Arabic countries in 2017

Source: International Labour Organization (ILO), ILOSTAT, ILO modelled estimates

On the other hand, *Figure 3* shows the total unemployment rate in Arabic countries in 2017. Most of Gulf countries have a low unemployment rate, for example, Qatar has only 0.1% total unemployment rate, Bahrain (1%), Kuwait (2%), Oman (3.1%), UAE (2.5%) and Saudi Arabia (5.9%). The lowest unemployment rate was in Qatar with 0.1% and the highest was in Palestine with 27.4%. The total unemployment rate in most Arabic countries is less than 15% and there are three countries located more than this rate like Palestine with 27.4%, Libya with 17.1% and Tunisia with 15.4% in 2017. In the case of the Arab countries located in Africa, which includes Algeria, Comoros, Djibouti, Egypt, Libya, Mauritania, Morocco, Somalia, Sudan, Tunisia. The highest total

unemployment rate among these countries found in Libya with 17.1% and the lowest total unemployment rate among these countries found in Comoros with 3.7%.

Most of these countries have total unemployment rate jump more than 10% which includes Algeria (12%), Djibouti (11.2%), Egypt (11.8%), Libya (17.1%), Mauritania (10.3%), Somalia (13.9%), Sudan (12.8%), and Tunisia (15.4%) with the exception of Comoros (3.7%) and Morocco (9.1%). In the case of the Arab countries located in Asia, which includes Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syria, the United Arab Emirates, and Yemen. The highest total unemployment rate among these countries found in Palestine with 27.4% and the lowest total unemployment rate among these countries found in Qatar with 0.1%.

Most of these countries have a total unemployment rate located less than 10% which includes Bahrain (1%), Iraq, (7.9%), Kuwait (2%), Lebanon (6.1%), Oman (3.1%), Qatar (0.1%), Saudi Arabia (5.9%), Syria (8%), and the United Arab Emirates (2.5%) with the exception of Jordan (14.9%), Palestine (27.4%) and Yemen(13.2%). Over the above, the lower total unemployment rate seen in Arabic countries located in Asia, in which Bahrain (1%), Kuwait (2%), Oman (3.1%), Qatar (0.1%), and the United Arab Emirates (2.5%) can be an example for the lower total unemployment rate seen in Arab countries in Asia.

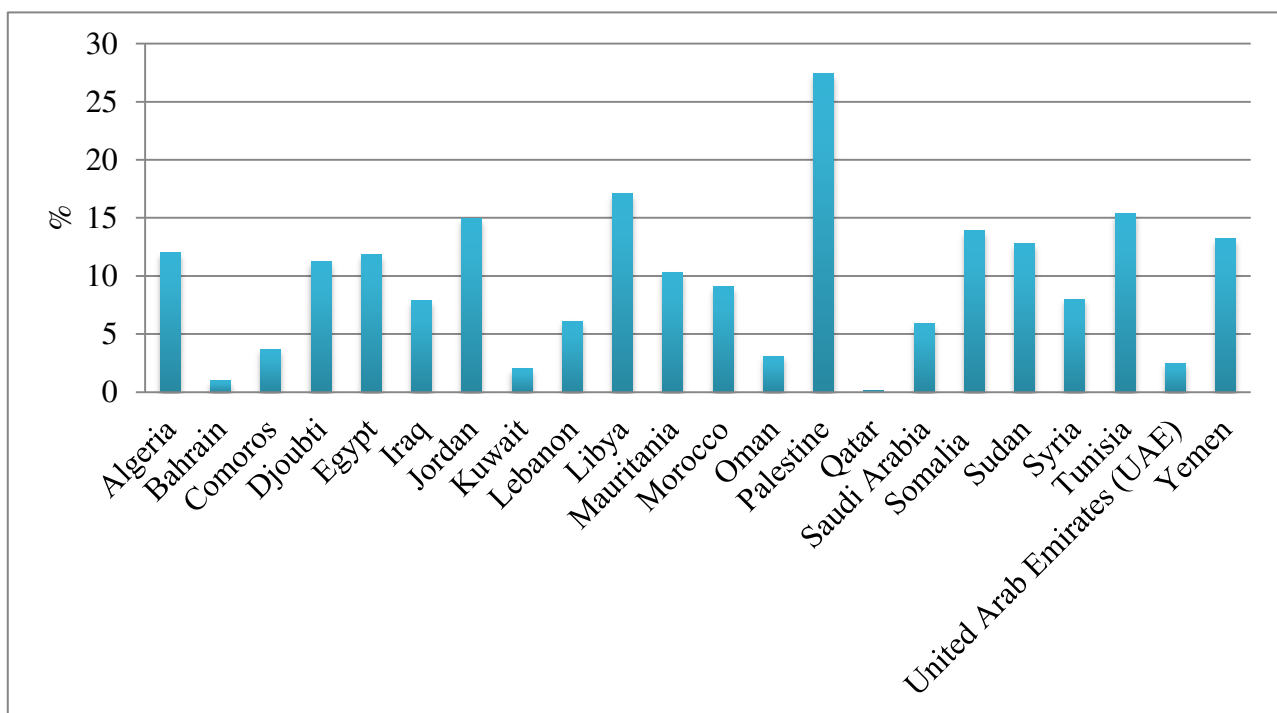


Figure 3: Total unemployment rate (%) in Arabic countries in 2017

Source: International Labour Organization (ILO), ILOSTAT, ILO modelled estimates

On the other hand, *Figure 4* shows the youth unemployment rate in Arabic countries in 2017. The lowest youth unemployment rate was in Qatar with 0.5% and the highest youth unemployment rate was in Palestine with 43.1%. Algeria, Egypt, Jordan, Libya, Palestine, and Tunisia have a higher youth unemployment rate in Arabic countries with 29.7%, 33%, 34.9%, 41.2%, 43.1%, and 34.7% respectively. Gulf countries have a low youth unemployment rate, for example, Qatar has only a 0.5% youth unemployment rate, Bahrain (4.7%), Kuwait (13.6%), Oman (8.4%), UAE (8%) and Saudi Arabia (25.3%) in 2017. *Figure 4* shows that most of the Arabic countries have youth unemployment rate located around and less 25% in which six of the Arab countries goes fare over this rate including Algeria, Egypt, Jordan, Libya, Palestine, and Tunisia.

In another way, most of the higher unemployment rates among youth which far over 25% in Arabic countries located in Africa including Algeria, Tunisia, Egypt, and Libya. On another side, the rest of Arabic countries which have a higher unemployment rate of youth far over than 25% in Arabic countries located in Asia which includes Jordan and Palestine in 2017, but despite this, the lower youth unemployment rate seen in Arabic countries located in Asia, in which Qatar (0.5%), Bahrain (4.7%), Kuwait (13.6%), Oman (8.4%), UAE (8%) can be an example for the lower youth unemployment rate seen in Arab countries in Asia.

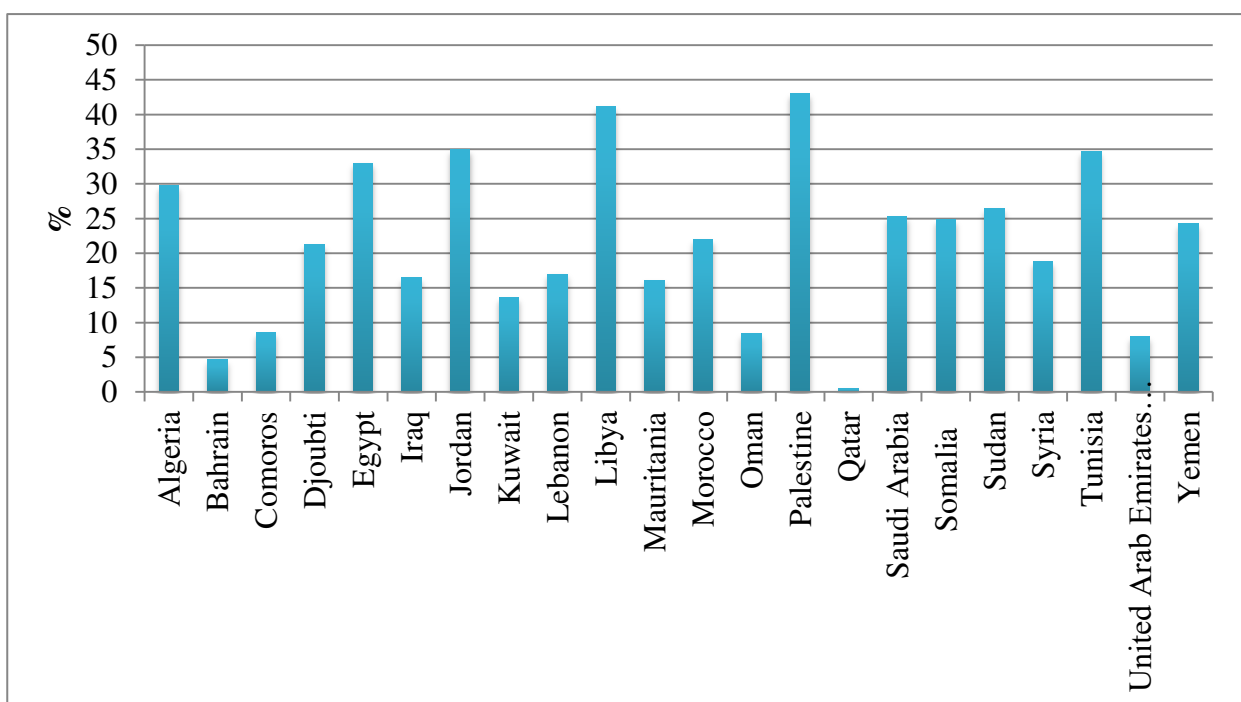


Figure 4: Youth unemployment rate (%) in Arabic countries in 2017

Source: International Labour Organization (ILO), ILOSTAT, ILO modelled estimates.

2.1.3. The GDP growth and employment among sectors

On the demand side, Gross Domestic Product (GDP) is connected with unemployment by so-called “Okun Law”, which indicates that the relationship between the growth and unemployment in which the relationship between the two variables is negative. The relationship will help to understand how the unemployment rate with the growth in which this connection can be helpful for the case of youth unemployment as well. *Figure 5* shows the GDP growth rate in some Arabic countries in 2017. Most of the Arabic countries have a positive growth rate. The highest positive GDP growth rate was in Sudan with 4.3% and the lowest positive growth rate was Lebanon with 0.6% in 2017. In another way, most of the higher annual growth in Arabic countries located in Africa including Algeria, Tunisia, Morocco, Egypt, Sudan, and Libya. Some of these countries reach over a 4% growth rate which all located in Africa which includes Morocco, Egypt, and Sudan.

On another side, the rest of the Arabic countries which have higher annual growth in Arabic countries are located in Asia which includes Bahrain, Jordan, Lebanon, Qatar, and UAE in 2017. The overview of the growth which is varied among Arab countries located in Asia or Arab countries situated in Africa which can play a role in might explaining the demand side variation regarding employment in these countries and from another side this growth can impact on unemployment and therefore youth unemployment among these Arabic countries.

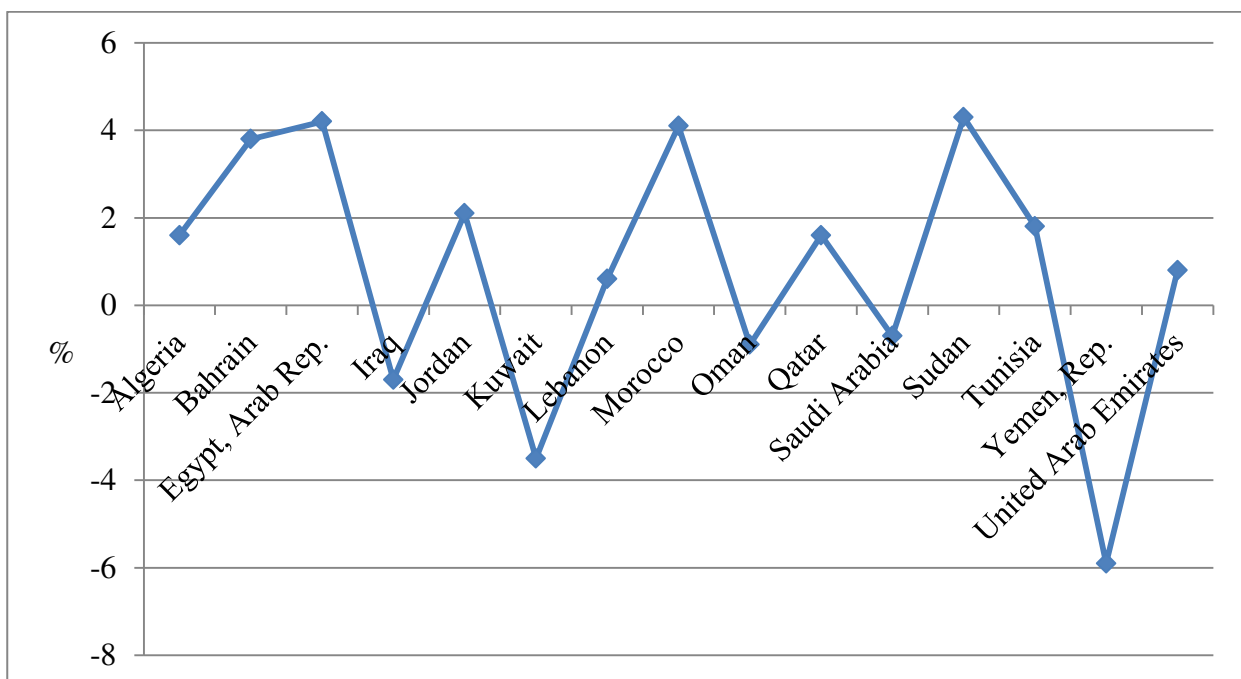


Figure 5: GDP annual growth rate (%) in some Arabic countries in 2017

Source: The World Bank, World Development Indicators database

Employment among sectors plays a critical impact on unemployment in general especially the employment in service which plays an important role in creating employment opportunities and decrease unemployment as GOMEZ-SALVADOR-LEINER-KILLINGER (2008) found. *Figure 6* shows the employment in (services, agriculture, and industry), percent of total employment in 2017. Employment in service has more shares in Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman, Palestine, Saudi Arabia, Syria, Tunisia, Yemen, and UAE. The highest share of employment in service was in the United Arab Emirates with 72.8% and the lowest share of employment in service was in Somalia with 21.1%.

On the other side, Employment in agriculture has more shares in Comoros, Mauritania, Somalia, and Sudan. The highest share of employment in agriculture was in Somalia with 72.5% and the lowest share of employment in agriculture was in Bahrain with 1.1%. Employment in the industry has more shares only in Qatar. The share of employment in the industry exceeds the share of employment in service in Qatar in 2017. The highest share of employment in the industry was in Qatar with 54.5% and the lowest share of employment in the industry was in Somalia with 6.4% in 2017. The highest share of employment in service and industry appeared among the Arab countries in Asia but the highest share of employment in agriculture can see among Arab countries in Africa.

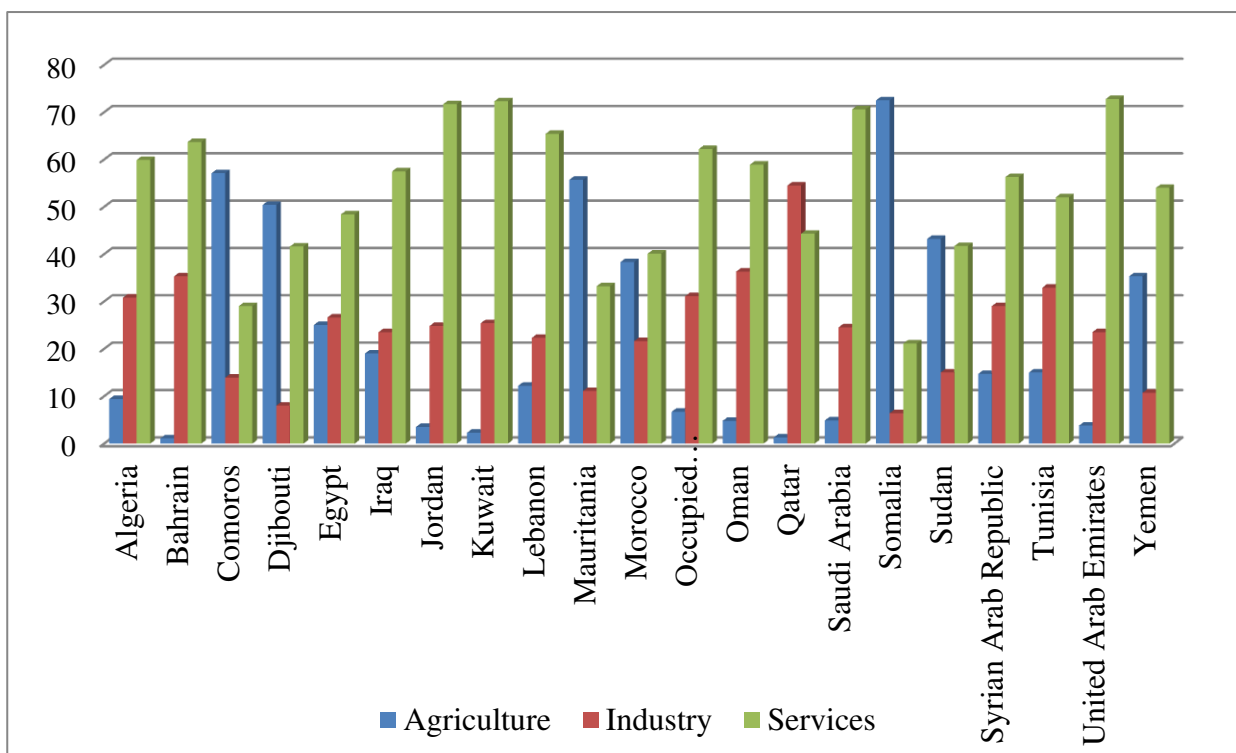


Figure 6: Employment in (services, agriculture, industry) of total employment (%) in some Arab countries in 2017

Source: International Labour Organization (ILO), ILOSTAT, ILO modelled estimates.

2.2. Theoretical framework

The supply and the demand are the basic concepts to understand unemployment in which in macroeconomics perspective, economic growth (GDP growth) can represent the demand and the labour force can represent the supply. As in macroeconomics GDP equals Aggregate Demand (AD), for that in case of demand-side can represent by AD. Both GDP and AD represented by many variables which include consumption, investment, government spending, export, and import. This in term calculations, but how this AD related to supply-side which represented by labour force and more specifically, how AD is related to unemployment.

Moreover, some empirical studies such as O'HIGGINS (2001) who stated that among the factors than can explained youth unemployment is aggregate demand. Further, this is in line with O'HIGGINS (1997) who found that the determinants of youth unemployment inconstancy can be explained by aggregate demand besides other factors.

In addition to that, "Okun's Law" in 1962 investigated the relationship between Gross Domestic Product (GDP) and unemployment. According to this law, the relationship between GDP and unemployment is negative. This implies how the GDP can impact on unemployment. On the other side and from the macroeconomics perspective, the labour force can represent the supply side. In the case of supply-side which is represented by the labour force? The labour force includes employed people, unemployed people and the people which out of the labour force. Among these types, many characteristics can influence the status of each type, for example, age, education, gender, location and etc. The impact of these characteristics proved by many empirical studies that prove for example how these characteristics affect on unemployment or youth unemployment like for example, NGANWA et al. (2015) pointed out that place of residence place; gender, age categories, and marital status have a significant impact on the urban youth unemployment in Ethiopia. In addition to that, ABSHOKO (2016) revealed that age, regional differences, electricity access, market information access, the families' economic status and level of education of youth, gender are the major factors that determine youth unemployment in Ethiopia. Further, NDAGIJIMANA et al. (2018) found that education, gender, age, and geographical location have an impact on employment among youth in Rwanda. These imply that how these characteristics of individuals can impact and role in unemployment determinants in general and youth unemployment determinants as well.

On the other hand, O'HIGGINS (2001) in his study mentioned that among the factors that explain the reasons for youth unemployment are aggregate demand and the youth labour force size. O'HIGGINS (2003) investigated trends in the labour market of youth in developing and transition

countries. He found that the conditions of the aggregate labour market and the demographic factors strongly impact on youth unemployment. Long-time ago, FREEMAN–WISE (1982) studied the nature, causes, and consequences of the youth labour market problem. Among the causes, they mentioned that economic strength is one of the substantial youth employment determinants. Besides that, they stated that the share of youths in the population is another variable that determines the employment of youth. The minimum wage is also a serious variable that can determine the employment of youth in which the minimum wage raise leads to a decrease in employment of youth.

HUTENGS–STADTMANN (2014) examined how unemployment among different ages response to GDP growth. They utilized a panel regression method to analyze the changes in the unemployment rate for different age categories and real GDP growth rate. They found that among the age categories, youth (age 15-24) has the highest absolute Okun coefficients which imply that youth is more affected by fluctuations of the business cycle. On the other hand, males got Okun coefficients in absolute more than females. DIXON et al. (2016) analyzed Okun relationship between output gaps and rates of unemployment by utilizing 20 of OECD countries from 1985 to 2013. They found that the Okun coefficient is different among ages and lowering with age. They proved that, the impact of changing in output gap on the unemployment rate lowering with age.

On another side, many studies proved the impact economic and financial crisis on unemployment and youth unemployment (O’HIGGINS, 2012; BRUNO et al., 2014; DEMIDOVA–SIGNORELLI, 2010; CHOUDHRY et al., 2010B; BRUNO et al., 2014; BRUNO et al., 2016). This implies how the economic and financial crisis can impact on unemployment and youth unemployment which indicates the role of the economic and financial crisis in explaining the unemployment among youth in our study. In addition to that and in particular, among young people and women, economic freedom can ultimately decrease unemployment as FELDMANN (2007) concluded. This implies how economic freedom can impact on unemployment and youth unemployment which indicates the role of economic freedom in explaining the unemployment among youth in our study.

2.3. The factors that impact on unemployment and youth unemployment

Many studies addressed youth unemployment and its determinants and how the crisis impact on it, but the research on this topic scarce in the Arabic world, especially in the case of studying the many Arabic countries together. To our knowledge, we found just one study in case of addressing many Arabic countries but this study addressing Muslim countries and don’t focus only on the Arabic countries. Besides that, only a few variables are studied regarding youth unemployment determinants. Besides that, the impact of crisis not studies yet. All of these reasons pushed us to

conduct this study in which we will address youth unemployment and its determinants by focusing only on the Arab world. Besides, studying the determinants of youth unemployment, we will address if the financial crisis has impacted on youth unemployment or not.

In my study, I will study the determinants of youth unemployment from a macroeconomic perspective. For that, I will summarize some of the studies which studied youth unemployment from a macroeconomic perspective. In the case of overall unemployment, many studies address overall unemployment and how it is related to other macroeconomic variables like GDP, inflation, etc. Among the studies which address the topic, some of the studies address the overall unemployment determinants like (AGHION–HOWITT, 1994; BASSANINI–DUVAL, 2006; KAMRAN, et al., 2014; CHOWDHURY–HOSSAIN, 2014; ALRABBA, 2017; TRIMURTI–KOMALASARI, 2014; ŞAHIN, 2016; FOLAWEWO–ADEBOJE, 2017; OGBEIDE et al., 2015; ALRAYES–ABU WADI, 2018; DALMAR et al., 2017; MAHMOOD et al., 2014; SCHOEMAN et al., 2008; MARELLI, et al., 2013; BAYAR, 2014; ABBAS, 2014; MAQBOOL et al., 2013; EITA–ASHIPALA, 2010; ARSLAN–ZAMAN, 2014; KOKOTOVIĆ, 2016).

Moreover, in the case of youth unemployment determinants, many studies address youth unemployment as well and how it is related to other macroeconomic variables like GDP, inflation besides other variables as well. Some of these studies which focus on addressing youth unemployment and its determinants like (O’HIGGINS, 1997; BLINOVA et al., 2015; DUNSCH, 2016; DEMIDOVA–SIGNORELLI, 2012; DIETRICH, 2013; NGANWA et al., 2015; DIETRICH–MÖLLER, 2016; TOMIĆ, 2018; SAYRE et al., 2015; AKHTAR–SHAHAZ, 2006; BAYRAK–TATLI, 2016; MSIGWA–KIPESHA, 2013; HAN et al., 2015; ABSHOKO, 2016; BAYRAK–TATLI, 2018; OUEDRAOGO, 2018; ANYANWU, 2013; CAPORALE–GIL-ALANA, 2014; BRUNO et al., 2014; KOKOTOVIĆ, 2016; BATU, 2016; EBADALLA, 2016).

In the case of the financial crisis, many studies addressed the impact of the financial crisis on total or youth unemployment. Some of these studies for example like (O’HIGGINS, 2012; BRUNO et al., 2014; DEMIDOVA–SIGNORELLI, 2010; CHOUDHRY et al., 2010B; BRUNO et al., 2014; CHO–NEWHOUSE, 2013; BANERJI et al., 2015; VAN OURS, 2015; BRUNO et al., 2016; VERICK, 2009; ARPAIA–CURCI, 2010; CHOUDHRY et al., 2010A; BERNAL-VERDUGO et al., 2013).

I will go through these studies starting from the studies which investigate the factors that impact and determine unemployment and after that, I will go through the studies which investigate the factors that affect on and determine youth unemployment. Firstly, to begin with, the studies which address the factors that impact on unemployment in which many researchers studied the factors that

determine unemployment, for example, AGHION–HOWITT (1994) studied the impact of growth on long-term unemployment. They found that growth can impact on unemployment in two impacts “capitalization and creative destruction”. In terms of capitalization impact, the growth increase leads to a decrease in the rate of unemployment. On the other hand, in the term of creative destruction impact, the growth increase leads to increasing the balance of unemployment either by increasing the job separation rate or by job creation discourage.

SCHOEMAN et al. (2008) examined the unemployment rate determinants in South Africa for the period 1970 to 2002. They found that key determinants of the unemployment rate are the labour force unionization degree, total fixed capital stock, and interest rate. EITA–ASHIPALA (2010) evaluated the unemployment determinants in Namibia from 1971 to 2007. They utilized the Engle-Granger two-step econometric procedure for the unemployment model. They found that the relationship between unemployment and investment is negative and it is same for the relationship between unemployment and inflation. RAFIQ et al. (2010) examined the factors that determine unemployment from 1998 to 2008 in Pakistan. They found that FDI, inflation, growth of population are the determinants of unemployment in Pakistan. The study concluded that FDI and inflation affecting negatively on unemployment while the growth of the population has a positive effect on unemployment in Pakistan.

MARELLI et al. (2013) summarized the main unemployment determinants in their study and they divided it into three categories’. The first category connected with conditions of macroeconomic cyclical which can be explained by so-called “Okun's Law” which represents the relationship between unemployment changes the GDP growth. The second category connected with structural or demographic conditions. The demographic can includes “the share of young or old persons on the whole populations in addition to the migration as well”. The third category connected with labour market institutions like “employment protection legislation (EPL), unemployment benefits etc”.

MAQBOOL et al. (2013) examined the unemployment determinants in Pakistan from 1976 to 2012 by understanding the relationship among the unemployment, GDP, population, foreign direct investment, external debt and inflation. They utilized the Autoregressive Distributed Lag (ARDL) approach to determine the determinants of unemployment. They found that in the short-run and long-run, GDP, population, foreign direct investment, and inflation are the significant determinants of unemployment in Pakistan. ABBAS (2014) inspected the long term impact of economic growth on the level of unemployment in Pakistan for the period from 1990 to 2006. He utilized the ARDL method in his study and found that there is a negative long term impact done by economic growth on the level of unemployment.

BAYAR (2014) studied the impact of foreign direct investment inflows, economic growth, and export on unemployment in Turkey by studying the relationship between foreign direct investment inflows, economic growth, and export and unemployment. He utilized data from the first quarter of 2000 to the third quarter of 2013 and employs an autoregressive distributed lag method for analyzing the relationships between the variables. The study found that foreign direct investment inflows, economic growth, export, and unemployment have long term relationships. Additionally, the relationship between economic growth, export, and unemployment found negative. On the other hand, the relationship between foreign direct investment inflows and unemployment found positive. ARSLAN-ZAMAN (2014) evaluated the determinants of unemployment in Pakistan from 1999 to 2010. They utilized the ordinary least square model for conducting the study. They found that some of the variables affect negatively on unemployment such as inflation rate, foreign direct investment, and rate of gross domestic product. On the other hand, they found that there is a positive relationship between unemployment and the growth rate of the population.

CHOWDHURY-HOSSAIN (2014) examined macroeconomic determinants of unemployment rate in Bangladesh from 2000-2011. They utilized the “Simple Single Equation Linear Regression Model” and found that there is a negative effect of exchange rate and GDP growth rate on unemployment. On the other side, they found that the inflation rate has a positive effect on unemployment. KAMRAN et al. (2014) analyzed the unemployment determinants in Pakistan from 1981-2010. They utilized the regression method and found that population growth has a positive impact on unemployment. On another hand, they found that there is a negative effect of foreign direct investment and literacy rate on unemployment.

MAHMOOD et al. (2014) studied the unemployment determinants in Pakistan from 1990 to 2010. Among the tested variables, they found that the labour force has a positive impact on unemployment. In the case of inflation and Foreign Direct Investment (FDI), it impacted negatively on unemployment in Pakistan. TRIMURTI-KOMALASARI (2014) evaluated the relationship between unemployment and economic growth, inflation, and the minimum wage in seven provinces of Indonesia from 2004 to 2012. They utilized regression methods and found that economic growth and minimum wage does not have a significant impact on unemployment. In addition to that, they found that inflation impacted positively on unemployment. AQIL et al. (2014) inspected what determines unemployment in Pakistan. They found that the growth of population and FDI negatively related to unemployment while in the case of inflation and GDP growth is found to be not affecting significantly on unemployment. ASLIDDIN-GHARLEGHI (2015) investigated what determines high unemployment in Tajikistan. They reported that low wages and shortage of education are major determinants of high unemployment in Tajikistan in which both of them

associated positively with unemployment. BAAH-BOATENG (2015) tested the causes of unemployment in Ghana from both labour demand and supply perspectives in Ghana. He proved that unemployment among youth is more than older in which the rate of unemployment is decreasing with age and rising with education. In addition to that, he found that sex, location of rural-urban, poverty situation; reservation wage and marital status are among sources of unemployment in Ghana.

GUR (2015) researched the determinants of unemployment in BRIC Countries which include (Brazil, Russia, India, and China). The study utilized the Panel data analysis for the period from 2001 to 2012. The study found that unemployment raises mostly because of inflation and the growth of population. In addition to that, the study found that the major factors that lowering unemployment are GDP growth, volume of trade, overall investment, and the growth of the industrial product consecutively. KHUMALO-EITA (2015) explored the unemployment macroeconomic determinants in Swaziland. They found that unemployment determinants in Swaziland are government spending, democratization of South Africa in 1994 dummy variable, the actual to potential GDP ratio, 2007-2009 global economic crisis, and inflation.

SUNDE-AKANBI (2015) addressed what causes unemployment in Namibia from 1980 to 2013. They found that the important factors that impact on unemployment are aggregate demand, real wages, and labour supply. OGBEIDE et al. (2015) tested the unemployment determinants in Nigeria in the period of 1981 to 2013. They found that trade openness, depreciation of exchange rate, GDP, and foreign direct investment are among the factors that help in the repression of unemployment. On the other side, they found that some of the factors made unemployment worse like financial development, and natural resource rent in Nigeria. ONIORE et al. (2015) determined the factors the impact on unemployment by focusing on macroeconomic determinants. They found that in the short run, inflation rate, private domestic investment, growth rate of GDP and openness degree are significantly impacting on unemployment in Nigeria.

KOKOTOVIĆ (2016) comparing the factors that impact on total unemployment and youth unemployment in some European countries. He utilized Distributed Lags (ARDL) approach and found that in Croatia and Spain the increasing of the ratio of public debt-to-GDP impacted more on youth unemployment than the total unemployment. ŞAHİN (2016) evaluated the unemployment determinants in China from 1982 to 2014. He utilized Autoregressive Distributed Lag (ARDL) method and found in case of the long run, that the relationship between GDP and unemployment is negative and significant and in addition to that, he found that the relationship between the unemployment rate and foreign direct investment and Inflation rate is positive but insignificant. The relationship between unemployment and GDP, foreign direct investment and inflation are negative

but insignificant in the case of the short run. AHMAD et al. (2017) inspected the variables that impact and determines unemployment in Pakistan. They concluded that inflation, growth of population and foreign direct investment are negatively associated with unemployment in Pakistan. ALRABBA (2017) analyzed what determine rate of unemployment in Jordan from 1992 to 2015. He found that private investment impacted negatively on unemployment and positively in case of the inflation rate.

DALMAR et al. (2017) tested the unemployment determinants in Somalia from 1995 to 2014. They found that the relationship between unemployment and external debt, GDP, and growth of population is positive and on another hand, they found that the relationship between unemployment and exchange rate and gross capital formation is negative and not significant. FOLAWEWO–ADEBOJE (2017) examined the macroeconomic determinants of unemployment in the economic community of West African states from 1991 to 2014. They utilized panel data methods and found that the growth of gross domestic product (GDP) and foreign direct investment (FDI) have a negative effect on unemployment, while the labour productivity and inflation have a positive effect on unemployment.

O'NWACHUKWU (2017) for the period of 1980 to 2016 studied the unemployment rate determinants in Nigeria and found that population, government expenditure and inflation appeared to be significant to determine and illustrate unemployment but on another hand, real GDP appeared to be not significant to illustrate unemployment in Nigeria. YÜKSEL–ADALI (2017) inspected the variables that impact on unemployment in Turkey. They utilized Multivariate Adaptive Regression Splines (MARS) method and used quarterly data from the year 2003 to 2016. They reported that inflation and economic growth are among the variables that impact on unemployment in Turkey in which both of these variables have a negative impact on unemployment.

ALRAYES–ABU WADI (2018) evaluated the unemployment determinants in Bahrain from 1980 to 2015. They aimed to study the effect of the government expenditure, inflation, fixed capital formation gross rate, and GDP on unemployment. They found that economic growth and inflation have no significant effect on unemployment. On addition to that, they found that the fixed capital formation and government expenditures have a significant effect on unemployment in Bahrain. RIAZ–ZAFAR (2018) addressed the unemployment determinants in Pakistan. They utilized Auto Regressive Distributed Lag method using data for the period from 1990 to 2015. They found that unemployment and GDP appeared to be negatively related in the long run. In addition to that, they found that unemployment is positively related to technical and vocational education and population

in which the relationship is not significant in case of technical and vocational education and significant in case of the population in Pakistan.

MUAFIQIE et al. (2018) tested the factors that impact on the level of unemployment in Indonesia. The study covers the period from 2000 to 2016. They found that GDP, wages, inflation and flow of foreign capital are the factors that impacting on the level of unemployment in Indonesia. DE LIMA–MARQUES (2019) examined what determines unemployment in Brazil by utilizing the ARDL method. They reported that there is a negative relationship between unemployment and exports, inflation, and the national product in the long term in which the raising in these factors would drive unemployment to decrease.

On the other side, the factors that determine youth unemployment and impacts on it studied by many scholars. Among the studies which addressed the youth unemployment determinants, for example, O’HIGGINS (1997) studied the youth unemployment challenges in Europe. In his paper, he concluded that the youth unemployment level is determined by conditions of macroeconomic. In his paper, he mentioned that the determinants of youth unemployment inconstancy can be explained by three main factors which are aggregate demand, youth labour force size and wages of youth.

KORENMAN–NEUMARK (2000) used the cross-country approach of OECD countries from 1970-1994. They found that a large youth population impacted on unemployment and increase it. They mentioned that the drop in the number of young people in at least a number of countries surveyed should lead to a decrease in youth unemployment rates. According to their projection, the low number of young people in the population should improve the labour market for young people over the next ten to fifteen years in some countries especially those countries which have high youth unemployment rates. The general improvements in the labour market have more impact on youth unemployment than the cohort size falling. The institutional changes in the labour market have more impact on youth unemployment decrease than the changing in population age structure. AKHTAR–SHAHNAZ (2006) examined the dimensions of youth unemployment in Pakistan in both the macro and micro during the 1990s. They utilized the simple bivariate regression model and found the GDP growth has impacted on youth unemployment started from a certain growth. In addition to that, they found that the growth rate of services sector GDP impacted more in decreasing unemployment among females. Besides that, they found that private sector investment growth is more helpful in decreasing unemployment among youth than the public one.

GOMEZ-SALVADOR–LEINER-KILLINGER (2008) analyzed unemployment of youth in the Euro Area. They found that the relationship between the youth unemployment rate and the share of young people in the total population is positive in the Euro Area. On the other hand, minimum

wages and employment protection impacted positively on youth unemployment in which an increase in minimum wages and employment protection led to increasing youth unemployment. On the other side, Active Labour Market Policies (ALMPs) founded to be decreased youth unemployment. Moreover, they found that the increase in the share of services employment impacting negatively on youth unemployment and can decrease the young person's unemployment.

DEMIDOVA–SIGNORELLI (2012) investigated the youth unemployment determinants in 75 Russian regions for the period 2000-2009. They found that the youth population in the regions, the rate of migration, economic development level, pensioners share and export and import among the factors that impact on youth unemployment. Among their results, they found that the economic development level plays an important role in youth unemployment in which as the economic development level increase, unemployment of youth goes down. In terms of crisis, they found that the 2008–2009 crises impacted on the unemployment of youth people more than the unemployment of adults.

ANYANWU (2013) evaluated the macroeconomic determinants of youth employment in Africa from 1991 to 2009. The study found that real GDP per capita impact negatively on youth employment. On the other hand, the domestic investment rate and real GDP growth have a positive association with youth employment. Moreover, inflation increase has a negative association with youth employment in North Africa. DIETRICH (2013) addressed youth unemployment in 23 European Union countries from 2001 to 2010. He utilized fixed-effect panel method and among the findings of the study, he found that GDP growth, education level and share of employment in the industry have an impact on the unemployment rate of youth in which the relationships between these variables and youth unemployment is negative.

ESCUDERO–MOURELO (2013) inspected the macro and microeconomic determinants of youth unemployment and inactivity rates. They found that the conditions of the aggregate labour market have the major impacts beside youth cohort size implications. In addition to that, they concluded that to improve employment among youth, vocational training can be the most impactful especially to women. MSIGWA–KIPESHA (2013) tested the factors that determine youth unemployment in Tanzania. They utilized the multinomial logistic regression model and they found that education, location, gender, and marital status and skills are the factors that illustrate the youth employment difference.

ANYANWU (2014) investigated the impact of Africa's intra-regional trade on youth unemployment. He utilized a cross-sectional time series from 1980 to 2010 and found that Africa's intra-regional trade, inflation, and economic growth impacted on total youth unemployment, female

and male youth unemployment and decreases them. BRUNO et al. (2014) studied the determinants of youth unemployment and how the crisis impact on youth unemployment. They utilized data of OECD countries from 1981 to 2009 and use a fixed effect panel method. They found that unemployment is having a high sensitivity to GDP growth. Besides that, they found that the financial crisis has a great impact and significant on youth unemployment and total unemployment but the impact is larger on youth unemployment than the impact on total unemployment. On the other hand, they found that the LMR has a significant effect on the unemployment rate.

CAPORALE-GIL-ALANA (2014) evaluated persistence and macroeconomic determinants of youth unemployment in 15 countries in Europe. They found that the main macroeconomic determinants of youth unemployment are GDP and inflation. Besides that their results prove that there is a long term relationship between GDP and inflation and youth unemployment. MARELLI-VAKULENKO (2014) addressed youth unemployment in Italy and Russia by considering the aggregate trends and the role of individual and family determinants which includes education level, marital status, age, gender, health, housing conditions, and household income. In case of sensitivity to the business cycle, they found that youth unemployment is more sensitive to the economic cycle than adult unemployment. Moreover, in case of individual and family characteristics, they found it is more important for the adult than young and they mentioned education and gender as examples. In addition to that they found the marital status and age have impact on unemployment and the importance of individual and family characteristics is found to be more than importance of regional characteristics regarding unemployment risk factors.

BLINOVA et al. (2015) analyzed the factors that impact on decreasing youth unemployment in Russian areas by using the regression model, and they found that vocational education can decrease youth unemployment in the regions. On the other hand, the structure of demographic impacted on youth unemployment besides the economic development level and employment rate and employment structure as well. In addition to that, they mentioned that the youth unemployment rate and employed share in industries of manufacturing, and households' share of internet access has a positive correlation. GÖÇER-ERDAL (2015) examined the relationship between economic growth and youth unemployment from 2006 to 2012. They use panel data analysis and cointegration tests and found that the relation between the two variables is negative and economic growth above the average can impact on youth unemployment and led to a decrease in youth unemployment. NGANWA et al. (2015) investigated the urban youth unemployment determinants in Ethiopia between 2006 and 2011. They utilized the logistic regression method and found that urban youth unemployment is more than the total unemployment rate. In addition to that, they found that urban unemployment of youth women is more than the urban unemployment of youth men. Besides that,

they found that gender, residence place, marital status, and age groups have a significant impact on the youth unemployment in the urban areas in Ethiopia. HAN et al. (2015) tested the factors that impact on the youth employment rate in South Korea. Among the variables they study, they found that the natural population growth rate has the greatest impact on youth employment and it has a positive impact on the youth employment rate.

ABSHOKO (2016) evaluated youth unemployment determinants in Ethiopia. He utilized the Binary logistic regression model to examine the factors that determine unemployment in Ethiopia. He found that age, regional differences, electricity access, market information access, the families' economic status and level of education of youth, gender, are the major factors that determine youth unemployment in Ethiopia. BAAH-BOATENG (2016) addressed the youth unemployment in Africa. He conducted his study on 41 African countries from 2000 to 2010. He utilized panel data regression methods and found that the share of youth in population impacted positively on the unemployment of youth. In addition to that, he did not find a significant impact of education on youth unemployment. On the other side, the study found that the manufacturing and agriculture value-added share in overall national output negatively impacted on youth unemployment.

BAYRAK-TATLI (2016) inspected the factors that impact on youth unemployment in turkey between 1988 and 2014. They found that higher education schooling rates and the producer price index have a negative and significant impact on youth unemployment in Turkey. In addition to that, they found, the GDP growth rate has a significant impact on diminishing youth unemployment in the short term. on the other hand higher education schooling rates and inflation impacting significantly on diminishing youth unemployment in the long run in Turkey.

EBAIDALLA (2016) studied the youth unemployment determinants in "Organization of Islamic Cooperation" (OIC) countries from 1993 to 2012. He utilized panel data analysis by addressing the effect of economic, demographic and institutional factors on youth unemployment. He found that youth unemployment in "Organization of Islamic Cooperation" (OIC) countries is determined by domestic investment, GDP growth, inflation and fertility rate. DIETRICH-MÖLLER (2016) investigated youth unemployment reasons in Europe. They utilized a fixed effect method and found that the sensitively of youth unemployment to the business cycle is more than the unemployment rate of adults. They stated that the impact of the business cycle is critical to explain the high rising of youth unemployment rate in Europe.

DUNSCH (2016) evaluated youth unemployment changes in connection to Okun's Law in Germany and Poland. He uses Okun coefficients for different age groups in the two countries. He found the sensitivity of youth to the business cycle is more than adults in Poland. In Poland,

unemployment rates are more sensitive to GDP changes than in Germany for all age groups. He added that young persons in Poland affected more than the young one in Germany by macroeconomic shocks. SAM-POKHARIYAL (2016) examined the youth unemployment economic determinants in Kenya for the period of 1979 to 2012. They utilized times series Autoregressive Distributed Lag Model (ARDL) and found that in the long run, the external debt and foreign direct investment impacted negatively on youth unemployment. In addition to that, in the long run, the population impacted positively on youth unemployment.

HOXHAIJ (2017) investigated the reasons for youth unemployment in Albania. The study found that youth unemployment and foreign direct investment are negatively related and the same relations appeared between youth unemployment and economic growth. Moreover, the study found that youth unemployment and the participation of youth in the labour market have a positive association. TOMIĆ (2018) addressed youth unemployment determinants in Europe from 2002 to 2014. He utilized panel data analysis and found that the most significant variables that determine the reduction of the unemployment rate among youth are construction sector share in gross value added and growth of real GDP. In addition to that, he found that the most variable that resists and raises unemployment among youth in European countries is public debt share in GDP.

BAYRAK-TATLI (2018) examined the youth unemployment determinants in OECD countries from 2000 to 2015. They used the youth unemployment rate as the dependent variable and the independent variables are economic growth rate, domestic gross savings, consumer price index, and labour productivity. A Panel Data Analysis was utilized, and they found economic growth, inflation, and domestic gross savings have a negative impact on youth unemployment. On the other hand, labour productivity has a positive effect on youth unemployment. They summarized that domestic gross savings, economic growth, labour productivity, and inflation are among the major determinants which determine unemployment among youth.

NDAGIJIMANA et al. (2018) inspected the youth employment determinants in Rwanda. They found that education, gender, age and geographical location have impacted on employment among youth in Rwanda. OUEDRAOGO (2018) studied the young employment determinants in the age of 15-29 in Burkina Faso. He found that jobs of low paid, large household, parents' socio-professional class in the labour market, rural environment, gender of the female, an organization non-membership, and monogamy impacted positively on youth employment. PATEL-CHOGA (2018) tested what determines unemployment of youth in South Africa. They utilized the Vector Error Correction Model (VECM) method from 2008 to 2015 by using quarterly data. They reported that youth unemployment negatively related to GDP, education, and FDI. AHMAD-KHAN (2018)

investigated what determines unemployment of youth from 1991 to 2016 in Pakistan. They reported that government expenditure, foreign direct investment (FDI), and inflation are negatively associated with unemployment. In addition to that, they found that the growth of the population and the rate of wage associated positively with unemployment.

On another hand, many studies have been addressed the impact of minimum wages on youth unemployment, some of the studies found that the minimum wages impacted on youth unemployment and some of them found it is not impacted on youth unemployment, for example, PEREIRA (2003) examined how the increase in minimum wages affecting on employment for young persons in Portugal and concluded that the increase in minimum wages impacted negatively on employment of workers aged 18 and 19-year-olds, on another hand, the increase in minimum wages impacted positively on employment of workers aged 20 to 25-year-olds.

In addition to that, NEUMARK–WASCHER (2004) evaluated the impact of minimum wages in determining the rate of employment among youth in 17 countries and how institutions and policies of labour market effect on this impact. They found that among the youth, minimum wages lead to decrease employment rate in which the correlation between minimum wages and the ratio of youth employment to population showed in the study to be negative. CHUANG (2006) analyzed how minimum wage impacts on youth employment and unemployment in Taiwan. The study found that a 10% minimum wage increase will increase the youth employment rate and the labour participation of youth by 0.47%, but has no significant impact on the youth unemployment rate.

GORRY (2013) addressed the impact of minimum wages on youth unemployment between 2006 and 2010 and he found that the minimum wages impacted on the unemployment rate and youth unemployment as well. He found that the youth unemployment will be increased more than the unemployment rate by the minimum wage increases. BERNAL-VERDUGO et al. (2012) evaluated the relationship between unemployment and the flexibility of the labour market among 97 countries for the period 1985 to 2008. They found that betterment in the flexibility of the labour market has a negative and significant effect on different categories of unemployment such as youth unemployment, long term unemployment and over unemployment. From indicators of labour market flexibility, costs of hiring and the regulations of hiring and firing got a potent impact on unemployment.

Economic freedom can play a role in economic growth, for example, DAWSON (1998) found that economic freedom affects positively on growth. In addition to that, ADKINS et al. (2002) pointed out that the rise of economic freedom is connected with bettered economic performance. SCULLY (2002) concluded that economic freedom leads to economic progress increase and in addition to that

he mentioned that economic freedom is one of the economic growth determinants. NELSON-SINGH (1998) revealed that economic freedom exerts a positive impact on economic growth. CARLSSON-LUNDSTRÖM (2002) discovered the economic freedom index has positive and strong relationships with GDP growth but this is limited to only some variables in the economic freedom index. DE HAAN-STURM (2000) stated that more economic freedom promotes economic growth, but the level of freedom is not linked to growth.

TANIN-MASIH (2017) tested how economic freedom effect on economic growth in Bangladesh. They utilized the ARDL approach from 1995 to 2015 and used the Heritage Foundation's Index of economic freedom in their study. They found that economic freedom boosts economic growth in Bangladesh. DAWSON (2003) analyzed the causality in the relationship between political and economic freedom and long-run economic growth and found that economic freedom level leads to growth, further he stated that economic freedom plays a role in enhancing economic prosperity in the long run. AYAL-KARRAS (1998) examined the relationships between factors of economic freedom and economic development and their findings uphold that total economic freedom fosters growth by promoting capital accumulation and by rising overall factor productivity.

COLE (2003) tested how economic freedom affecting economic growth. He found that the economic freedom degree is closely related to real GDP per capita and the real GDP per capita growth rate. GWARTNEY et al. (1999) discovered that higher economic freedom will lead to higher economic growth and in addition to that they stated that economic growth's main determinant is economic freedom. ISLAM (1996) addressed the relationship between the economic performance of low, middle and high-income countries and economic freedom. He found that for both high-income countries and for all countries, per capita income growth rate and index of economic freedom is directly related.

STURM-DE HAAN (2001) evaluated the relationship between economic growth and economic freedom. They found that there is a strong relationship between the two variables in case of economic freedom change but this is not true in case of economic freedom level. KACPRZYK (2015) inspected how economic freedom is related to economic growth among 28 countries in the European Union. The study found that the four variables of economic freedom named: quality of monetary policy, freedom to trade, the security of property rights and regulatory policies and economic growth is positively associated. PIATEK et al. (2013) studied the connection between economic growth and economic freedom and the study utilized 25 of transition countries for the period 1990 to 2008. They found that economic freedom affects positively on economic growth.

On another side, the Economic freedom is playing a role and impact on unemployment in general and unemployment among young as well (FELDMANN, 2007; FELDMANN, 2009A; FELDMANN, 2008; FELDMANN, 2009B; FELDMANN, 2009C; FELDMANN, 2013). Few studies conducted on addressing the impact of economic freedom on unemployment, for example, FELDMANN (2007) examined the impact of economic freedom on unemployment in 87 countries from 1980 to 2003. He found that in particular, among young people and women, economic freedom can ultimately decrease unemployment. In addition to that, he concluded that the size of the government has an impact on youth persons and the labour force in which the smaller size of the government possibly decreasing unemployment. Regarding property rights, the more secure and strong law, the more favorable impact on unemployment and decreasing youth unemployment and total unemployment as well. On other hand regarding regulation, he found that more flexibility in regulation is correlated with youth unemployment decline. The more liberal of international trade is correlated with youth unemployment decline as well.

BENGOA-SANCHEZ-ROBLES (2003) evaluated the impact between economic freedom, foreign direct investment and economic growth in 18 of Latin American countries. They utilized panel data method in the period from 1970 to 1999 and they found that economic freedom is playing as a positive determinant of foreign direct investment inflows. In addition to that, they stated that there is a positive correlation between foreign direct investment and economic growth. FELDMANN (2009A) studied the impact of government size on unemployment in developing countries by utilizing data from 58 countries around the world. According to his results, he found that if the government size is large, this expecting to increase unemployment. Besides that, he found that a large amount of share of subsidies and transfers in gross domestic product and a large amount of government consumption share of aggregate consumption plainly can have a harmful impact. FELDMANN (2008) analyzed business regulation and performance of the labour market in 74 industrial, developing and transition countries for the period from 2000 to 2003. He evaluated the impact of anticompetitive business regulations on labour market performance. He found that anti-competitive business regulations decrease employment and rise unemployment and made employment status become worse especially for young persons.

FELDMANN (2009B) investigated the quality of the legal system and performance of the labour market in 75 countries for the period from 1995 to 2003. He evaluated the impact of the quality of the legal system on the labour market performance. He concluded that the level of employment can decrease, in addition to unemployment growing when the characteristics of a legal system as a shortage of protecting intellectual property, integrity shortage, unfair courts, and dependent judiciary in which the size of the impact appeared to be Great, especially among young persons.

FELDMANN (2009C) tested the impact of labour regulations on unemployment in 73 economies for the period from 2000 to 2003. He found that the more rigorous labour regulations likely to raise unemployment and unemployment among female likely to rise when collective bargaining is more centralized.

FELDMANN (2013) evaluated how the level of sophistication of the financial system impact on unemployment by utilizing data from 21 industrial countries between 1984 and 2006. He found that for a total labour force and high-skilled workers, unemployment seems to decrease as the sophistication level is higher. HELLER–STEPHENSON (2014) inspected how economic freedom is related to the participation rate of the labour force, unemployment and ratio of employment to population. They utilized data from 50 states for the period 1981 to 2009. They found that a one-point increase in economic freedom will lead to a decrease rate of unemployment by 1.3 %. On the other hand, In the case of the participation rate of the labour force, if economic freedom is higher by one point, the participation rate of the labour force will higher by 1.9 %. Moreover, In the case of the ratio of employment to population, if economic freedom is higher by one point, the ratio of employment to the population will be higher by 2.3 %.

The financial crisis and its impact either on total unemployment or youth unemployment are studied by many researchers to understand the effect of the financial crisis on unemployment and youth unemployment. Among the studies which study the impact of the crisis on unemployment and youth unemployment, for example, VERICK (2009) evaluated the impact of the recent crisis on the labour market by evaluating the impact of past 'Big 5 Crises' on unemployment. He found the young people got the hardest impact of the crises. ARPAIA–CURCI (2010) analyzed the labour market in EU-27 after the 2008-2009 recession related to employment, unemployment, and wages. They found that the "great recession" had impacted on workers and increased youth unemployment greatly.

CHOUDHRY et al. (2010A) found that the financial crisis impacted on the youth unemployment rate and its impact on the youth unemployment rate is more than the impact on overall unemployment. They found additionally that financial crises impacted on youth unemployment five years after the crises, and mostly in the second and the third year of the crises. CHOUDHRY et al. (2010B) inspected the impact of financial crises on youth unemployment. Using data from 1980-2005, they utilized a fixed effects panel method of about 70 countries globally to evaluate the relationship between the youth unemployment rate and financial crises. They found that the financial crisis has a significant effect on the unemployment rate among youth and the crisis higher the rate of unemployment among youth. In economies with different income, labour market reactions is varied to the financial crisis and results showed that there is a significant and negative

effect of the financial crisis on the unemployment rate of youth only appeared on economies with high incomes. In terms of gender, the unemployment rate among females got more effect on the financial crisis than in the case of overall youth unemployment, but additionally, the study found that there is a positive and significant effect of the crisis for the case of female young workers. The study also concluded that the impact of financial crises on the unemployment rate among youth remains to the following five years since the crisis started.

DEMIDOVA–SIGNORELLI (2010) studied the impact of 1998 and 2008 crises on youth unemployment in Russian regions for the age category 20-29. They utilized a panel data method to analysis 78 of Russian regions in the period 1997 to 2008. They found that there big differences among regions in case of the youth unemployment rate and total unemployment rate. In addition to that, they found as the development level increase the youth unemployment decrease. In the case of the crisis, they found that the impact of the 1998-1999 crises impacted more on youth unemployment than on the general unemployment, but they did not find the effect of 2008 crises on youth unemployment and general unemployment.

BELL–BLANCHFLOWER (2011) addressed the impact of the great recession on the labour markets of the youth. They stated that the great recession has impacted on unemployment and it raised the gap between youth unemployment and adult unemployment. Moreover, they mentioned that preferences of working time, migration increase and part-time work indicate that the young age cohort is more restrictive than the supply of other age cohorts due to low levels of labour demand for the time span of the recession.

O’HIGGINS (2012) studied the great recession impact on the young person’s labour market experiences in the European Union. He concluded that, in the countries which have strong employment protection legislation, the loss of youth employment as a result of the recession was decreased. In addition to that, he added, the potent negative adjustment of youth employment in countries with relatively resilient labour markets resulting from the economic recession has not been accompanied by a potent positive adjustment of youth employment to total labour demand growth during the expansion time before the downturn. BOERI et al. (2012) discovered that recession impacted negatively on job creation, and in addition to that, there is an additional impact on job destruction done by financial shocks. Moreover, they found that the rate of job destruction in highly leveraged sectors is higher than the rate of job destruction in low-leveraged sectors. In addition to that, they concluded that during banking crises the high proportion of debt-to-assets or (sales) are correlating with the elasticity of high employment-to-output.

Moreover, in their study “Banking crises, labor reforms, and unemployment”, BERNAL-VERDUGO et al. (2013) utilizing data from 97 countries from 1980 to 2008 and found that a great negative effect on unemployment has done by banking crises and this impact depends on labour market institutions flexibility in which in countries that have more labour markets flexibility, the banking crises effect is more severe but It did not last long. On another hand, in countries that have more strict labour markets, the impact is so persistent. CHO-NEWHOUSE (2013) tested the impact of the great recession on different types of workers. They utilized 17 Middle-Income countries in their study. They found that the crises impacted highly on youth in which they shifted them from wage employment to unemployed. In addition to that self-employment has failed to provide a strong barrier to compensate for fewer jobs due to fewer wages and other factors and this led the youth to exit the labour market. They added that men have a harder hit than women by this crisis. BRUNO et al. (2014) analyzed the effect of the crisis on the neither in employment or education or training (NEET) rate and on the youth unemployment rate of the EU regions from 2000 to 2010. They found that NEET rates are constant over time to a level similar to youth unemployment and continued to rise during the years of crisis 2009-2010. In the southern regions, they found that there is the highest persistence of youth unemployment rate, unemployment rate, and NEET rate and it have less responsive to changes in gross domestic product.

KELLY et al. (2014) evaluated to what extent the transition to employment among unemployed youth has changed during the great recession in Ireland. They found that the rate of transition to employment for unemployed youth found decreased significantly between 2006 and 2011. Moreover, they found that changes in the external environment, on other, meaning the effect of some characteristics has changed during the recession was the reason for the decline in the rate of transition of unemployed youth, and not to changes in composition, or the unemployed group characteristics. BANERJI et al. (2015) mentioned that the more sensitivity of youth unemployment to economic activity than adult unemployment and the dynamics of output can explain the rise of the unemployment rate of youth during the crisis. VAN OURS (2015) studied the impact of the great recession in labour market analysis. He utilized Data from 20 countries in the Organization for Economic Cooperation and Development to compare to the 1980s recession to the great recession. He found that the great recession mostly impacted on unemployment rates and employment rates of young workers. The great recession impacted on the employment of old workers as well but not as high as it impact on young.

JUNANKAR (2015) analyzed the labour market of youth and how it reacts to the global financial crisis in Australia. In addition to the significant difference between the labour market of adult and the labour market of youth, during the recession, the rate of unemployment among youth has raised

fast and he stated the reason behind that because of part-time employment of youth and in addition to the employment of youth in some sensitive sectors. Moreover, the study found that minimum wages, high wages of youth and unemployment benefits cannot illustrate the higher unemployment of youth. BRUNO et al. (2016) investigated the financial crisis short and long-run impacts on unemployment of youth in OECD countries from 1981 to 2009. They found that the financial crisis has a great impact and significant on youth unemployment in the short and long run but the impact is larger on youth unemployment than the impact on total unemployment. FURCERI-MOUROUGANE (2012) tested the impact of financial crises on potential output in OECD countries from 1960 to 2008. They found that a financial crisis has a negative and permanent impact on potential output. They mentioned that on average, the financial crises can decrease the potential output by around 1.5–2.4%. MBEKENI-PHIRI (2019) inspected what determines unemployment in South Africa after the financial crisis. They utilized the autoregressive distributive lag (ARDL) method using quarterly data from 2009 to 2018. They reported that among serious factors that determine unemployment after the crisis are domestic investment, household debt, trade, rate of savings, economic growth, and debt of the government.

Table 1: The summarized of some important previous studies

Author and year	Title	Applied method	Significant Influencing variables
MAQBOOL et al. (2013)	Determinants of Unemployment: Empirical Evidences from Pakistan	Autoregressive Distributed Lag (ARDL) approach	GDP, population, foreign direct investment, and inflation
YÜKSEL-ADALI (2017)	Determining Influencing Factors of Unemployment in Turkey with MARS Method	Multivariate Adaptive Regression Splines (MARS)	Inflation and economic growth
ALRAYES-ABU WADI (2018)	Determinants of Unemployment in Bahrain	Regression analysis	Fixed capital formation and government expenditures
MUAFIQIE et al. (2018)	Determinant Factors of Unemployment Level in Indonesia at 2000-2016	The Vector Autoregressive	GDP, wages, inflation and flow of foreign capital

	Period.	(VAR)	
DE LIMA- MARQUES (2019)	Macroeconomic Determinants of Unemployment in Brazil: An ARDL Approach.	ARDL method	Exports, inflation, and national product
DEMIDOVA- SIGNORELLI (2012)	Determinants of youth unemployment in Russian regions.	Panel data analysis	The youth population in the regions, the rate of migration, economic development level, pensioners share and export and import. the 2008–2009 crises
BRUNO et al. (2014)	Youth Unemployment : Key Determinants and the Impact of Crises.	fixed-effect panel method	Labour Market Reforms (LMR), and the financial crisis
CAPORALE- GIL-ALANA (2014)	Youth Unemployment in Europe : Persistence and Macroeconomic Determinants.	autoregressive and fractional integration, and fractional cointegration	GDP and inflation
BLINOVA et al. (2015)	Vocational Education in the System of Determinants of Reducing Youth Unemployment: Interregional Comparisons.	Regression method	Vocational education, the structure of demographics, the economic development and employment rate
BAAH- BOATENG (2016)	The youth unemployment challenge in Africa: What are the drivers?	panel data methods	Share of youth in population, and manufacturing and

			agriculture value-added share in overall national output
BAYRAK–TATLI (2016)	Short and long term analysis of some factors effecting youth unemployment in Turkey.	Augmented Dickey-Fuller test, the co-integration test and ARDL bound test	Higher education schooling rates, the producer price index, GDP growth rate, and inflation
EBAIDALLA (2016)	Determinants of Youth Unemployment in OIC Member States: A Dynamic Panel Data Analysis.	Panel Data Analysis	GDP growth, inflation, domestic investment, and fertility rate
SAM–POKHARIYAL (2016)	Modelling Economic Determinants of Youth Unemployment in Kenya.	Times series Autoregressive Distributed Lag Model (ARDL)	The external debt and foreign direct investment, and population
BAYRAK–TATLI (2018)	The Determinants of Youth Unemployment: A Panel Data Analysis of OECD Countries.	Panel Data Analysis	Economic growth, inflation, domestic gross savings, and labour productivity

Source: Author's own construction (2020)

After reviewing the previous studies, the literature explored how economic growth can impact on unemployment and youth unemployment. On the other hand, the financial crisis impact negatively on total unemployment and youth unemployment and youth among the harder hit by the crisis. In addition to that, the economic freedom impacts positively on youth unemployment. To explore the effect of economic growth, the impact of the financial crisis and economic freedom on youth unemployment in the Arabic world, I will set my hypotheses as to the following:

H1: Economic growth impact positively on youth unemployment in the Arab world.

H2: The financial crisis impact negatively on youth unemployment and higher than its impact on older in the Arab world.

H3: Economic freedom impact positively on youth unemployment in the Arab world.

3. MATERIAL AND METHODS

3.1. Data collection

This study is a quantitative time-series study focusing on studying the determinants of youth unemployment. It covers many countries from the Arab world which include Algeria, Egypt, Jordan, Lebanon, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, and Tunisia in the period from 2000 to 2016. The research utilized database from different sources, for example, “total youth unemployment rate (15-24), male youth unemployment rate (15-24), female youth unemployment rate (15-24), total unemployment rate (+15), male unemployment rate (+15), female unemployment rate (+15), adult unemployment rate (+25), male unemployment rate (+25), female unemployment rate (+25) and minimum wage (Statutory nominal gross monthly minimum wage “Harmonized series”),” were obtained from International Labour Organization (ILO), ILOSTAT database. The variables which include “Gross domestic product, constant prices, percent change, General government revenues, percentage of GDP” were obtained from International Monetary Fund (IMF), World Economic Outlook Database (*Table 2*).

The variables which include “Manufacturing, value added (% of GDP), Imports of goods and services (% of GDP), Trade, percentage of GDP” were obtained from The World Bank, World Development Indicators database. “Employment in services, percent of total employment, modeled ILO estimate” was obtained from The World Bank, Sustainable Development Goals database (*Table 2*).

The educational variable represented by “education index” was obtained from United Nations Development Programme (UNDP), Human Development Reports (*Table 2*).

The economic freedom variable represented by the “index of economic freedom” was obtained from The Heritage Foundation database. The index measures the degree of economic freedom” which includes the following indicators: “labour market regulations, hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, conscription” were obtained from Fraser institute database (*Table 2*).

Table 2: The study variables and its sources

Variable	Source of data
Total youth unemployment rate (15-24)	International Labour Organization (ILO), ILOSTAT database 2000-2016
Male youth unemployment rate (15-24)	
Female youth unemployment rate (15-24)	

<p>Total unemployment rate (+15)</p> <p>Male unemployment rate (+15)</p> <p>Female unemployment rate (+15)</p> <p>Adult unemployment rate (+25)</p> <p>Male unemployment rate (+25)</p> <p>Female unemployment rate (+25)</p> <p>Minimum wage (Statutory nominal gross monthly minimum wage - Harmonized series)</p>	(I1)
<p>Gross domestic product, constant prices, percent change</p> <p>General Government revenues, percentage of GDP</p>	<p>International Monetary Fund (IMF), World Economic Outlook Database</p> <p>2000-2016</p> <p>(I2)</p>
<p>Manufacturing value added (% of GDP)</p> <p>Imports of goods and services (% of GDP)</p> <p>Trade, percentage of GDP</p>	<p>The World Bank, World Development Indicators database</p> <p>2000-2016</p> <p>(I3)</p>
<p>Employment in services, percent of total employment modeled ILO estimate</p>	<p>The World Bank, Sustainable Development Goals database</p> <p>2000-2016</p> <p>(I4)</p>
<p>Education index</p>	<p>United Nations Development Programme (UNDP), Human Development Reports.</p> <p>2000-2016 (I5)</p>
<p>Index of economic freedom</p>	<p>The Heritage Foundation, Index of Economic Freedom database</p> <p>2000-2016</p> <p>(I6)</p>
<p>Labour market regulations,</p> <p>Hiring regulations and minimum wage</p> <p>Hiring and firing regulations</p> <p>Centralized collective bargaining</p> <p>Hours regulations</p> <p>Mandated cost of worker dismissal</p> <p>Conscription</p>	<p>Fraser institute database</p> <p>2000-2016</p> <p>(I7)</p>

Source: Author's own construction (2020)

3.2. The study variables

In this section, I will introduce the dependent and independent variables and why these variables were included in the study.

3.2.1. The dependent variables

I use the youth unemployment rate (15-24), total unemployment rate (+15) and adult unemployment rate (+25) besides gender among these rates and our dependent variables. The dependent variables will be summarized as the following: “total youth unemployment rate (15-24), male youth unemployment rate (15-24), female youth unemployment rate (15-24), Total unemployment rate (+15), male unemployment rate (+15), female unemployment rate (+15), adult unemployment rate (+25), male unemployment rate (+25), female unemployment rate (+25)” for the period from 2000 to 2016.

The youth unemployment rate (15-24) is defined as the percentage of unemployed people aged (15 to 24 years old) from the labour force (ILO, 2019B).

The total unemployment rate (+15) is defined as the percentage of unemployed people aged (15 years and more) from the labour force (ILO, 2019C).

Adult unemployment rate (+25) is defined as the percentage of unemployed people aged (25 years and more) from the labour force (ILO, 2019B).

I use this division to examine the impact on both youth and total unemployment together besides the adult unemployment and in addition to the gender of (total unemployment, adult unemployment, and youth unemployment) and how each of these variables react to change in other variables. Many scholars were interesting to examine the relations of these variables to other variables for example recently the study of (BRUNO et al., 2016).

I added unemployment among genders to the study as mentioned by many researchers that impacted on unemployment/youth unemployment for example (NGANWA et al., 2015; ABSHOKO, 2016; NDAGIJIMANA et al., 2018).

3.2.2. The independent variables

The general relationships between unemployment and GDP growth are so-called “Okun law” which indicates that the relationships between the two variables are negative. Besides this law also many studies proved that GDP/GDP growth impacted on unemployment and youth unemployment for example (AGHION–HOWITT, 1994; MAQBOOL et al., 2013; CHOWDHURY–HOSSAIN, 2014;

DIETRICH, 2013; CAPORALE–GIL-ALANA, 2014). For that, I utilized the GDP growth as an independent variable in my research.

According to IMF, Gross domestic product, constant prices, percent change is defined as “*Annual percentages of constant price GDP are year-on-year changes; the base year is country-specific*” (IMF, 2019).

The structure of an economy is very important to understand unemployment in a country. TOMIĆ (2018) use in his model “*share of exports in GDP, the share of agriculture in Gross Value Added (GVA), the share of industry in GVA, and share of construction in GVA*” for control the structure of the economy. In addition to that, BAAH-BOATENG (2016) stated in his results that the manufacturing and agriculture value-added share in overall national output negatively impacted on youth unemployment. For that, I will use Manufacturing value added (% of GDP) and in addition to, imports of goods and services (% of GDP), government revenues, percentage of GDP as independent variables in my study.

According to the world bank, Imports of goods and services (% of GDP) is defined as “*imports of goods and services represent the value of all goods and other market services received from the rest of the world*” (THE WORLD BANK, 2019B).

According to IMF, General Government revenues, percentage of GDP is defined as “*revenue consists of taxes, social contributions, grants receivable, and other revenue*” (IMF, 2019).

According to the world bank, Trade, percentage of GDP is defined as “*trade is the sum of exports and imports of goods and services measured as a share of gross domestic product*” (THE WORLD BANK, 2019B).

Education is a very import variable in studying (un)employment in which many researchers use this variable to understand (un)employment behaviour in labour market for example (BAYRAK–TATLI, 2016; MSIGWA–KIPESHA, 2013). For that, I will use the “education index” as an independent variable that can explain education among different levels of education.

According to UNDP, Education index is defined as “*education index is an average of mean years of schooling (of adults) and expected years of schooling (of children), both expressed as an index obtained by scaling with the corresponding maxima*” (UNDP, 2019).

Labour market structure includes employment in different sectors can be useful to explain unemployment. For example, the increase of service employment which impacts on youth unemployment (GOMEZ-SALVADOR–LEINER-KILLINGER, 2008). For that, I will use

“Employment in services, percent of total employment” as an independent variable that can explain youth unemployment.

According to the world bank, Employment in services, percent of total employment is defined as *“employment is defined as persons of working age who were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period or not at work due to temporary absence from a job, or to working-time arrangement. The services sector consists of wholesale and retail trade and restaurants and hotels; transport, storage, and communications; financing, insurance, real estate, and business services; and community, social, and personal services”* (THE WORLD BANK, 2019A).

In addition to other variables that I included in my models of youth unemployment, I need to add the crisis variable on my models to address the impact of the financial crisis on youth unemployment, total unemployment, and adult’s unemployment

The economic freedom is very critical for employment, for that I will utilize the following indicator in my model as an independent variable to explain its impact on youth unemployment, total unemployment, and adult’s unemployment which includes “index of economic freedom”.

According to the heritage foundation, Economic freedom is defined as *“Economic freedom is the fundamental right of every human to control his or her own labour and property”* (THE HERITAGE FOUNDATION, 2019).

According to (THE HERITAGE FOUNDATION, 2019), Economic freedom is measured depend on 12 factors divided into four groups. The first group is the rule of law which includes property rights, government integrity, and judicial effectiveness. The second group is government size which includes government spending, tax burden, and fiscal health. The third group is regulatory efficiency which includes business freedom, labour freedom, and monetary freedom. The fourth group is open markets which include trade freedom, investment freedom, and financial freedom. Within these groups each of the 12 economic freedoms is scored on a scale of 0 to 100. Calculating the sum of these 12 economic freedoms obtains the total country ranking.

On another side, depend on (THE FRASER INSTITUTE, 2019) measures the degree of economic freedom index by focusing on five key areas which include the size of government; legal System and security of property rights; sound money; freedom to trade internationally; and regulation.

Depend on (THE FRASER INSTITUTE, 2019), among regulation areas, labour market regulations include “hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription”. For that, I will

utilize the impact of labour market regulations on youth unemployment, total unemployment, and adult's unemployment

To address the impact of the financial crisis on youth unemployment, I will utilize the dummy variable in which one dummy variable for the financial crisis is utilized (see section 3.4).

Moreover, among the institutions' variables, the minimum wage has an impact on employment/unemployment or youth unemployment (PEREIRA, 2003; NEUMARK–WASCHER, 2004; CHUANG, 2006; GORRY, 2013). For this, I will use minimum wages as an independent variable.

According to ILO, Minimum wages “(Statutory nominal gross monthly minimum wage - Harmonized series)” which refer to the “*Minimum monthly earnings for all employees as of December 31 of each year*” (ILO, 2019D).

Table 3: The dependent and independent variables of the study

The dependent variables
Total youth unemployment rate (15-24)
Male youth unemployment rate (15-24)
Female youth unemployment rate (15-24)
Total unemployment rate (+15)
Male unemployment rate (+15)
Female unemployment rate (+15)
Adult unemployment rate (+25)
Male unemployment rate (+25)
Female unemployment rate (+25)
The independent variables
GDP growth rate
Imports of goods and services (% of GDP)
Government revenues, percentage of GDP
Trade (% of GDP)
manufacturing value added (% of GDP)
Employment in services
Education index
Index of economic freedom
Labour market regulations, Hiring regulations and minimum wage

Hiring and firing regulations
Centralized collective bargaining
Hours regulations
Mandated cost of worker dismissal
Conscription
Minimum wage

Source: Author's own construction (2020)

3.3. Methodology

The study will consist of three steps. *In the first step*, the study will address the impact of (labour market, economic, and educational, economic freedom, financial crisis) variables on youth unemployment total unemployment and adult unemployment and in addition to examining the impact on gender as well (*Figure 7*). *In the second step*, the study will address the impact of labour market regulations on youth unemployment, total unemployment and adult unemployment and in addition to examining the impact on gender as well. *In the third step*, the study will examine the impact of the minimum wage on the level of youth unemployment and besides its impact on total unemployment and adult unemployment and in addition to examine the impact on gender as well.

3.3.1. Panel data analysis

Panel data analysis methods utilized by many researchers to examine the factors that impact or determine unemployment or youth unemployment for example (FOLAWEWO–ADEBOJE, 2017; DIETRICH, 2013; BRUNO et al., 2014; GÖÇER–ERDAL, 2015; BAAH-BOATENG, 2016; EBADALLA, 2016; DIETRICH–MÖLLER, 2016; TOMIĆ, 2018; BAYRAK–TATLI, 2018; CHOUDHRY et al., 2010B; DEMIDOVA–SIGNORELLI, 2010).

The lack of long term time series data pushed me to utilize panel data regression methods and utilizes panel data in the period from 2000 to 2016. My analysis will be as following:

1. Analysis of the data using fixed effect method

In this step, I will analyze the study data, using the STATA program for conducting fixed effect model.

2. Analyze the data using random effect method

During this step, I will analyze the study data, using the STATA program for conducting a random effect model.

3. Apply the Hausman test to evaluate the two models

For the purpose of selecting the best appropriate model for my analysis, I use the Hausman test (HAUSMAN, 1978) for the two models (fixed effect model and random effect model).

4. If the appropriate model of the two models can't be selected by Hausman test output, then the appropriate model can be selected by the fit of the model such as the value of R-square of the model.

During this step 4, and if after applying the Hausman test, if the output of Hausman test cans selects the best model, I will look to the fit of the model output to select the appropriate model. (For that the selecting of the appropriate model is depending on the output of the Hausman test in addition to the fit of the model such as R- square).

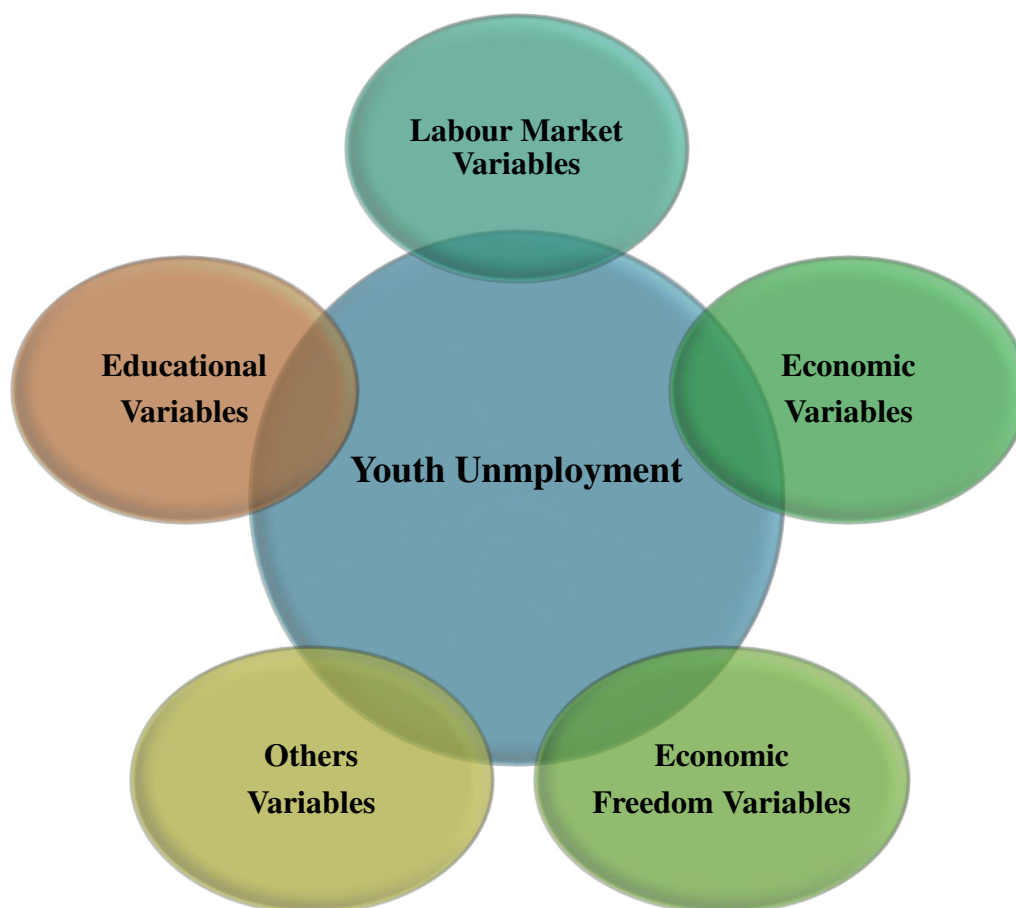


Figure 7: The main variables of the research

Source: Author's own construction (2020)

3.3.2. The impact of the main variables on youth unemployment

In this section, *Table 4* shows the model 1 which will address the effect of (labour market, economic, and educational, economic freedom, financial crisis) variables on youth unemployment total unemployment and adult unemployment and in addition to examining the impact on unemployment among gender as well.

The study will cover the following countries Algeria, Egypt, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, and Tunisia in the time series study from 2000 to 2016. The dependent variables will include “total youth unemployment rate (15-24), male youth unemployment rate (15-24), female youth unemployment rate (15-24), total unemployment rate (+15), male unemployment rate (+15), female unemployment rate (+15), adult unemployment rate (+25), male unemployment rate (+25), female unemployment rate (+25)” (*Table 4*).

The independent variables will be some (labour market, economic, and educational, economic freedom, financial crisis, and others) variables. Economical and labour market variables are such as, “GDP growth rate, Imports of goods and services (% of GDP), government revenues, percentage of GDP, Trade, percentage of GDP and Employment in services”. Educational variable included “Education index”. Economics freedom variable is such as “index of economic freedom” (*Table 4*).

Besides that, the study will use a dummy variable for the financial crisis of 2008. The dummy variable for the financial crisis 2008, this variable will indicate 1 if the year is 2008 and 0 is otherwise in our panel database. In this study, I will utilize panel regression methods because of short-period data availability. To make my results more suitable and accurate, firstly, I will use both fixed panel method and random panel method. Secondly, I will use the Hausman test to evaluate which of my models will be stronger to use.

To test the effect of (labour market, economic, and educational, economic freedom, financial crisis) variables on youth unemployment, total unemployment, and adult unemployment and besides it impact on unemployment among males and females, firstly I analyze the data by conducting fixed effect method; secondly, I analyze the data using random effect method. Moreover, and to evaluate which of the two models (fixed or random) is appropriate, I use the Hausman test. (*See section 3.4.1*)

Table 4: The determinants of youth unemployment 2000-2016 (Model 1)

The dependent variables	Total youth unemployment rate (15-24)
	Male youth unemployment rate (15-24)
	Female youth unemployment rate (15-24)
	Total unemployment rate (+15)
	Male unemployment rate (+15)
	Female unemployment rate (+15)
	Adult unemployment rate (+25)
	Male unemployment rate (+25)
	Female unemployment rate (+25)
The independent variables	
Overall economy	GDP growth rate
Economic	Imports of goods and services (% of GDP)
	Government revenues, percentage of GDP
	Trade (% of GDP)
	manufacturing value added (% of GDP)
Education	Education index
Economic freedom	Economic freedom index
labour market	Employment in service

Source: Author's own construction (2020)

3.3.3. The impact of labour market regulations on youth, total, and adult unemployment

In this step *Table 5* shows model 2 which will address the effect of Labour market regulations on youth unemployment total unemployment and adult unemployment and in addition to examining the impact on unemployment among gender as well.

In this step, the study will cover the following countries Algeria, Egypt, Jordan, Morocco, and Tunisia in the time series study from 2000 to 2016. The dependent variables will include “total youth unemployment rate (15-24), male youth unemployment rate (15-24), female youth unemployment rate (15-24), total unemployment rate (+15), male unemployment rate (+15), female unemployment rate (+15), adult unemployment rate (+25), male unemployment rate (+25), female unemployment rate (+25)”.

The independent variables will include the index of Labour market regulations” which includes the following indicators: “Labour market regulations, Hiring regulations and minimum wage, hiring and firing regulations, Centralized collective bargaining, Hours regulations, Mandated cost of

worker dismissal, conscription” and economic freedom variables which include: “The overall index, Size of government, Legal system and property rights Sound money, Freedom to trade internationally, Regulation (*Table 5*).

I will utilize panel regression methods because of short-period data availability. To make my results more suitable and accurate, firstly, I will use both fixed panel method and random panel method. Secondly, I will use the Hausman test to evaluate which of my models will be stronger to use. To test the effect of Labour market regulations on youth unemployment, total unemployment, and adult unemployment and besides its impact on unemployment among gender, firstly I analyze our data by conducting fixed effect method; secondly, I analyze our data using random effect method. Moreover, and to evaluate which of the two models (fixed or random) is appropriate, I use the Hausman test (*See section 3.4.1*).

Table 5: Impact of labour market regulations on youth unemployment 2000-2016 (Model 2)

The dependent variables	Total youth unemployment rate (15-24)
	Male youth unemployment rate (15-24)
	Female youth unemployment rate (15-24)
	Total unemployment rate (+15)
	Male unemployment rate (+15)
	Female unemployment rate (+15)
	Adult unemployment rate (+25)
	Male unemployment rate (+25)
	Female unemployment rate (+25)
	The independent variables
Labour market regulations	Hiring regulations and minimum wage
	Hiring and firing regulations
	Centralized collective bargaining
	Hours Regulations
	Mandated cost of worker dismissal
	Conscription

Source: Author’s own construction (2020)

3.3.4. The impact of the minimum wage on youth, total, and adult unemployment

In this step model 3, I will test the impact of the minimum wage on the level of youth unemployment, total unemployment and adult unemployment. I will utilize the availability of minimum wage in some countries according to the availability of this variable in the following

countries (Algeria, Jordan, Lebanon, Egypt, Morocco, and Tunisia) for the time series from 2000 to 2011. The dependent variables will include “total youth unemployment rate (15-24), male youth unemployment rate (15-24), female youth unemployment rate (15-24), total unemployment rate (+15), male unemployment rate (+15), female unemployment rate (+15), adult unemployment rate (+25), male unemployment rate (+25), female unemployment rate (+25)”. The independent variables will include the minimum wages as an example of labour market intuitions variables (*Table 6*). I will utilize panel regression methods because of short-period data availability from 2000 to 2011. To make our results more suitable and accurate, firstly, I will use both fixed panel method and random panel method. Secondly, I will use the Hausman test to evaluate which of my models will be stronger to use.

To test the effect of minimum wage on youth unemployment, total unemployment, and adult unemployment and besides its impact on unemployment among gender, firstly I analyze my data by conducting fixed effect method; secondly, I analyze the data using random effect method. Moreover, and to evaluate which of the two models (fixed or random) is appropriate, I use the Hausman test. (*See section 3.4.1*).

Table 6: Impact of minimum wages on youth unemployment 2000-2011 (Model 3)

The dependent variables	Total youth unemployment rate (15-24)
	Male youth unemployment rate (15-24)
	Female youth unemployment rate (15-24)
	Total unemployment rate (+15)
	Male unemployment rate (+15)
	Female unemployment rate (+15)
	Adult unemployment rate (+25)
	Male unemployment rate (+25)
	Female unemployment rate (+25)
The independent variable	
Minimum wage	Statutory nominal gross monthly minimum wage

Source: Author’s own construction (2020)

3.4. Dissertation structure

My dissertation is located in six chapters which include, the introduction of topics and objectives, literature review, material and methods, research findings and their evaluations, conclusions, and recommendations and main conclusions and novel findings of the dissertation.

Chapter 1 explores the topics and objectives of the study. The objective of our study is to explore the determinants of youth unemployment in Arabic countries. The chapter starts with explaining why we study youth unemployment in which it explains the problem statement and the research gap that this dissertation aims to fill. Secondly, the chapter states the reasons for studying the determinants of youth unemployment in Arabic countries together. After that, the chapter explains the characteristics of the labour market in Arabic countries to get an overview of the labour market in the Arab world. Next to that, the chapter states the objective and questions that the study attempt to answer. Finally, the chapter explains the building of the hypotheses of the study.

Chapter 2 introduces the previous literature on the topic. The chapter begins by explaining the theoretical framework of the study. Next, the chapter introduces the factors that impact on unemployment and youth unemployment. After that, the chapter introduces the relationship between economic freedom and unemployment. Moreover, the chapter introduces the literature on the impact of financial crises on unemployment and youth unemployment.

Chapter 3 shows the material and methods of my study. The chapter starts with introducing the data collection and the sources of data collection of the study. Next, the chapter introduces the study variables of the study which state the dependent and independent variables. After that, the chapter introduces the methodology of the study.

Chapter 4 investigates the research findings and evaluations. The chapter begins to explore the results of the effect of (labour market, economic, and educational, economic freedom, financial crisis) variables on youth unemployment, total unemployment, and adult unemployment. After that, the chapter explores the results of the impact of Labour Market Regulations (LMR) and its variables on youth unemployment total unemployment and adult unemployment. Moreover, in the end, the chapter explores the results of the impact of minimum wage on youth, total and adult unemployment.

Chapter 5 summarizes the conclusions and recommendations of the study. The chapter begins by stating the conclusions of the study. Next, the chapter, state the recommendations of the study. After that, the chapter mentioned the limitations and future research directions.

Chapter 6 presents the main conclusions and novel findings of the dissertation. The chapter summarized the contributions and the importance of the new findings

Finally, the references, list of tables, list of figures, and author's publications are included at the end of the dissertation.

4. RESEARCH FINDINGS AND EVALUATION

4.1. The impact of (labour market, economic, and economic freedom) variables

In this section, I will show my results of the effect of (labour market, economic, and educational, economic freedom, financial crisis) variables on youth unemployment, total unemployment, and adult unemployment. More specifically, what are the factors that determine the unemployment among the youth besides the determinants of unemployment in terms of males and females?

Moreover, the results will show how these factors impact on unemployment among adults besides in terms of males and females of the adult unemployment rate. In addition to that, the results will show how these factors impact on total unemployment besides in terms of males and females of the total unemployment rate. The labour market, economic, and educational, economic freedom, financial crisis variables play a role as independent variables and the unemployment rate of youth; adult and total beside the males and females of youth, total and adult unemployment play a role as dependent variables.

4.1.1. *The determinants of youth unemployment*

Table 7 shows that the impact of (labour market, economic, and educational, economic freedom, and financial crisis) variables on youth unemployment. The dependent variable is youth unemployment and the independent variables are GDP growth rate, manufacturing value added (% of GDP), imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, index of economic freedom, and financial crisis dummy variable. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and I couldn't select the appropriate model using Hausman test output and I selected the best of the two models depends on the strong fit using R-square. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.6496) and 153 observations.

The results showed that GDP growth (GDPGR), government revenues, percentage of GDP (GRGDP), manufacturing value added (% of GDP) (MVAGDP), employment in service (EMPLOYMENTSERVICES), and economic freedom (EFINDEX) are associated significantly with youth unemployment. GDP growth (GDPGR), government revenues, percentage of GDP (GRGDP), manufacturing value added (% of GDP) (MVAGDP), and economic freedom (EFINDEX) have a significant negative relationship with youth unemployment. On another side, employment in service (EMPLOYMENTSERVICES) has a significant positive relationship with youth unemployment. GDP growth (GDPGR), government revenues, percentage of GDP (GRGDP), manufacturing value added (% of GDP) (MVAGDP), employment in service

(EMPLOYMENTSERVICES), and economic freedom (EFINDEX) are the determinants of youth unemployment.

On another hand, the results uncovered that the education index (EDUINDEX) has an inverse but not significant relationship with youth unemployment. Moreover, the financial crisis appeared to have a positive and not significant relationship with youth unemployment.

Table 7: The determinants of youth unemployment 2000-2016

YU	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
GDPGR	-0.4285791	.146869	-2.92	0.004	-.7164371	-.1407212
IMGDP	.0565778	.0954479	0.59	0.553	-.1304967	.2436522
GRGDP	-.5219055	.0821719	-6.35	0.000	-.6829595	-.3608514
TRADEGDP	.0060545	.0742315	0.08	0.935	-.1394365	.1515455
MVAGDP	-.0902047	.0238021	-3.79	0.000	-.136856	-.0435534
EMPLOYMENTSERVICES	.4851953	.0679308	7.14	0.000	.3520533	.6183372
EDUINDEX	-3.813185	9.066553	-0.42	0.674	-21.5833	13.95693
EFINDEX	-.9765975	.1515047	-6.45	0.000	-1.273541	-.6796537
FCDUMMY	.5529638	2.442675	0.23	0.821	-4.234591	5.340518
_cons	76.07737	8.182847	9.30	0.000	60.03929	92.11546

Source: Author's own calculation (2020)

Table 8 shows that the impact of (labour market, economic, and educational, economic freedom, and financial crisis) variables on male youth unemployment. The dependent variable is male youth unemployment and the independent variables are GDP growth rate, manufacturing value added (% of GDP), imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, index of economic freedom, and financial crisis dummy variable. I checked the model using a fixed-effect regression model and a random-effect regression model and validated all models using the Hausman test and I couldn't select the appropriate model using Hausman test output and I selected the best of the two models depends on the strong fit using R-square. The output showed that the appropriate model was a random-effect GLS regression with R-square (0.5679) and 153 observations.

Results clarified that GDP growth (GDPGR), government revenues, percentage of GDP (GRGDP), manufacturing value added (percent of GDP) (MVAGDP), employment in the service sector (EMPLOYMENTSERVICES) and economic freedom (EFINDEX) are significantly related to male youth unemployment. GDP growth (GDPGR), government revenues, percentage of GDP (GRGDP), manufacturing value added (percent of GDP) and economic freedom (EFINDEX) have a substantial negative association with male youth unemployment.

On another side, employment in service (EMPLOYMENTSERVICES) has a significant positive relationship with male youth unemployment. GDP growth (GDPGR), government revenues, percentage of GDP (GRGDP), manufacturing value added (% of GDP) (MVAGDP), employment in service (EMPLOYMENTSERVICES), and economic freedom (EFINDEX) are the determinants of male youth unemployment.

Additionally, the results discovered that the Education Index (EDUINDEX) has a negative but not important relationship with male youth unemployment. Furthermore, the financial crisis seemed to have an opposite and non-significant association with male youth unemployment.

Table 8: The determinants of male youth unemployment 2000-2016

YUM	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
GDPGR	-.4766937	.1571094	-3.03	0.002	-.7846226	-.1687649
IMGDP	-.0128153	.102103	-0.13	0.900	-.2129335	.187303
GRGDP	-.4979903	.0879014	-5.67	0.000	-.6702738	-.3257068
TRADEGDP	.1042897	.0794073	1.31	0.189	-.0513457	.2599251
MVAGDP	-.0786112	.0254617	-3.09	0.002	-.1285153	-.0287072
EMPLOYMENTSERVICES	.3931978	.0726673	5.41	0.000	.2507725	.5356231
EDUINDEX	-17.51033	9.698719	-1.81	0.071	-36.51947	1.498804
EFINDEX	-.9743995	.1620684	-6.01	0.000	-1.292048	-.6567513
FCDUMMY	-.56354	2.61299	-0.22	0.829	-5.684907	4.557827
_cons	80.49421	8.753396	9.20	0.000	63.33787	97.65055

Source: Author's own calculation (2020)

Table 9 shows that the impact of (labour market, economic, and educational, economic freedom, and financial crisis) variables on female youth unemployment. The dependent variable is female youth unemployment and the independent variables are GDP growth rate, manufacturing value added (% of GDP), imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, index of economic freedom, and financial crisis dummy variable. I checked the model using a fixed-effect regression model and a random-effect regression model and validated all models using the Hausman test and Hausman test found that fixed-effect is appropriate but by evaluating the two models fit, I found that the random-effect model is more appropriate. The analysis showed that the correct model was random effects GLS regression with R-square (0.7258) and 153 observations.

The results uncovered that imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), trade percentage of GDP (TRADEGDP), manufacturing value added (% of GDP) (MVAGDP), employment in service (EMPLOYMENTSERVICES) education index (EDUINDEX), economic freedom (EFINDEX) are associated significantly with

female youth unemployment. Government revenues, percentage of GDP (GRGDP), trade percentage of GDP (TRADEGDP), manufacturing value added (% of GDP) (MVAGDP), economic freedom (EFINDEX) have a significant negative relationship with female youth unemployment.

On other side, imports of goods and services (% of GDP) (IMGDP), employment in service (EMPLOYMENTSERVICES), and education index (EDUINDEX) have a significant a positive relationship with female youth unemployment. Imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), trade percentage of GDP (TRADEGDP), manufacturing value added (% of GDP) (MVAGDP), employment in service (EMPLOYMENTSERVICES), education index (EDUINDEX), economic freedom (EFINDEX) are the determinants of female youth unemployment.

Over and above that, the results have shown that GDP growth (GDPGR) has a negative but not important association with female youth unemployment. In addition, the financial crisis has proven to have a positive and not significant relationship with female youth unemployment.

Table 9: The determinants of female youth unemployment 2000-2016

YUF	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]
GDPGR	-.2243334	.1846665	-1.21	0.224	-.586273 .1376063
IMGDP	.3180572	.1200119	2.65	0.008	.0828382 .5532762
GRGDP	-.6125398	.1033193	-5.93	0.000	-.8150419 -.4100377
TRADEGDP	-.2783692	.0933353	-2.98	0.003	-.4613031 -.0954353
MVAGDP	-.1202162	.0299277	-4.02	0.000	-.1788734 -.0615589
EMPLOYMENTSERVICES	.8007545	.0854132	9.38	0.000	.6333478 .9681612
EDUINDEX	51.04233	11.39988	4.48	0.000	28.69899 73.38568
EFINDEX	-.940545	.1904953	-4.94	0.000	-1.313909 -.5671811
FCDUMMY	3.988672	3.07131	1.30	0.194	-2.030984 10.00833
_cons	48.54446	10.28874	4.72	0.000	28.37889 68.71003

Source: Author's own calculation (2020)

4.1.2. The determinants of total unemployment

Table 10 shows the impact of (labour market, economic, and educational, economic freedom, and financial crisis) variables on total unemployment. The dependent variable is total unemployment and the independent variables are GDP growth rate, manufacturing value added (% of GDP), imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, index of economic freedom, and financial crisis dummy variable. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and I couldn't select the appropriate model using Hausman test output and I selected the best of the two models depends

on the strong fit using R-square. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.5438) and 153 observations.

The results discovered that imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), and economic freedom (EFINDEX) have a significant association with total unemployment. Government revenues, percentage of GDP (GRGDP), and economic freedom (EFINDEX) are significant and negatively related with total unemployment.

On the other side, imports of goods and services (% of GDP) (IMGDP) is significant and positively related with total unemployment. Imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), and economic freedom (EFINDEX) are the factors that determine total unemployment.

In addition to that, the results disclosed that GDP growth (GDPGR) has a negative but not significant relationship with total unemployment and, in addition, employment in the service sector appears to be insignificant in relation to total unemployment. Moreover, the financial crisis seemed to have an inverse and non-significant relationship with total unemployment.

Table 10: The determinants of total unemployment 2000-2016

TU	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
GDPGR	-.137888	.0858764	-1.61	0.108	-.3062026	.0304266
IMGDP	.1634153	.0558097	2.93	0.003	.0540302	.2728003
GRGDP	-.1404019	.0480471	-2.92	0.003	-.2345725	-.0462314
TRADEGDP	-.0339044	.0434042	-0.78	0.435	-.118975	.0511663
MVAGDP	.0099885	.0139174	0.72	0.473	-.0172892	.0372662
EMPLOYMENTSERVICES	.047638	.0397201	1.20	0.230	-.030212	.1254879
EDUINDEX	-8.006344	5.301341	-1.51	0.131	-18.39678	2.384095
EFINDEX	-.3854117	.088587	-4.35	0.000	-.5590389	-.2117844
FCDUMMY	-.7435816	1.428266	-0.52	0.603	-3.542932	2.055769
_cons	36.402	4.784626	7.61	0.000	27.02431	45.7797

Source: Author's own calculation (2020)

Table 11 shows that the impact of (labour market, economic, and educational, economic freedom, and financial crisis) variables on male total unemployment. The dependent variable is male total unemployment and the independent variables are GDP growth rate, manufacturing value added (% of GDP), imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, index of economic freedom, and financial crisis dummy variable. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and I couldn't select

the appropriate model using Hausman test output and I selected the best of the two models depends on the strong fit using R-square. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.4724) and 153 observations.

The results disclosed that imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), education index (EDUINDEX), economic freedom (EFINDEX) have a significant association with male total unemployment. Government revenues, percentage of GDP (GRGDP), education index (EDUINDEX), economic freedom (EFINDEX) are significant and negatively related with male total unemployment.

On the other side, imports of goods and services (% of GDP) (IMGDP) is significant and positively related with male total unemployment.

Imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), education index (EDUINDEX), economic freedom (EFINDEX) are the factors that determine male total unemployment.

Furthermore, the results evinced that GDP growth (GDPGR) has a negative but not substantial relationship with male total unemployment and, in addition, employment in service tends to be negligible in relation to male total unemployment. Furthermore, the financial crisis seemed to have an opposite and non-significant association with male total unemployment.

Table 11: The determinants of total male unemployment 2000-2016

TUM	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
GDPGR	-.1244735	.0898321	-1.39	0.166	-.3005412	.0515943
IMGDP	.1356054	.0583805	2.32	0.020	.0211817	.2500291
GRGDP	-.1217644	.0502603	-2.42	0.015	-.2202728	-.023256
TRADEGDP	-.0010864	.0454035	-0.02	0.981	-.0900757	.0879029
MVAGDP	.0127359	.0145585	0.87	0.382	-.0157982	.0412701
EMPLOYMENTSERVICES	.0250772	.0415497	0.60	0.546	-.0563588	.1065132
EDUINDEX	-13.80095	5.545539	-2.49	0.013	-24.67001	-2.931892
EFINDEX	-.340765	.0926676	-3.68	0.000	-.5223901	-.1591399
FCDUMMY	-1.04076	1.494057	-0.70	0.486	-3.969058	1.887538
_cons	34.59829	5.005022	6.91	0.000	24.78863	44.40796

Source: Author's own calculation (2020)

Table 12 shows the impact of (labour market, economic, and educational, economic freedom, and financial crisis) variables on female total unemployment. The dependent variable is female total unemployment and the independent variables are GDP growth rate, manufacturing value added (% of GDP), imports of goods and services (% of GDP), government revenues, percentage of GDP,

trade percentage of GDP, employment in service, education index, index of economic freedom, and financial crisis dummy variable. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and I couldn't select the appropriate model using Hausman test output and I selected the best of the two models depends on the strong fit using R-square. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.6687) and 153 observations.

The results evinced that imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), trade percentage of GDP (TRADEGDP), employment in service (EMPLOYMENTSERVICES) education index (EDUINDEX), economic freedom (EFINDEX) have a significant association with female total unemployment. Government revenues, percentage of GDP (GRGDP), trade percentage of GDP (TRADEGDP), and economic freedom (EFINDEX) are significant and negatively related with female total unemployment. On the other side, imports of goods and services (% of GDP) (IMGDP), employment in service (EMPLOYMENTSERVICES), education index (EDUINDEX) are significant and positively related with female total unemployment. Imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), trade percentage of GDP (TRADEGDP), employment in service (EMPLOYMENTSERVICES) education index (EDUINDEX), economic freedom (EFINDEX) are the factors that determine female total unemployment.

On top of that, the results offered that GDP growth (GDPGR) has a negative but not important relationship with total female unemployment. However, the financial crisis seemed to have a positive and not important association with total female unemployment.

Table 12: The determinants of total female unemployment 2000-2016

TUF	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
GDPGR	-.1475298	.0999321	-1.48	0.140	-.3433931	.0483335
IMGDP	.2499541	.0649443	3.85	0.000	.1226655	.3772426
GRGDP	-.2590489	.0559111	-4.63	0.000	-.3686327	-.149465
TRADEGDP	-.1488887	.0505083	-2.95	0.003	-.2478832	-.0498942
MVAGDP	.0045237	.0161954	0.28	0.780	-.0272187	.036266
EMPLOYMENTSERVICES	.1878683	.0462213	4.06	0.000	.0972763	.2784603
EDUINDEX	19.61585	6.169033	3.18	0.001	7.524765	31.70693
EFINDEX	-.4980165	.1030863	-4.83	0.000	-.700062	-.2959709
FCDUMMY	.6775092	1.662036	0.41	0.684	-2.580022	3.935041
_cons	35.02772	5.567745	6.29	0.000	24.11514	45.9403

Source: Author's own calculation (2020)

4.1.3. The determinants of adult unemployment

Table 13 shows that the impact of (labour market, economic, and educational, economic freedom, and financial crisis) variables on adult unemployment. The dependent variable is adult unemployment and the independent variables are GDP growth rate, manufacturing value added (% of GDP), imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, index of economic freedom, and financial crisis dummy variable. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and I couldn't select the appropriate model using Hausman test output and I selected the best of the two models depends on the strong fit using R-square. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.5275) and 153 observations.

The results presented that GDP growth (GDPGR), imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), and economic freedom (EFINDEX) are associated significantly with adult unemployment. Moreover, GDP growth (GDPGR), government revenues, percentage of GDP (GRGDP), and economic freedom (EFINDEX) have a significant negative relationship with adult unemployment.

On the other side, imports of goods and services (% of GDP) (IMGDP) have a significant positive relationship with adult unemployment. Besides that, the results showed that GDP growth (GDPGR), imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), and economic freedom (EFINDEX) are the determinants of adult unemployment.

Further, the results detected that the Education Index (EDUINDEX) has a negative but not important connection to adult unemployment. Nevertheless, the financial crisis has proven to have an opposite and not important association with adult unemployment.

Table 13: The determinants of adult unemployment 2000-2016

ADU	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]
GDPGR	-.1312812	.0647827	-2.03	0.043	-.258253 - .0043093
IMGDP	.1247579	.0421013	2.96	0.003	.0422409 .207275
GRGDP	-.0798264	.0362454	-2.20	0.028	-.150866 -.0087867
TRADEGDP	-.0127503	.0327429	-0.39	0.697	-.0769252 .0514246
MVAGDP	.0131791	.0104989	1.26	0.209	-.0073984 .0337567
EMPLOYMENTSERVICES	-.0053247	.0299637	-0.18	0.859	-.0640525 .0534032
EDUINDEX	-6.137625	3.999184	-1.53	0.125	-13.97588 1.700632
EFINDEX	-.2763799	.0668275	-4.14	0.000	-.4073595 -.1454004
FCDUMMY	-.9445264	1.077444	-0.88	0.381	-3.056278 1.167226

_cons	26.38056	3.609388	7.31	0.000	19.30628	33.45483
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Source: Author's own calculation (2020)

Table 14 shows that the impact of (labour market, economic, and educational, economic freedom, and financial crisis) variables on male adult unemployment. The dependent variable is male adult unemployment and the independent variables are GDP growth rate, manufacturing value added (% of GDP), imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, index of economic freedom, and financial crisis dummy variable. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and I couldn't select the appropriate model using Hausman test output and I selected the best of the two models depends on the strong fit using R-square. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.4677) and 153 observations.

The results offered that imports of goods and services (% of GDP) (IMGDP), education index (EDUINDEX), and economic freedom (EFINDEX) are associated significantly with male adult unemployment. Education index (EDUINDEX), and economic freedom (EFINDEX) have a significant negative relationship with male adult unemployment. On the other side, imports of goods and services (% of GDP) (IMGDP) have a significant positive relationship with male adult unemployment. Furthermore the analysis displayed that Imports of goods and services (% of GDP) (IMGDP), education index (EDUINDEX), and economic freedom (EFINDEX) are the determinants of male adult unemployment.

Besides that, the results exhibited that GDP growth (GDPGR) has a negative but not important relationship with male adult unemployment and, in addition, employment in the service sector tends to be non-essential in relation to male adult unemployment. Furthermore, the financial crisis tended to have an opposite and non-significant association with male adult unemployment.

Table 14: The determinants of male adult unemployment 2000-2016

ADUM	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
GDPGR	-.0988437	.0672861	-1.47	0.142	-.2307221	.0330347
IMGDP	.1081539	.0437282	2.47	0.013	.0224482	.1938597
GRGDP	-.0717698	.037646	-1.91	0.057	-.1455546	.0020151
TRADEGDP	.0059186	.0340082	0.17	0.862	-.0607362	.0725734
MVAGDP	.0158515	.0109046	1.45	0.146	-.0055212	.0372241
EMPLOYMENTSERVICES	-.011706	.0311216	-0.38	0.707	-.0727032	.0492913
EDUINDEX	-11.28342	4.153724	-2.72	0.007	-19.42457	-3.142272

EFINDEX	-0.2271062	.0694099	-3.27	0.001	-.3631472	-.0910652
FCDUMMY	-1.073185	1.11908	-0.96	0.338	-3.266541	1.120171
_cons	24.36258	3.748865	6.50	0.000	17.01494	31.71022

Source: Author's own calculation (2020)

Table 15 shows that the impact of (labour market, economic, and educational, economic freedom, and financial crisis) variables on female adult unemployment. The dependent variable is female adult unemployment and the independent variables are GDP growth rate, manufacturing value added (% of GDP), imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, index of economic freedom, and financial crisis dummy variable. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and Hausman test found that fixed-effect is appropriate but by evaluating the two models fit, I found that the random-effect model is more appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.6563) and 153 observations.

The results detected that GDP growth (GDPGR), imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), trade percentage of GDP (TRADEGDP), education index (EDUINDEX), economic freedom (EFINDEX) are associated significantly with female adult unemployment. GDP growth (GDPGR), government revenues, percentage of GDP (GRGDP), trade, percentage of GDP (TRADEGDP), and economic freedom (EFINDEX) has significant negative relationship with female adult unemployment. On the other side, imports of goods and services (% of GDP) (IMGDP), and education index (EDUINDEX) have a significant positive relationship with female adult unemployment. GDP growth (GDPGR), imports of goods and services (% of GDP) (IMGDP), government revenues, percentage of GDP (GRGDP), trade percentage of GDP (TRADEGDP), education index (EDUINDEX), economic freedom (EFINDEX) are the determinants of female adult unemployment.

On top of that, the results displayed that employment in the service was not important in the relationship with adult female unemployment. Furthermore, the financial crisis tended to have an opposite and not significant association with adult female unemployment.

Table 15: The determinants of female adult unemployment 2000-2016

ADUF	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]
GDPGR	-0.2125608	.074117	-2.87	0.004	[-0.3578274, -0.0672941]
IMGDP	.174217	.0481675	3.62	0.000	[.0798104, .2686236]
GRGDP	-0.1533859	.0414678	-3.70	0.000	[-0.2346614, -0.0721105]

TRADEGDP	-.0912815	.0374607	-2.44	0.015	-.1647032	-.0178599
MVAGDP	.0099087	.0120117	0.82	0.409	-.0136337	.0334512
EMPLOYMENTSERVICES	.0621142	.0342811	1.81	0.070	-.0050755	.1293039
EDUINDEX	18.90903	4.575409	4.13	0.000	9.941392	27.87667
EFINDEX	-.4091016	.0764564	-5.35	0.000	-.5589535	-.2592498
FCDUMMY	-.1869435	1.232689	-0.15	0.879	-2.602969	2.229082
_cons	27.67881	4.129449	6.70	0.000	19.58524	35.77239

Source: Author's own calculation (2020)

4.2. The impact of labour market regulations

In this section, I will show my results of the impact of Labour Market Regulations (LMR) and its variables on youth unemployment, total unemployment and adult unemployment. The logarithm (LOG) was utilized to prevent autocorrelations between the variables.

4.2.1. The impact of labour market regulations on youth unemployment

Table 16 shows results of the impact of LMR on youth unemployment in which the dependent variable is youth unemployment and independent variables are LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.5006) and 58 observations.

The results of random-effects GLS regression exhibited that LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription are associated significantly with youth unemployment.

The results presented that there is a significant negative relationship between LMR and youth unemployment. More specifically, the variables of LMR “hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on youth unemployment. The results clarified that LMR has a great effect on youth unemployment in which it has the highest coefficient among the variables and among its variables the mandated cost of worker dismissal has the greatest impact on youth unemployment in which it got the highest coefficient among LMR variables.

Moreover, the results disclosed that centralized collective bargaining and hours regulations have also a high effect on youth unemployment and among the lowest effect are hiring regulations and minimum wage, hiring and firing regulations, and conscription.

Table 16: The impact of LMR on youth unemployment 2000-2016

LOGYU	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
LOGhrandmw	.7100831	.1956896	3.63	0.000	.3265384	1.093628
LOGhandfr	.6407227	.2570653	2.49	0.013	.136884	1.144561
LOGccb	1.05849	.4158465	2.55	0.011	.2434459	1.873534
LOGhr	1.008788	.3491014	2.89	0.004	.3245621	1.693014
LOGmcofwd	1.183578	.3581782	3.30	0.001	.4815612	1.885594
LOGconscription	.6826173	.2297977	2.97	0.003	.232222	1.133013
LOGlmrs	-5.786344	1.885833	-3.07	0.002	-9.482508	-2.09018
_cons	4.521032	.7336267	6.16	0.000	3.08315	5.958914

Source: Author's own calculation (2020)

Table 17 shows results of the impact of LMR on male youth unemployment in which the dependent variable is male youth unemployment and independent variables are LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.4417) and 58 observations.

The results of random-effects GLS regression displayed that LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription are associated significantly with male youth unemployment.

The results demonstrated that there is a significant negative relationship between LMR and male youth unemployment. In addition to that, the variables of LMR “hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on male youth unemployment. The results evinced that LMR has a great effect on male youth unemployment in which it has the highest coefficient among the variables and among its variables the mandated cost of worker dismissal has the greatest impact on male youth unemployment in which it got the highest coefficient among LMR variables.

Besides that, the results showed that centralized collective bargaining and hours regulations have also a high effect on youth unemployment and among the lowest effect are hiring regulations and minimum wage, hiring and firing regulations, and conscription.

Table 17: The impact of LMR on male youth unemployment 2000-2016

LOGYUM	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
LOGhrandmw	.7899415	.2179266	3.62	0.000	.3628132	1.21707
LOGhandfr	.9762501	.2862766	3.41	0.001	.4151582	1.537342
LOGccb	1.142681	.4631008	2.47	0.014	.2350205	2.050342
LOGhr	1.33698	.3887712	3.44	0.001	.5750022	2.098957
LOGmcofwd	1.433876	.3988794	3.59	0.000	.6520872	2.215666
LOGconscription	.8499149	.2559105	3.32	0.001	.3483395	1.35149
LOGlmrs	-7.291179	2.100127	-3.47	0.001	-11.40735	-3.175005
_cons	5.018787	.8169916	6.14	0.000	3.417513	6.620062

Source: Author's own calculation (2020)

Table 18 shows results of the impact of LMR on female youth unemployment in which the dependent variable is female youth unemployment and independent variables are LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and Hausman test found that fixed-effect model is appropriate but by evaluating the two models fit, I found that the random-effect model is more appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.8440) and 58 observations.

The results of random-effects GLS regression demonstrated that hiring regulations and minimum wage, and centralized collective bargaining are associated significantly with female youth unemployment.

The results manifested that there is a negative but not significant relationship between LMR and female youth unemployment. The variables of LMR “hiring regulations and minimum wage and centralized collective bargaining” have a positive and significant impact on female youth unemployment. The results explicated that LMR has an effect on female youth unemployment but not comparable in degree and not significant as with the effect on youth unemployment and male youth unemployment.

In addition to that and among the significant variables, the results show that centralized collective bargaining has a higher effect on female youth unemployment. hiring regulations and minimum wage got a high impact on female youth unemployment.

Table 18: The impact of LMR on female youth unemployment 2000-2016

LOGYUF	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
LOGhrandmw	.4441521	.1602906	2.77	0.006	.1299882	.7583159
LOGhandfr	-.3676701	.2105638	-1.75	0.081	-.7803676	.0450274
LOGccb	.7592401	.3406226	2.23	0.026	.0916321	1.426848
LOGhr	-.1163115	.2859512	-0.41	0.684	-.6767655	.4441426
LOGmcofwd	.4767643	.293386	1.63	0.104	-.0982618	1.05179
LOGconscription	.1748407	.1882288	0.93	0.353	-.194081	.5437623
LOGlmrs	-1.156518	1.544698	-0.75	0.454	-4.184069	1.871034
_cons	3.177985	.6009184	5.29	0.000	2.000207	4.355763

Source: Author's own calculation (2020)

4.2.2. The impact of labour market regulations on total unemployment

Table 19 shows results of the impact of LMR on total unemployment in which the dependent variable is total unemployment and independent variables are LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.2865) and 58 observations.

The results of random-effects GLS regression presented that LMR and its variables which are hiring regulations and minimum wage, hours Regulations, mandated cost of worker dismissal, and conscription are associated significantly with total unemployment.

The results proved that there is a significant negative relationship between LMR and total unemployment. More specifically, the variables of LMR “Hiring regulations and minimum wage, hours regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on total unemployment. The results discovered that LMR has a great effect on total unemployment in which it has the highest coefficient among the variables and among its variables the mandated cost of worker dismissal has the greatest impact on total unemployment in which it got the highest coefficient among LMR variables. On top of that, the results showed that

hiring regulations and the minimum wage have the lowest effect on total unemployment in which it has the lowest coefficient. Hours regulations have also high effect on total unemployment comparing to the effect of hiring and firing regulations and conscription.

Table 19: The impact of LMR on total unemployment 2000-2016

LOGTU	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
LOGhrandmw	.5713285	.2615011	2.18	0.029	.0587957	1.083861
LOGhandfr	.626381	.3435178	1.82	0.068	-.0469015	1.299663
LOGccb	.8548044	.555698	1.54	0.124	-.2343436	1.943953
LOGhr	.9525646	.4665061	2.04	0.041	.0382294	1.8669
LOGmcofwd	1.191531	.4786355	2.49	0.013	.2534226	2.129639
LOGconscription	.6314235	.30708	2.06	0.040	.0295578	1.233289
LOGlmrs	-5.351341	2.520049	-2.12	0.034	-10.29055	-.412136
_cons	3.734981	.9803495	3.81	0.000	1.813531	5.65643

Source: Author's own calculation (2020)

Table 20 shows results of the impact of LMR on male total unemployment in which the dependent variable is male total unemployment and independent variables are LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.2172) and 58 observations.

The results of random-effects GLS regression manifested that the mandated cost of worker dismissal is associated significantly with male total unemployment.

The results illustrated that there is a negative but not significant relationship between LMR and male total unemployment. In addition to that, the variable of LMR “Mandated cost of worker dismissal” has a positive and significant impact on male total unemployment. The results disclosed that LMR has an effect on male total unemployment but not significant. Further to that and among the significant variables, the results show that the mandated cost of worker dismissal has a higher effect on male total unemployment.

Table 20: The impact of LMR on male total unemployment 2000-2016

LOGTUM	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
LOGhrandmw	.4600282	.296318	1.55	0.121	-.1207445	1.040801
LOGhandfr	.709706	.3892546	1.82	0.068	-.0532189	1.472631
LOGccb	.7019201	.629685	1.11	0.265	-.5322398	1.93608
LOGhr	.9066824	.5286179	1.72	0.086	-.1293897	1.942755
LOGmcofwd	1.276406	.5423622	2.35	0.019	.2133961	2.339417
LOGconscription	.6435042	.3479654	1.85	0.064	-.0384953	1.325504
LOGlmrs	-5.323595	2.855574	-1.86	0.062	-10.92042	.2732276
_cons	3.819215	1.110876	3.44	0.001	1.641939	5.996491

Source: Author's own calculation (2020)

Table 21 shows results of the impact of LMR on female total unemployment in which the dependent variable is female total unemployment and independent variables are LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and Hausman test found that fixed-effect model is appropriate but by evaluating the two models fit, I found that the random-effect model is more appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.6781) and 58 observations.

The results of random-effects GLS regression proved that hiring regulations and minimum wage, centralized collective bargaining, and mandated cost of worker dismissal are associated significantly with female total unemployment.

The results explicated that there is a negative but not significant relationship between LMR and female total unemployment. The variables of LMR "Hiring regulations and minimum wage, centralized collective bargaining, and mandated cost of worker dismissal" have a positive and significant impact on female total unemployment. The results evinced that LMR has an effect on female total unemployment but not significant. Additionally and among the significant variables, the results show that centralized collective bargaining has the highest effect on female total unemployment and the lowest effect was by hiring regulations and minimum wage.

Table 21: The impact of LMR on female total unemployment 2000-2016

LOGTUF	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
LOGhrandmw	.6255207	.1967804	3.18	0.001	.2398383	1.011203
LOGhandfr	.0587208	.2584981	0.23	0.820	-.4479262	.5653679
LOGccb	.9159907	.4181644	2.19	0.028	.0964036	1.735578
LOGhr	.5243569	.3510472	1.49	0.135	-.163683	1.212397
LOGmcofwd	.7297416	.3601746	2.03	0.043	.0238124	1.435671
LOGconscription	.3757905	.2310786	1.63	0.104	-.0771152	.8286961
LOGlmrs	-3.243455	1.896344	-1.71	0.087	-6.960221	.4733108
_cons	3.01131	.7377158	4.08	0.000	1.565413	4.457206

Source: Author's own calculation (2020)

4.2.3. The impact of labour market regulations on adult unemployment

Table 22 shows results of the impact of LMR on adult unemployment in which the dependent variable is adult unemployment and independent variables are LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.2618) and 58 observations.

The results of random-effects GLS regression illustrated that LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, hours regulations, mandated cost of worker dismissal, and conscription are associated significantly with adult unemployment. The results showed that there is a significant negative relationship between LMR and adult unemployment. In addition to that, the variables of LMR “Hiring regulations and minimum wage, hiring and firing regulations, hours regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on adult unemployment.

The results clarified that LMR has the greatest effect on adult unemployment in which it has the highest coefficient among the variables and among its variables the mandated cost of worker dismissal has the greatest impact on adult unemployment in which it got the highest coefficient among LMR variables. Furthermore, the results offered that hours regulations have also high effect on adult unemployment and among the lowest effect are hiring regulations and minimum wage, hiring and firing regulations, and conscription.

Table 22: The impact of LMR on adult unemployment 2000-2016

LOGADU	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
LOGhrandmw	.644293	.2601632	2.48	0.013	.1343825	1.154203
LOGhandfr	.7270225	.3417602	2.13	0.033	.0571849	1.39686
LOGccb	.976283	.5528548	1.77	0.077	-.1072925	2.059858
LOGhr	1.156038	.4641193	2.49	0.013	.2463809	2.065695
LOGmcofwd	1.221651	.4761865	2.57	0.010	.2883424	2.154959
LOGconscription	.6901338	.3055088	2.26	0.024	.0913476	1.28892
LOGlmrs	-6.067776	2.507155	-2.42	0.016	-10.98171	-1.153843
_cons	3.661193	.9753335	3.75	0.000	1.749574	5.572811

Source: Author's own calculation (2020)

Table 23 shows results of the impact of LMR on male adult unemployment in which the dependent variable is male adult unemployment and independent variables are LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.1907) and 58 observations.

The results of random-effects GLS regression explicated that the mandated cost of worker dismissal is associated significantly with male adult unemployment.

The results uncovered that there is a negative but not significant relationship between LMR and male adult unemployment. In addition to that, the variable of LMR “Mandated cost of worker dismissal” has a positive and significant impact on male adult unemployment. The results detected that LMR has an effect on male adult unemployment but not significant. Over and above that and among the significant variables, the results show that the mandated cost of worker dismissal has the highest effect on male adult unemployment.

Table 23: The impact of LMR on male adult unemployment 2000-2016

LOGADUM	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
LOGhrandmw	.4512173	.3022413	1.49	0.135	-.1411648	1.043599
LOGhandfr	.7132108	.3970356	1.80	0.072	-.0649647	1.491386
LOGccb	.7006597	.6422722	1.09	0.275	-.5581706	1.95949
LOGhr	.9797754	.5391848	1.82	0.069	-.0770074	2.036558
LOGmcofwd	1.260156	.5532038	2.28	0.023	.1758961	2.344415
LOGconscription	.6636033	.354921	1.87	0.062	-.0320292	1.359236
LOGlmrs	-5.476456	2.912656	-1.88	0.060	-11.18516	.2322446
_cons	3.620431	1.133082	3.20	0.001	1.399632	5.84123

Source: Author's own calculation (2020)

Table 24 shows results of the impact of LMR on female adult unemployment in which the dependent variable is female adult unemployment and independent variables are LMR and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.5804) and 58 observations.

The results of random-effects GLS regression clarified that LMR and its variables which are hiring regulations and minimum wage, centralized collective bargaining, hours regulations, and mandated cost of worker dismissal are associated significantly with female adult unemployment.

The results discovered that there is a significant negative relationship between LMR and female adult unemployment. More specifically, the variables of LMR “Hiring regulations and minimum wage, centralized collective bargaining, hours regulations, and mandated cost of worker dismissal” have a positive and significant impact on female adult unemployment.

The results exhibited that LMR has the greatest effect on female adult unemployment in which it has the highest coefficient among the variables and among its variables the centralized collective bargaining has the greatest impact on female adult unemployment in which it got the highest coefficient among LMR variables. Additionally, the results showed that hiring regulations and

minimum wage, hours regulations, and mandated cost of worker dismissal have also high effect on female adult unemployment.

Table 24: The impact of LMR on female adult unemployment 2000-2016

LOGADUF	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
LOGhrandmw	.8070882	.1993738	4.05	0.000	.4163227	1.197854
LOGhandfr	.2840269	.261905	1.08	0.278	-.2292974	.7973513
LOGccb	1.145308	.4236755	2.70	0.007	.3149189	1.975696
LOGhr	.8982124	.3556738	2.53	0.012	.2011045	1.59532
LOGmcofwd	.7351062	.3649215	2.01	0.044	.0198732	1.450339
LOGconscription	.4397689	.2341241	1.88	0.060	-.0191058	.8986436
LOGlmrs	-4.494928	1.921337	-2.34	0.019	-8.260679	-.7291776
_cons	3.06158	.7474385	4.10	0.000	1.596628	4.526533

Source: Author's own calculation (2020)

4.3. The impact of the minimum wage

In this section, I will summarize the results of the impact of minimum wage on youth, total and adult unemployment. The data of the statutory nominal gross monthly minimum wage is multiplied by 12 to get the yearly minimum wage. The currency of data is selected by USD (US dollar).

4.3.1. The case of youth unemployment

Table 25 shows the results of the impact of minimum wage on youth unemployment in which the dependent variable is youth unemployment and the independent variable is minimum wage. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (0.2393) and 72 observations.

The results of random-effects GLS regression showed that there is a significant negative relationship between minimum wage and youth unemployment.

Table 25: The impact of the minimum wage on youth unemployment 2000-2011

YU	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
MW	-.0043488	.0010001	-4.35	0.000	-.006309	-.0023887
_cons	34.49729	3.040064	11.35	0.000	28.53888	40.45571

Source: Author's own calculation (2020)

Table 26 shows the results of the impact of minimum wage on male youth unemployment in which the dependent variable is male youth unemployment and the independent variable is minimum wage. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (within = 0.2847) and 72 observations.

The results of random-effects GLS regression displayed that also that there is a significant negative relationship between minimum wage and youth unemployment among males.

Table 26: The impact of the minimum wage on male youth unemployment 2000-2011

YUM	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
MW	-.0052451	.0010949	-4.79	0.000	-.007391	-.0030992
_cons	34.17133	3.483006	9.81	0.000	27.34476	40.99789

Source: Author's own calculation (2020)

Table 27 shows the results of the impact of minimum wage on female youth unemployment in which the dependent variable is female youth unemployment and the independent variable is minimum wage. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and I couldn't select the appropriate model using Hausman test output and I selected the best of the two models depends on the strong fit using R-square. The output showed that the appropriate model is the random-effects regression with R-square (0.3924) and 72 observations.

The results of random-effects regression presented that also that there is a negative relationship but not significant between minimum wage and youth unemployment among females.

Table 27: The impact of the minimum wage on female youth unemployment 2000-2011

YUF	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
MW	-.0003848	.0009767	-0.39	0.694	-.0022991	.0015296
_cons	34.03508	4.644132	7.33	0.000	24.93275	43.13741

Source: Author's own calculation (2020)

4.3.2. The case of total unemployment

Table 28 shows the results of the impact of minimum wage on total unemployment in which the dependent variable is total unemployment and the independent variable is minimum wage. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (within = 0.2717) and 72 observations.

The results of random-effects GLS regression demonstrated that there is a significant negative relationship between minimum wage and total unemployment.

Table 28: The impact of the minimum wage on total unemployment 2000-2011

TU	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
MW	-.0029781	.00063	-4.73	0.000	-.0042128	-.0017434
_cons	17.72088	1.944168	9.11	0.000	13.91038	21.53138

Source: Author's own calculation (2020)

Table 29 shows the results of the impact of minimum wage on male total unemployment in which the dependent variable is male total unemployment and the independent variable is minimum wage. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the fixed-effects model is appropriate. The output showed that the appropriate model is the fixed-effects regression with R-square (within = 0.3180) and 72 observations.

The results of fixed-effects regression also manifested that there is a significant negative relationship between minimum wage and total unemployment among males.

Table 29: The Impact of the minimum wage on male total unemployment 2000-2011

TUM	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
MW	-.0038496	.0006993	-5.50	0.000	-.0052462	-.002453
_cons	17.96573	1.338553	13.42	0.000	15.29245	20.639

Source: Author's own calculation (2020)

Table 30 shows the results of the impact of minimum wage on female total unemployment in which the dependent variable is female total unemployment and the independent variable is minimum wage. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the fixed-effects model is appropriate. The output showed that the appropriate model is the fixed-effects regression with R-square (0.4362) and 72 observations.

The results of fixed-effects regression proved that also that there is a negative relationship but not significant between minimum wage and total unemployment among females.

Table 30: The impact of the minimum wage on female total unemployment 2000-2011

TUF	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
MW	-.001257	.0006447	-1.95	0.056	-.0025445	.0000304
_cons	19.8731	1.233985	16.10	0.000	17.40867	22.33754

Source: Author's own calculation (2020)

4.3.3. The case of adult unemployment

Table 31 shows the results of the impact of minimum wage on adult unemployment in which the dependent variable is adult unemployment and the independent variable is minimum wage. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (within = 0.2337) and 72 observations.

The results of random-effects GLS regression illustrated that there is a significant negative relationship between minimum wage and adult unemployment.

Table 31: The impact of the minimum wage on adult unemployment 2000-2011

ADU	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
MW	-.0019813	.000483	-4.10	0.000	-.0029278	-.0010347
_cons	12.05811	1.582714	7.62	0.000	8.956047	15.16017

Source: Author's own calculation (2020)

Table 32 shows the results of the impact of minimum wage on male adult unemployment in which the dependent variable is male adult unemployment and the independent variable is minimum wage. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the fixed-effects model is appropriate. The output showed that the appropriate model is the fixed-effects regression with R-square (within = 0.2963) and 72 observations.

The results of fixed-effects regression explicated that also that there is a significant negative relationship between minimum wage and adult unemployment among males.

Table 32: The impact of the minimum wage on male adult unemployment 2000-2011

ADUM	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
MW	-.0027758	.0005306	-5.23	0.000	-.0038354	-.0017163
_cons	12.59549	1.015548	12.40	0.000	10.5673	14.62368

Source: Author's own calculation (2020)

Table 33 shows the results of the impact of minimum wage on female adult unemployment in which the dependent variable is female adult unemployment and the independent variable is minimum wage. I tested the model using a fixed-effect regression model and random effect regression model and I evaluated both models by Hausman test and the Hausman test found that the random-effects model is appropriate. The output showed that the appropriate model is the random-effects GLS regression with R-square (between = 0.3318) and 72 observations.

The results of random-effects GLS regression cleared up that also that there is a negative relationship but not significant between minimum wage and adult unemployment among females.

Table 33: The impact of the minimum wage on female adult unemployment 2000-2011

ADUF	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
MW	-.0005075	.0005136	-0.99	0.323	-.0015141	.0004991
_cons	13.09266	1.5257	8.58	0.000	10.10234	16.08297

Source: Author's own calculation (2020)

4.4. Evaluation and discussion of research findings

The outcomes of the research revealed that GDP growth, government revenues, percentage of GDP, manufacturing value added (% of GDP), employment in service, and economic freedom are associated significantly with youth unemployment. Accordingly, the determinants of total youth unemployment are GDP growth, government revenues, percentage of GDP, manufacturing value added (% of GDP), employment in service, and economic freedom are the determinants of youth unemployment.

On the case of male youth unemployment, the results displayed that GDP growth, government revenues, percentage of GDP, manufacturing value added (% of GDP), employment in service, and economic freedom are the determinants of male youth unemployment. In the case of female youth unemployment, the results show Imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, manufacturing value added (% of GDP), employment in service, education index, economic freedom are the determinants of female youth unemployment.

In addition to that, the study results presented that imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom are associated significantly with total unemployment. Therefore the determinants of total unemployment are Imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom.

The results demonstrated that imports of goods and services (% of GDP), government revenues, percentage of GDP, education index, and economic freedom are associated significantly with male total unemployment. Therefore the determinants of male total unemployment are imports of goods and services (% of GDP), government revenues, percentage of GDP, education index, and economic freedom.

The results manifested that imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, and economic freedom are associated significantly with female total unemployment. Therefore the

determinants of female total unemployment are Imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, and economic freedom.

Moreover, the results proved that GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom are associated significantly with total adult unemployment. Therefore the determinants of total adult unemployment are GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom.

The results of the study appeared that imports of goods and services (% of GDP), education index, and economic freedom are associated significantly with male adult unemployment. Therefore the determinants of male adult unemployment are Imports of goods and services (% of GDP), education index, and economic freedom.

The results of the study explained that GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, education index, and economic freedom are associated significantly with female adult unemployment. Therefore the determinants of female adult unemployment are GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, education index, and economic freedom.

The results illustrated that the determinants of males youth unemployment are different from determinants of female youth unemployment, for example, the determinants of female youth unemployment are imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, manufacturing value added (% of GDP), employment in service, education index, economic freedom which different from determinants of male youth unemployment.

The results explicated that the determinants of total male unemployment are different from determinants of total female unemployment, for instance, the determinants of total female unemployment are imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, and economic freedom which dissimilar from determinants of total male unemployment.

The results cleared up that the determinants of males adult unemployment are different from determinants of female adult unemployment, for instance, the determinants of female adult unemployment are GDP growth, imports of goods and services (% of GDP), government revenues,

percentage of GDP, trade percentage of GDP, education index, economic freedom which unlike from determinants of male adult unemployment.

The GDP growth has a negative relationship in case of youth unemployment and males youth unemployment, but in case of females youth unemployment, the results clarified that the GDP growth is not significantly related to females youth unemployment. The GDP growth is not significant in all models of total unemployment. In another hand, in the case of adults' unemployment the GDP growth is also significantly related to adults' unemployment except in the case of males' adults' unemployment.

In the case of the significant findings, the relationships between the GDP and unemployment proved that the GDP can effect on unemployment in a positive way and reduces unemployment. This findings in case of youth unemployment and GDP growth relations can be in harmony with DIETRICH (2013) findings. Moreover, in the case of the findings regarding youth unemployment determinants may in line with CAPORALE–GIL-ALANA (2014) and EBAIDALLA (2016) findings. In addition to that, the finding can go in line with BAYRAK–TATLI (2016) findings.

On the other side, in case total unemployment, the results uncovered that the relationships between GDP growth and total unemployment, males total unemployment and females' total unemployment is not significant. This finding is may in line with (ŞAHİN, 2016) findings who stated that the relationship between unemployment and GDP is negative but insignificant in the case of the short-run. The reason for not significant of GDP growth on total unemployment maybe because of not enough GDP growth comparing to labour force growth. The second reason can be maybe because of the short term study as ŞAHİN (2016) found that in the case of short-run unemployment and GDP is negative but insignificant. The GDP growth is significant in case of youth unemployment and males youth unemployment, ***therefore the results are supporting the first hypothesis H1: "Economic growth impact positively on youth unemployment in the Arab world"***.

In the case of government revenues, percentage of GDP, the results discovered that government revenues, percentage of GDP has negative and significant relationships with youth unemployment, male youth unemployment, and females youth unemployment. This finding showed the impact of the government, percentage of GDP on youth unemployment and unemployment of youth among males and females as well.

Moreover, the findings disclosed that government revenues have negative and significant relationships with total unemployment and males and females unemployment as well. This implies

how government revenues are critical in explaining unemployment. Subsequently, government revenues can play a role in decreasing total unemployment.

Furthermore, in the case of adult unemployment, government revenues, percentage of GDP appeared to have significant negative relations with adult unemployment, and females' adults' unemployment. Additionally, the results show there is a negative but significant relationship between males adults unemployment and government revenues.

Imports of goods and services (% of GDP) have a significant positive relationship with females' youth unemployment. This finding may be in harmony with DEMIDOVA–SIGNORELLI (2012). In the case of youth unemployment and male youth unemployment, the results exhibited that the relations between imports of goods and services (% of GDP) and youth unemployment and male youth unemployment are not significant. Moreover, a positive and significant relation appeared between imports of goods and services (% of GDP) and total unemployment, male total unemployment and females' total unemployment.

Additionally, the results evinced that there is a positive relationship between imports of goods and services (% of GDP) and adults' unemployment, male adult unemployment, and females' adults' unemployment. This finding can be explained and may be in harmony with (OGBEIDE et al., 2015) findings as trade openness impact on unemployment. This finding shows how Goods and services imports can impact, explain and help in determining unemployment among youth females, and total unemployment, male total unemployment and females' total unemployment and in addition to determining adults' unemployment, male adult unemployment, and females' adults' unemployment.

The results offered that the manufacturing value added (% of GDP) has negative and significant relationships with youth unemployment, male youth unemployment, and females youth unemployment. This is proving that how the manufacturing value added (% of GDP) can impact on unemployment among youth. This finding may be in harmony with (BAAH-BOATENG, 2016) findings. On another hand, the manufacturing value added (% of GDP) and total unemployment and adults unemployment found to be not significantly related.

The trade, percentage of GDP has negative and significant relationships with females youth unemployment, females total unemployment, and females adult unemployment. The finding of the trade, percentage of GDP and its relations with females youth unemployment may be in harmony with ANYANWU (2014) findings. This implies how the trade impact on females youth unemployment, females total unemployment, and females adult unemployment and how it can help on decreasing unemployment among females. This finding may be in harmony with (MBEKENI–PHIRI, 2019)

findings of how trade can be a determinant for unemployment. Moreover, the relations between trade, percentage of GDP and youth unemployment, male youth unemployment, total unemployment, male total unemployment, adult unemployment, male adult unemployment found to be not significant.

Regarding employment in services, the results surfaced that employment in services is positively related to youth unemployment, males youth unemployment, and females youth unemployment. This finding is going not in harmony with GOMEZ-SALVADOR-LEINER-KILLINGER (2008) findings. In addition to that, the finding showed that employment in services has positive relationships with total unemployment and males and females unemployment but significant only in the case of females unemployment. The reason behind that may be because this sector not has a great impact on unemployment among females. This finding shows how employment in services can help to understand unemployment among women. Moreover, there are no significant relations between adult's unemployment, male adult unemployment, and female adult's unemployment and employment in the services sector.

Education as representing with education index found to be not significantly related to youth unemployment, male youth unemployment and significantly related to females youth unemployment in which the relations between education index and females youth unemployment is positive. Moreover, education index has a negative relationship with total unemployment but not significant. In the case of male total unemployment, the education index appeared to have a negative and significant relationship. On the other side, In the case of the female's total unemployment, the education index appeared to have a positive and significant relationship. The relations should be negative as education impact negatively on unemployment, but here is positive and the reason behinds that maybe because of cumulative and high unemployment among females which leads education to have positive not a negative relation with unemployment of females.

In addition to that, females may also have more opportunities job on fields which do not need more education, so if females got more education can join this job opportunities because of some reasons like low wages, for example, this can be seen further regarding the case of education level and unemployment in Palestine case (SALAMA, 2017B). Furthermore, education index and male adults' unemployment have a negative and significant relationship. Additionally, the results found that there is a positive relationship between education index and female adults' unemployment

Economic freedom has negative and significant relationships with youth, total and adult unemployment and its gender as well. This finding goes in line with (FELDMANN, 2007) and (HELLER-STEPHENSON, 2014) findings. This finding shows how economic freedom is

influential on the unemployment of youth, total and adult unemployment. Therefore, economic freedom development can play a role in decreasing unemployment of youth, total and adult unemployment. ***Therefore the third hypothesis H3: “Economic freedom impact positively on youth unemployment in the Arab world” is accepted.***

Regarding the impact of the financial crisis 2008 on youth, total and adult unemployment, my finding showed that there no significant impact on youth, total and adult unemployment but surprisingly, the sign is negative between, financial crisis variable and unemployment variables (male youth unemployment, total unemployment, male total unemployment and adult unemployment in total and males and females as well). Moreover, the outcomes of the study proved that there is a positive but not significant in case of youth unemployment, female youth unemployment, and female total unemployment. This finding may in line with (DEMIDOVA-SIGNORELLI, 2010) findings. This may because the financial crisis is not hitting the Arab world much like the US and EU. The reasons behind that may because of the limit impact of the financial crisis on the economy because of large liquidity surplus, low market capitalization and relative isolation among Arab countries as (BEHRENDT et al., 2009) highlighted.

In addition to that in some countries of the Arab world, unemployment is growing because of other reasons, so the impact of these reasons may impact more on unemployment in the region, for that the financial crisis 2008 appeared not to affect on youth, total and adult unemployment. ***Therefore the results are not supporting the second hypothesis H2: “The financial crisis impact negatively on youth unemployment and higher than its impact on older in the Arab world”.***

In the case of labour market regulations, the results detected that labour market regulations have a significant and negative relationship with youth, total, and adult unemployment. In other means, labour market regulations have a negative effect on unemployment among youth, total and adults as well. More specifically, labour market regulations are based on is flexible or rigorous and this finding can go in harmony with (FELDMANN, 2009C) findings. This implies how labour market regulations can impact on unemployment among youth, total and adult and how the labour market regulations development can help to decrease youth unemployment, total unemployment, and adult unemployment. On the other hand, Centralized collective bargaining associated positively with unemployment among females in youth, total, and adult. This is in harmony with (FELDMANN, 2009C) findings.

In the case of the impact of minimum wage findings, the results of random-effects GLS regression found out that there is a significant negative relationship between minimum wage and youth unemployment. Moreover, the results showed also that there is a significant negative relationship

between minimum wage and youth unemployment among males. On the other side, the results of random-effects GLS regression showed also that there is a negative relationship but not significant between minimum wage and youth unemployment among females. This finding is not in harmony with (PEREIRA, 2003; NEUMARK–WASCHER, 2004; CHUANG, 2006) and inconsistent with (GORRY, 2013).

In addition to that my study showed that there is a significant negative relationship between minimum wage and total unemployment. Moreover, the results of fixed-effects regression also showed that there is a significant negative relationship between minimum wage and total unemployment among males. On the other side, the results of fixed-effects regression showed also that there is a negative relationship but not significant between minimum wage and total unemployment among females.

Moreover, my study showed that there is a significant negative relationship between minimum wage and adult unemployment. Moreover, the results of fixed-effects regression elucidated also that there is a significant negative relationship between minimum wage and adult unemployment among males. On the other side, the results of random-effects GLS regression indicated also that there is a negative relationship but not significant between minimum wage and youth unemployment among females. Despite the small coefficient of relationships between the two variable but the relationships for the negative relationships between the two variables can be the short run because, in the short run, the increase of minimum wages lead to increase the employment. Moreover, the private and public sectors' wages may impact for example (SALAMA, 2017A).

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

This dissertation aims to explore the determinants of youth unemployment in the Arabic world. Firstly, the study utilized panel regression methods to address the effect of (labour market, economic, and educational, economic freedom, financial crisis) variables on youth unemployment total unemployment and adult unemployment and in addition to examining the impact on unemployment among gender as well. The study covered Algeria, Egypt, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, and Tunisia in the time series study from 2000 to 2016.

The results of the study showed that GDP growth, government revenues, percentage of GDP, manufacturing value added (% of GDP), employment in service, and economic freedom are associated significantly with youth unemployment. Therefore the determinants of total youth unemployment are GDP growth, government revenues, percentage of GDP, manufacturing value added (% of GDP), employment in service, and economic freedom are the determinants of youth unemployment.

On the case of male youth unemployment, the results show GDP growth, government revenues, percentage of GDP, manufacturing value added (% of GDP), employment in service, and economic freedom are the determinants of male youth unemployment. In the case of female youth unemployment, the results show Imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, manufacturing value added (% of GDP), employment in service, education index, economic freedom are the determinants of female youth unemployment.

In addition to that, the study results show that imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom are associated significantly with total unemployment. Therefore the determinants of total unemployment are Imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom.

The results show that imports of goods and services (% of GDP), government revenues, percentage of GDP, education index, and economic freedom are associated significantly with male total unemployment. Therefore the determinants of male total unemployment are imports of goods and services (% of GDP), government revenues, percentage of GDP, education index, and economic freedom. The results show that imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, and economic freedom are associated significantly with female total unemployment. Therefore the determinants of female total unemployment are Imports of goods and services (% of GDP),

government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, and economic freedom.

Moreover, the results show that GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom are associated significantly with total adult unemployment. Therefore the determinants of total adult unemployment are GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom.

The results of the study show that imports of goods and services (% of GDP), education index, and economic freedom are associated significantly with male adult unemployment. Therefore the determinants of male adult unemployment are Imports of goods and services (% of GDP), education index, and economic freedom.

The results of the study show that GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, education index, economic freedom are associated significantly with female adult unemployment. Therefore the determinants of female adult unemployment are GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, education index, and economic freedom.

Secondly, the study applied panel regression methods to address the effect of labour market regulations on youth unemployment total unemployment and adult unemployment and in addition to examining the impact on unemployment among gender as well. The study will cover the following countries Algeria, Egypt, Jordan, Morocco, and Tunisia in the time series study from 2000 to 2016.

The results of random-effects GLS regression showed Labour Market Regulations (LMR) and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription are associated significantly with youth unemployment. The results showed, that there is a significant negative relationship between LMR and youth unemployment.

More specifically, the variables of LMR “hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hour’s regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on youth unemployment. The results of random-effects GLS regression showed Labour Market Regulations (LMR) and its variables which are hiring regulations and minimum wage, hiring and firing regulations, centralized

collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription are associated significantly with male youth unemployment.

The results showed that there is a significant negative relationship between LMR and male youth unemployment. In addition to that, the variables of LMR “hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on male youth unemployment. The results of random-effects GLS regression showed hiring regulations and minimum wage, and centralized collective bargaining is associated significantly with female youth unemployment.

The results showed that there is a negative but not significant relationship between LMR and female youth unemployment. The variables of LMR “hiring regulations and minimum wage and centralized collective bargaining” have a positive and significant impact on female youth unemployment. The results of random-effects GLS regression showed Labour Market Regulations (LMR) and its variables which are hiring regulations and minimum wage, hours Regulations, mandated cost of worker dismissal, and conscription is associated significantly with total unemployment. The results showed that there is a significant negative relationship between LMR and total unemployment.

More specifically, the variables of LMR “Hiring regulations and minimum wage, hour’s regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on total unemployment. The results of random-effects GLS regression showed the mandated cost of worker dismissal is associated significantly with male total unemployment. The results showed that there is a negative but not significant relationship between LMR and male total unemployment.

In addition to that, the variable of LMR “Mandated cost of worker dismissal” has a positive and significant impact on male total unemployment. The results of random-effects GLS regression showed hiring regulations and minimum wage, centralized collective bargaining, and mandated cost of worker dismissal are associated significantly with female total unemployment. The results showed that there is a negative but not significant relationship between LMR and female total unemployment. The variables of LMR “Hiring regulations and minimum wage, centralized collective bargaining, and mandated cost of worker dismissal” have a positive and significant impact on female total unemployment.

The results of random-effects GLS regression showed Labour Market Regulations (LMR) and its variables which are hiring regulations and minimum wage, hiring and firing regulations, hours

regulations, mandated cost of worker dismissal, and conscription are associated significantly with adult unemployment. The results showed that there is a significant negative relationship between LMR and adult unemployment. In addition to that, the variables of LMR “Hiring regulations and minimum wage, hiring and firing regulations, hours regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on adult unemployment.

The results of random-effects GLS regression showed the mandated cost of worker dismissal is associated significantly with male adult unemployment. The results showed that there is a negative but not significant relationship between LMR and male adult unemployment. In addition to that, the variable of LMR “Mandated cost of worker dismissal” has a positive and significant impact on male adult unemployment.

The results of random-effects GLS regression showed Labour Market Regulations (LMR) and its variables which are hiring regulations and minimum wage, centralized collective bargaining, hours regulations, and mandated cost of worker dismissal are associated significantly with female adult unemployment. The results showed that there is a significant negative relationship between LMR and female adult unemployment. More specifically, the variables of LMR “Hiring regulations and minimum wage, centralized collective bargaining, hours regulations, and mandated cost of worker dismissal” have a positive and significant impact on female adult unemployment.

Thirdly, the study used panel regression methods to test the impact of the minimum wage on the level of youth unemployment, total unemployment, and adult unemployment. We will utilize the availability of minimum wage in some countries according to the availability of this variable in the following countries (Algeria, Jordan, Lebanon Egypt Morocco, and Tunisia) for the time series from 2000 to 2011.

The results of random-effects GLS regression showed that there is a significant negative relationship between minimum wage and youth unemployment. Moreover, the results showed also that there is a significant negative relationship between minimum wage and youth unemployment among males. On the other side, the results of random-effects GLS regression showed also that there is a negative relationship but not significant between minimum wage and youth unemployment among females.

The results of random-effects GLS regression showed that there is a significant negative relationship between minimum wage and total unemployment. Moreover, the results of fixed-effects regression also showed that there is a significant negative relationship between minimum wage and total unemployment among males. On the other side, the results of fixed-effects

regression showed also that there is a negative relationship but not significant between minimum wage and total unemployment among females.

The results of random-effects GLS regression showed that there is a significant negative relationship between minimum wage and adult unemployment. Moreover, the results of fixed-effects regression showed also that there is a significant negative relationship between minimum wage and adult unemployment among males. On the other side, the results of random-effects GLS regression showed also that there is a negative relationship but not significant between minimum wage and youth unemployment among females.

5.2. Recommendations

The results and findings summarized in the conclusions which need for some policies and recommendations.

- Economic growth is critical for employment creations in which it needs development to cover the growth of the labour force available annually.
- Education has a significant positive relationship with female's unemployment among youth, total, and adult. Firstly, the outputs of the education system should be convenient with the labour market needs. Moreover, in this case, technical education can be a partial solution to improve the outputs of the education system.
- As economic freedom has negative and significant relationships with youth, total and adult unemployment and its gender as well. Secondly, Economic freedom development should be improving at all stages like business freedom, financial freedom, investment freedom, monetary freedom, trade freedom particularly in terms of investment freedom which can attract more investors to invest in the region and therefore create more job opportunities for youth.
- As labour market regulations have a significant and negative relationship with youth, total, and adult unemployment. Thirdly, flexible labour market regulations are needed in the Arab world to make youth easily access to the labour market.
- As negative relationship appeared between minimum wage and unemployment. Fourthly, fair minimum wages should be sited according to the standard of living especially for youth employment but at the same time not strict labour market regulations which lead youth to have a normal wage and entering the labour market easily.
- Fifthly, the free movement of individuals between the Arabic countries will improve the labour market in the Arab world, especially for youth.

- Training of job search for youth for using the internet effectively and applying to jobs to be online to increase productivity by policymakers.
- Training for self-employment can be helpful for young people to reduce the pressure on the public sectors.
- Developing private sectors to absorb more young people after offering concentrated training to young graduates before joining private-sector jobs to substitute the challenge of lack of experiences of youth.
- The agriculture sector can be critical for employment in some countries in which wages in the sector must develop to be in harmony with living prices so this sector can attract a more young person's for employment particularly the young without or less educated.
- The service sector can be one of the important sectors for the future of employment which need development to absorb more young people especially for the educated young.
- One of the most important factors that can help to decrease unemployment of youth is integration between the Arab world in terms of employment needs.

5.3. Strengths, limitations and future research directions

This dissertation has some strength, limitations and in addition to that, further research in the future is concluded.

Firstly, in the case of strengths, the main strengths can be summarized as the following:

- The study covers many variables including the labour market, economic, and educational, economic freedom, financial crisis to investigating the determinants of youth unemployment in the Arab world.
- The study analyzed the determinants of total unemployment and adult unemployment besides the determinants of youth unemployment in the Arab world.
- The study investigates how males and females determinants of youth, total, and adult unemployment are different in the Arab world.
- The study addresses how the minimum wages impact on unemployment among youth, total and adults as well in the Arab world.
- The study adding value by testing the impact of labour market regulations on youth, total and adults unemployment in the Arab world.

Secondly, in the case of limitations, the main limitations can be concluded as the following:

- In general, the lack of availability of data in the Arab world in which the data is not available for many variables in Arabic countries which limited the study to certain periods and certain variables.

- The limited database for minimum wage data and for limited countries as well in which regarding minimum wages, the data was available for some certain time period and for some certain countries in the Arab world.
- The study focuses on determinants of youth unemployment from the macro perspective but it may have other factors on the Arab world that impact on youth unemployment as well.

Thirdly, in case of future direction, the direction for future research can be as the following:

- Further study of how the labour market regulations impact on youth employment in the Arab world.
- Further investigation of minimum wage impacts on youth unemployment among more countries in the Arab world.
- Investigation of how flexible and strict labour market regulations impact on youth employment in the Arab world.

6. MAIN CONCLUSIONS AND NOVEL FINDINGS OF THE DISSERTATION

This dissertation aims to seek the determinants of youth unemployment in the Arabic world. As youth unemployment determinants are not highly researched in the Arabic region jointly. The novel findings of the dissertation are the following:

- *The first important of the findings* because this dissertation evaluates the determinants of youth unemployment besides studying the determinants of total unemployment and adult unemployment in comparisons with the determinants of youth unemployment. In addition to that this dissertation evaluates how the genders are different in term of determinants in which the dissertation examine the determinants of youth unemployment of males and females besides studying the determinants of total unemployment and adults unemployment of males and females. Identifying the determinants of youth, total, and adult unemployment will help to set policies to minimize unemployment among youth, total, and adults. In addition to that, knowing the determinants of the males and females of youth, total, and adult unemployment will help to address the challenge of unemployment among youth in the Arab world.
- *The second important of the findings* because this dissertation investigated the impact of economic freedom at all stages like business freedom, financial freedom, investment freedom, monetary freedom, trade freedom on youth unemployment besides studying the impact on total unemployment and adult unemployment in comparison with the impact on youth unemployment. In addition to that this dissertation evaluates how the genders are different in terms of economic freedom impact in which the dissertation examines the impact of economic freedom on youth unemployment of males and females besides studying the impact of economic freedom on total unemployment and adults unemployment of males and females. Identifying the impact of economic freedom on youth, total, and adult unemployment will help to set policies and laws to optimize economic freedom which will directly salutary on decrease the unemployment among youth, total, and adults. In addition to that, knowing the impact of economic freedom on males and females of youth, total, and adult unemployment will help to address the challenge of unemployment among them particularly by optimizing investment freedom in the Arab world.
- *The third important of the findings* because this dissertation studied the impact of financial crises on youth unemployment besides studying the impact of financial crises on total unemployment and adult unemployment in comparisons with the impact on youth unemployment. In addition to that this dissertation evaluates how the genders are different in term of financial crises impact in which the dissertation examine the impact of financial

crises on youth unemployment of males and females besides studying the impact of financial crises on total unemployment and adults unemployment of males and females. Knowing the impact of financial crises on youth, total, and adult unemployment will help to set policies and laws to prevent and decrease the impact of any future financial crises.

- *The fourth important of the findings* because this dissertation studied the effect of labour market regulations on youth unemployment besides studying the effect of labour market regulations on total unemployment and adult unemployment in comparisons with the impact on youth unemployment. In addition to that this dissertation evaluates how the genders are different in term of labour market regulations impact in which the dissertation examines the effect of labour market regulations on youth unemployment of males and females besides studying the effect of labour market regulations on total unemployment and adults unemployment of males and females. Identifying the impact of labour market regulations on youth, total, and adult unemployment will help to set policies and laws to develop labour market regulations which will decrease the unemployment among youth, total, and adults. In addition to that, knowing the impact of labour market regulations on males and females of youth, total, and adult unemployment will help to set labour market regulations among them.
- *The fifth important of the findings* because this dissertation studied the impact of the minimum wage on youth unemployment besides studying the impact of the minimum wage on total unemployment and adult unemployment in comparisons with the impact on youth unemployment. In addition to that this dissertation evaluates how the genders are different in term of labour market regulations impact in which the dissertation examines the impact of the minimum wage on youth unemployment of males and females besides studying the impact of the minimum wage on total unemployment and adult's unemployment of males and females. Distinguishing the impact of minimum wage on youth, total, and adult unemployment will help to set policies and laws to set a fair minimum wage which will directly impact on the unemployment among youth, total, and adults. In addition to that, knowing the impact of minimum wage on males and females of youth, total, and adult unemployment will help to set minimum wages which can be in harmony with the standard of living in the Arab world.

SUMMARY

This dissertation aims to study the determinants of youth unemployment in the Arabic world. The study starts with exploring the effect of (labour market, economic, and educational, economic freedom, financial crisis) variables on youth unemployment, total unemployment, and adult unemployment. Next, the study investigates the impact of Labour Market Regulations (LMR) and its variables on youth unemployment total unemployment and adult unemployment. Moreover, the study explores the impact of minimum wage on youth, total and adult unemployment.

The dissertation is located in six chapters which include topics and objectives, literature review, material and methods, research findings and their evaluations, conclusions, and recommendations and main conclusions and novel findings of the dissertation.

Chapter 1 explores the topics and objectives of my study. The objective of my study is to explore the determinants of youth unemployment in Arabic countries. The chapter starts to explain why I study youth unemployment. Secondly, the chapter states the reasons for studying the determinants of youth unemployment in Arabic countries together. After that, the chapter explains the characteristics of the labour market in Arabic countries. Finally, the chapter states the aims, objectives, and questions that the study attempt to answer.

Chapter 2 introduces the previous literature on the topic. It begins by explaining the theoretical framework of my study. Next, the chapter introduces the factors that impact on unemployment and youth unemployment. After that, the chapter introduces the relationship between economic freedom and unemployment. Moreover, the chapter introduces the literature on the impact of financial crises on youth unemployment.

Chapter 3 shows the material and methods of our study. It starts to introduce the data collection and the sources of data collection of the study. Next, the chapter introduces the study variables of the study. After that, the chapter introduces the methodology of the study. The study utilized panel regression methods. Firstly I analyse our data by conducting fixed effect method; secondly, I analyse the data using random effect method. Moreover, and to evaluate which of the two models (fixed or random) is appropriate, I use the Hausman test. The study will consist of three steps. *In the first step*, the study will address the impact of (labour market, economic, and educational, economic freedom, financial crisis) variables on youth unemployment total unemployment and adult unemployment and in addition to examining the impact on gender as well. *In the second step*, the study will address the impact of labour market regulations on youth unemployment, total unemployment and adult unemployment and in addition to examining the impact on gender as well. *In the third step*, the study will examine the impact of the minimum wage on the level of youth

unemployment and besides its impact on total unemployment and adult unemployment and in addition to examine the impact on gender as well.

Chapter 4 investigates the research findings and evaluations. It begins to explore the results of the effect of (labour market, economic, and educational, economic freedom, financial crisis) variables on youth unemployment, total unemployment, and adult unemployment. The results of the study showed that GDP growth, government revenues, percentage of GDP, manufacturing value added (% of GDP), employment in service, and economic freedom are associated significantly with youth unemployment. Therefore the determinants of total youth unemployment are GDP growth, government revenues, percentage of GDP, manufacturing value added (% of GDP), employment in service, and economic freedom are the determinants of youth unemployment.

On the case of male youth unemployment, the results show GDP growth, government revenues, percentage of GDP, manufacturing value added (% of GDP), employment in service, and economic freedom are the determinants of male youth unemployment. In the case of female youth unemployment, the results show Imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, manufacturing value added (% of GDP), employment in service, education index, economic freedom are the determinants of female youth unemployment.

In addition to that, the study results show that imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom are associated significantly with total unemployment. Therefore the determinants of total unemployment are Imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom.

The results show that imports of goods and services (% of GDP), government revenues, percentage of GDP, education index, and economic freedom are associated significantly with male total unemployment. Therefore the determinants of male total unemployment are imports of goods and services (% of GDP), government revenues, percentage of GDP, education index, and economic freedom. The results show that imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, and economic freedom are associated significantly with female total unemployment. Therefore the determinants of female total unemployment are Imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, employment in service, education index, and economic freedom.

Moreover, the results show that GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom are associated significantly with

total adult unemployment. Therefore the determinants of total adult unemployment are GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, and economic freedom.

The results of the study show that imports of goods and services (% of GDP), education index, and economic freedom are associated significantly with male adult unemployment. Therefore the determinants of male adult unemployment are Imports of goods and services (% of GDP), education index, and economic freedom.

The results of the study show that GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, education index, economic freedom are associated significantly with female adult unemployment. Therefore the determinants of female adult unemployment are GDP growth, imports of goods and services (% of GDP), government revenues, percentage of GDP, trade percentage of GDP, education index, and economic freedom.

After that, chapter 4 provided the results of the impact of Labour Market Regulations (LMR) and its variables on youth unemployment total unemployment and adult unemployment. The results showed, that there is a significant negative relationship between LMR and youth unemployment. More specifically, the variables of LMR “hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hour’s regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on youth unemployment.

The results showed that there is a significant negative relationship between LMR and male youth unemployment. In addition to that, the variables of LMR “hiring regulations and minimum wage, hiring and firing regulations, centralized collective bargaining, hours regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on male youth unemployment. The results showed that there is a negative but not significant relationship between LMR and female youth unemployment. The variables of LMR “hiring regulations and minimum wage and centralized collective bargaining” have a positive and significant impact on female youth unemployment.

The results showed that there is a significant negative relationship between LMR and total unemployment. More specifically, the variables of LMR “Hiring regulations and minimum wage, hour’s regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on total unemployment. The results showed that there is a negative but not significant relationship between LMR and male total unemployment. In addition to that, the

variable of LMR “Mandated cost of worker dismissal” has a positive and significant impact on male total unemployment.

The results showed that there is a negative but not significant relationship between LMR and female total unemployment. The variables of LMR “Hiring regulations and minimum wage, centralized collective bargaining, and mandated cost of worker dismissal” have a positive and significant impact on female total unemployment. The results showed that there is a significant negative relationship between LMR and adult unemployment.

In addition to that, the variables of LMR “Hiring regulations and minimum wage, hiring and firing regulations, hours regulations, mandated cost of worker dismissal, and conscription” have a positive and significant impact on adult unemployment. The results showed that there is a negative but not significant relationship between LMR and male adult unemployment. In addition to that, the variable of LMR “Mandated cost of worker dismissal” has a positive and significant impact on male adult unemployment. The results showed that there is a significant negative relationship between LMR and female adult unemployment. More specifically, the variables of LMR “Hiring regulations and minimum wage, centralized collective bargaining, hours regulations, and mandated cost of worker dismissal” have a positive and significant impact on female adult unemployment.

Moreover, chapter 4 displays the results of the impact of minimum wage on youth, total and adult unemployment. The results of random-effects GLS regression showed that there is a significant negative relationship between minimum wage and youth unemployment. Moreover, the results showed also that there is a significant negative relationship between minimum wage and youth unemployment among males.

On the other side, the results of random-effects GLS regression showed also that there is a negative relationship but not significant between minimum wage and youth unemployment among females. The results of random-effects GLS regression showed that there is a significant negative relationship between minimum wage and total unemployment. Moreover, the results of fixed-effects regression also showed that there is a significant negative relationship between minimum wage and total unemployment among males.

On the other side, the results of fixed-effects regression showed also that there is a negative relationship but not significant between minimum wage and total unemployment among females. The results of random-effects GLS regression showed that there is a significant negative relationship between minimum wage and adult unemployment. Moreover, the results of fixed-effects regression showed also that there is a significant negative relationship between minimum wage and adult unemployment among males. On the other side, the results of random-effects GLS

regression showed also that there is a negative relationship but not significant between minimum wage and adult unemployment among females.

Chapter 5 summarizes the conclusions and recommendations of our study. The results and findings summarized in the conclusions which need for some policies and recommendations. Education has a significant positive relationship with female's unemployment among youth, total, and adult. Firstly, the outputs of the education system should be inconvenient with the labour market needs. In this case, the technical education can be a partial solution to improve the outputs of the education system. As economic freedom has negative and significant relationships with youth, total and adult unemployment and its gender as well.

Secondly, Economic freedom development should be improving at all stages like business freedom, financial freedom, investment freedom, monetary freedom, trade freedom particularly in terms of investment freedom which can attract more investors to invest in the region and therefore create more job opportunities for youth. As labour market regulations have a significant and negative relationship with youth, total, and adult unemployment.

Thirdly, flexible labour market regulations are needed in the Arab world to make youth easily access to the labour market. A negative relationship has appeared between minimum wage and unemployment. Fourthly, fair minimum wages should be sited according to the standard of living especially for youth employment but at the same time not strict labour market regulations which lead youth to have a normal wage and entering the labour market easily. Fifthly, the free movement of individuals between the Arabic countries will improve the labour market in the Arab world, especially for youth.

Chapter 6 presents the main conclusions and novel findings of the dissertation. *The first important of the findings* is because this dissertation evaluates the determinants of youth unemployment besides studying the determinants of total unemployment and adult unemployment in comparisons with the determinants of youth unemployment. In addition to that this dissertation evaluates how the genders are different in term of determinants in which the dissertation examine the determinants of youth unemployment of males and females besides studying the determinants of total unemployment and adults unemployment of males and females. Identifying the determinants of youth, total, and adult unemployment will help to set policies to minimize unemployment among youth, total, and adults. In addition to that, knowing the determinants of the males and females of youth, total, and adult unemployment will help to address the challenge of unemployment among youth in the Arab world. *The second important of the findings* because this dissertation investigated the impact of economic freedom at all stages like business freedom, financial freedom, investment

freedom, monetary freedom, trade freedom on youth unemployment besides studying the impact on total unemployment and adult unemployment in comparison with the impact on youth unemployment. In addition to that this dissertation evaluates how the genders are different in terms of economic freedom impact in which the dissertation examines the impact of economic freedom on youth unemployment of males and females besides studying the impact of economic freedom on total unemployment and adult's unemployment of males and females. Identifying the impact of economic freedom on youth, total, and adult unemployment will help to set policies and laws to optimize economic freedom which will directly salutary on decrease the unemployment among youth, total, and adults. In addition to that, knowing the impact of economic freedom on males and females of youth, total, and adult unemployment will help to address the challenge of unemployment among them particularly by optimizing investment freedom in the Arab world.

The third important of the findings because is this dissertation studied the impact of financial crises on youth unemployment besides studying the impact of financial crises on total unemployment and adult unemployment in comparisons with the impact on youth unemployment. In addition to that this dissertation evaluates how the genders are different in term of financial crises impact in which the dissertation examine the impact of financial crises on youth unemployment of males and females besides studying the impact of financial crises on total unemployment and adults unemployment of males and females. Knowing the impact of financial crises on youth, total, and adult unemployment will help to set policies and laws to prevent and decrease the impact of any future financial crises.

The fourth important of the findings because this dissertation studied the effect of labour market regulations on youth unemployment besides studying the effect of labour market regulations on total unemployment and adult unemployment in comparisons with the impact on youth unemployment. In addition to that this dissertation evaluates how the genders are different in term of labour market regulations impact in which the dissertation examines the effect of labour market regulations on youth unemployment of males and females besides studying the effect of labour market regulations on total unemployment and adults unemployment of males and females. Identifying the impact of labour market regulations on youth, total, and adult unemployment will help to set policies and laws to develop labour market regulations which will decrease the unemployment among youth, total, and adults. In addition to that, knowing the impact of labour market regulations on males and females of youth, total, and adult unemployment will help to set labour market regulations among them.

The fifth important of the findings because this dissertation studied the impact of the minimum wage on youth unemployment besides studying the impact of the minimum wage on total unemployment

and adult unemployment in comparisons with the impact on youth unemployment. In addition to that this dissertation evaluates how the genders are different in term of labour market regulations impact in which the dissertation examines the impact of the minimum wage on youth unemployment of males and females besides studying the impact of the minimum wage on total unemployment and adult's unemployment of males and females. Distinguishing the impact of minimum wage on youth, total, and adult unemployment will help to set policies and laws to set a fair minimum wage which will directly impact on the unemployment among youth, total, and adults. In addition to that, knowing the impact of minimum wage on males and females of youth, total, and adult unemployment will help to set minimum wages which can be in harmony with the standard of living in the Arab world.

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LIST OF PUBLICATIONS



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LIST OF ABBREVIATIONS

AD = Aggregate Demand

GDP = Gross Domestic Product

LMR = Labour Market Regulations

FDI = Foreign Direct Investment

OECD = Organization for Economic Cooperation and Development

OIC = Organization of Islamic Cooperation

YU = Youth Unemployment

YUM = Male Youth Unemployment

YUF = Female Youth Unemployment

TU = Total Unemployment

TUM = Total Male Unemployment

TUF = Total Female Unemployment

ADU = Adult Unemployment

ADUM = Male Adult Unemployment

ADUF = Female Adult Unemployment

GDPGR = GDP growth rate

IMGDP = imports of goods and services (% of GDP)

GRGDP = government revenues, percentage of GDP

MVAGDP = manufacturing value added (% of GDP)

TRADEGDP = trade, percentage of GDP

EMPLOYMENTSERVICES = employment in service

EFINDEX = economic freedom

EDUINDEX = education index

hrandmw = hiring regulations and minimum wage

handfr = hiring and firing regulations

ccb = centralized collective bargaining

hr = hours regulations

mcofwd= mandated cost of worker dismissal

Conscription = conscription

MW = minimum wage

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