Social, Human and Job Characteristics as the Determinants of Wages and Gender Discrimination in Syria: Direct and Indirect Effects

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Abstract

The issue of gender wage differentials has long been of interest not only to economists, but also to governments and policy makers. In the last few decades, the labour market outcomes for females seem to be improving; however, the gender pay gap persists globally and females still earn significantly less than males. However, labour market discrimination has not received the research attention it deserves in developing countries in general, and in Syria in particular. A wide variety of factors could influence the gender pay gap, such as human capital, job characteristics and social factors. In the Syrian context, social and cultural factors play an important role in determining the position of females in the labour market. However, most previous studies have ignored the effects of social factors on other variables. Therefore, this research investigates the indirect effect of social factors on wages through human capital and job characteristics. This thesis has two main aims: to examine the main determinants of earnings for men and women in Syria, and to investigate the existence and extent of discrimination in the observed gender wage differentials there.

To achieve this, two methods were used. Firstly, the Mincerian wage equations were used to analyse gender wage determinants, then discrimination was estimated using Oaxaca's decomposition. Secondly, General Linear Modelling (GLM) Univariate ANOVA was tested to reveal the main and interaction effects of the factors specified in the theoretical model. The data used in this research came from the Syrian Labour Force Survey (LFS) 2010 conducted by the Government through the Central Bureau of Statistics.

The results indicated that human capital variables were vital in explaining individuals' earnings. Also, job characteristics and social variables explained wages to different degrees. Rates of return to education were, on average, around 5%, with women's returns being better for higher educational levels. All three groups of variables explained only 17.19% of the earning gap between men and women, leaving 82.81% that could be considered as labour market discrimination. The GLM models revealed that social factors have significant indirect effects on wages as, when adding these indirect effects to the model, the explained variance in wages increased from 35% to 55%.

This research makes significant contributions to the field of gender wage differentials and discrimination in Syria. The results of this study could help the Syrian government to develop tailored policies for the Syrian labour market to narrow the gender pay gap as decreasing gender inequality would enhance productivity and foster economic growth.

Dedication

To my Father

My Mother

*My Uncle "**Abdulhadi**"*

&

*My wife "**Souad**"*

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I thank God Almighty for helping me and giving me the strength to finish this thesis.

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You don't choose your parents but if I had the choice I would choose them again and again. I have the most amazing, wonderful and loving parents anyone can get. Foremost, I want to thank my loving and caring *parents* who taught me how to achieve my goals. I would not have made it this far without their unconditional love, prayers and encouragement. I cannot thank my uncle *Abdulhadi* enough for his endless love and prayers. I would also like to thank my *father* and *mother in law* for their love and encouragement. Both families have been waiting for this moment for a long time; they will be very happy and proud of me.

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Thank you all!
Abdulhadi

Declaration

I hereby declare that this thesis contains no material that has been previously submitted, in whole or in part, for a degree in this or any other university. I further declare that this thesis is my own work.

I also declare that all ideas, information and conclusions reported in this thesis are entirely my effort, except where otherwise acknowledged.

<div align="right">Abdulhadi Ibrahim</div>

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Chapter 1: Introduction

1.1 Background

This main purpose of this thesis is to investigate the individual wage determinants, the gender wage differentials and discrimination in the Syrian labour market. This topic has attracted considerable interest from economists and policy makers worldwide. The most important source of household income in Syria is from wages or employment returns as alternative sources of income are scarce (Ovensen and Sletten, 2007). On the other hand, wages account for a large portion of government spending in Syria. According to Kabbani (2009), almost half of the increase in public spending in 2003 resulted from an increase in the wage bill and in 2004 this increase accounted for 2.3% of the GDP.

The labour force in Syria is fast growing; females are increasingly participating in the labour market and are gaining higher educational attainments. However, in spite of the improvement in females' labour market outcomes, they still face pay inequality and still earn significantly less than men.

Over the past two decades the Syrian government has undertaken significant economic reforms to move the country from a centrally-planned economy to a more social market economy (Aita, 2005; Huitfeldt and Kabbani, 2007; Kabbani, 2009). The social market economy "aims at empowering the market but maintaining a role for the state in terms of safeguarding social equity" (Thanawala, 2002, p. 669). However, even by moving to the social market economy, women's position in the labour market has not noticeably improved as they are still facing constraints in their participation and are being rewarded less than men. Hence, the gender pay gap still persists.

Reviewing previous literature revealed a wide variety of factors that could influence the gender wage differences. However, this topic has not received the research attention it deserves in Syria. Moreover, social norms and cultural factors play an important role in Syria and contribute to the less elevated position of females in the labour market. For example, females might be subject to pre-labour market discrimination (e.g. women have lower access to education than men and control may be imposed by men on women's participation in the labour market). Also, females might be affected by the feedback effects. Thus, traditional empirical analysis techniques capture only the direct effect of the variables on the wage and ignore the interaction effect between the variables.

This chapter aims to offer an introduction to the thesis by presenting the problem and motivation behind this research and explaining the aims and objectives of this study. This chapter is organised into five further sections. The following section presents the research problem and motivation. Section three reports on the research aims, objectives and questions while section four briefly outlines the research design and methods used. The fifth section communicates the significance of this study and the final section presents the organisation of the thesis.

1.2 The Research Problem and Motivation

The issue of gender wage differentials has long been of interest not only to economists, but also to governments and policy makers. Berg and Ostry (2011) found that greater equality in income distribution will lead to longer duration of growth. Similarly, in the Global Gender Gap Index, Hausmann *et al*. (2011) found a correlation between competitiveness, income and development on one side and gender gaps on the other. They stressed that reducing gender inequality enhances productivity and economic growth. The authors (Hausmann *et al*., 2011, p.32) sent a message to policy-makers that "in order to maximize competitiveness and development potential, each country should strive for gender equality—that is, should give women the same rights, responsibilities and opportunities as men". Similarly, Lucifora, (2001) found that inequality in the labour market happens in countries with most deregulated and decentralised labour markets and leads to significant inequalities in standards of living, as well as increasing poverty among individuals.

The labour force in Middle Eastern and North African (MENA) countries is the fastest-growing labour force of any region in the world (World Bank, 2004) while Syrian labour market conditions, to a great extent, are similar to those of other MENA countries. Syria is ranked first among the Mediterranean Arabic countries with regard to population growth (Aita, 2009a). This population growth, along with some major events, such as the arrival of 1.5 million Iraqi refugees to Syria after the United States' invasion of Iraq in 2003 and the withdrawal of Syrian troops from Lebanon in 2005 which resulted in the return of hundreds of thousands of Syrian workers from Lebanon, has resulted in large growth in the supply of labour in the Syrian market. Thus, labour demand in the market is far below the supply which has resulted in high unemployment rates. The unemployment rate has risen from 5% in 1981 to

11.6% in 2002 and 14.9% in 2011[1] (El-Laithy and Abu-Ismail, 2005; Islam and Abdel Fadil, 2005). According to Aita (2009a), the Syrian economy created only around 37,000 jobs between 2001 and 2007, leaving a yearly gap of around 200,000 to 300,000 jobs between the yearly increase in the size of the labour market and the number of jobs created. This rapid growth of the working-age population, accompanied by insufficient growth in employment opportunities, has caught the Syrian labour market in what is called a 'double squeeze' (El-Laithy and Abu-Ismail, 2005).

Furthermore, the expansion of female participation in the labour force is another factor that has contributed to the high growth rate of supply in the Syrian labour force. In Syria, and in MENA countries, social norms play an important role in preventing women from entering the labour market. Traditionally, women are responsible for the housework and child rearing while men are the bread-winners. Kabbani and Kothari (2005) noted that the participation rates of females in the labour force in the MENA region are the lowest in the world at 29% for female adults. However, this is now changing and females' participation rates, in MENA countries in general and in the Syrian labour market specifically, have been on the rise; for example, the female labour force participation rate in Syria rose from 11.9% in 1983 to 21.3% in 2001 (International Labour Organization, 2004). This increase in the participation rate of the female labour force in Syria might be attributed to many reasons, such as: declining fertility rates, increasing female educational attainment, helping males with increased living costs, and the trend towards female emancipation in the region (World Bank, 2004).

Syrian rates of return to education are very low for all educational levels but this increases with the level of educational attainment. For example, on average, the rate of return to preparatory schooling is 2%, to secondary schooling it is 2.5% and is 4.5% to higher education (Kabbani and Salloum, 2010). The international average for return to education is around 10-15% (Kabbani and Salloum, 2010) while, in the region, the return to higher education is around 8-9% in both Egypt and Morocco, and around 10-11% in both Tunisia and Jordan (El-Araby, 2010).

Nevertheless, gender imbalances in educational attainment have been reduced in Syria as, in 1985, net enrolment rates for primary school were 100% for male children and 90% for female children, and the net enrolment rates for secondary school were 59% for males and 43% for females, up from 40% for boys and 18% for girls in 1970 (Kabbani and Salloum, 2010).

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[1] This rate rose to 57.7% in 2014 as a result of the crisis.

This improvement continued through the 2000s as the number of female higher education students nearly doubled in 2007 from its level in 1997. Remarkably, "by 2006 the number of females enrolled in the Syrian public universities was almost equal to the male's one resulting in a gender parity index of 0.98" (Kabbani and Salloum, 2010, p.111). The results were outstanding for the number of university graduates as between 2000 and 2007, they increased by 18% for males compared to 87% for females (Kabbani and Salloum, 2010). Thus, despite the remarkable reduction in gender inequities in terms of educational attainment, Syria still lags behind many MENA countries in this regard (Huitfeldt and Kabbani, 2007).

According to the Global Gender Gap report (2011), Syria was ranked among the worst globally as it was positioned 124 out of 135 in 2011. The Syrian position is also getting worse over time as it was ranked 103 out of 128 in 2007, 107 out of 130 in 2008, 121 out of 134 in 2009, and 124 out of 134 in 2010. The Gender Gap Index measures the relative gaps between women and men (gender equality) across four key areas: economically, politically, in education and in health. In fact, in almost all countries, gender gaps in education and life expectancy have been closed while they are still present in other areas (even in some developed countries), such as in earning, economic participation and political empowerment (the Global Gender Gap Index, 2011; the World Development Report, 2012).

However, in spite of the increase in females' participation rates in the labour market and females' educational attainment in Syria in recent years, they still lag behind men in terms of employment opportunities and earning. The situation of women is similar in most parts of the globe where "this increased participation has not translated into equal employment opportunities or equal earnings for men and women" (The World Development Report, 2012; p.16) and in the EU women are still paid 16% less than men per hour of work (European Commission, 2015). Additionally, in almost all countries, women are more likely to work in low-productivity activities (such as agriculture), carry out unpaid family work, have part time jobs or work in the informal sector (The World Development Report, 2012). Syria is no exception as females are highly represented in low-productivity activities (Islam and Abdel-Fadil, 2005): for example, agriculture and services accounted for over 80% of the total number of female workers in 2010. The new labour structure in Syria (with improved female participation rates) has increased the pressure on specific occupations that appeal to female workers. This has resulted in female unemployment rates three times higher than for males (Huitfeldt and Kabbani, 2007).

Even though females' labour market outcomes seem to be improving, the gender pay gap is persistent (Blau and Kahn, 1997). Females still face pay inequality and still earn

significantly less than men as wage gaps are present globally in almost all industries. Thus, over the past few decades, the gender pay gap has been greatly reduced in developed and industrialised countries as a result of anti-discrimination and equal pay legislation. For example, in OECD (Organisation for Economic Co-operation and Development) countries, the average gender wage gap was 18.22% in 2000 but this had then reduced to 15.35% by 2011 (OECD website).

The gender pay gap in the Middle East and North Africa regions ranged between 15-40% in 2011; for example, it was 34% in Syria, 15% in Egypt, 24% in Bahrain, 40% in Iran, 38% in Jordan, 33% in Kuwait, 35% in Lebanon, 34% in Morocco, 31% in Oman, 31% in Qatar, 35% in Saudi Arabia, 23% in Tunisia, and 27% in the United Arab Emirates (the Global Gender Gap Index, 2011). Most of the gender pay gap literature is dominated by studies examining the issue in the developed economies while studies in developing countries are limited (Jamali *et al*., 2008). Hence, there is a crucial need to understand the factors affecting the gender pay differentials, especially in developing countries in general and in Syria in particular. This was also stressed in Psacharopoulos and Patrinos (2004) where the authors stated the need for more studies on the link between education and earnings in developing countries. Gender wage differentials and discrimination have not received the research attention they deserve in Syria.

Reviewing previous literature revealed a wide variety of factors that could influence the gender wage differences (e.g. Harkness, 1996). Those factors could be classified into three major categories: human capital characteristics, job characteristics, and societal characteristics. Discrimination may exist when the differences in wages are greater than what might be expected owing to differences in productivity-related characteristics between two groups of workers. The gender gap could be a result of both differences in individual characteristics (skills) and returns to these characteristics between males and females (discrimination), or as a result of pure discrimination against women. The most widely used method in the analysis of the gender wage gap is the decomposition technique which was first developed by Oaxaca (1973). This technique estimates both the portion of the gender wage gap that is explained by different characteristics between males and females, and that portion which cannot be explained by different gender attributes which is consequently regarded as gender discrimination in pay. Hence, Oaxaca's decomposition technique matches the prevailing actual wage structure of a disadvantaged group (females) with the virtual wage structure that would prevail in the ideal situation with no discrimination between males and females. It does so by estimating wage equations for males and females separately (by controlling for different

characteristics) and then decomposes the resulting coefficients using the attributes of both genders. Oaxaca has insisted on the cautious selection of variables that are controlled in the wage equations for both men and women. Nevertheless, as is discussed in Chapter (5), the Oaxaca decomposition technique assumes that the controlled variables included in the model are non-discriminatory; consequently, it regards the portion that cannot be explained by different characteristics as discrimination. However, it is difficult and unrealistic to guarantee that the controlled variables are "discrimination-free" ones, meaning that the estimation of discrimination will be biased.

On the one hand, some characteristics are due to discrimination and therefore including them in the analysis of gender wage differentials yields an under-stated estimation of discrimination. On the other hand, excluding variables which are subject to discrimination from the model will limit the analysis to only a few variables (mainly human capital variables[2]); this prevents in-depth examination and reduces the explanatory power of the model (Blinder, 1973; Oaxaca, 1973; Blau and Jusenius, 1976; Treiman and Hartmann, 1981; Cain, 1986; Cotton, 1988; Neumark, 1988; Gunderson, 1989; Goldin, 1990; Sorenson, 1990; Even and Macpherson, 1993; Fortin and Lemieux, 1998). In the Syrian context, social and cultural factors play an important role in determining females' position in the labour market. However, most previous studies ignored the interactive effects of the social factors on human capital and job characteristics, such as the effect on access to education, the feedback effect, family background and social roles for males and females that affect job choices (Altonji and Blank, 1999).

Hence, in accordance with the limitations mentioned above, in terms of including or excluding variables that are likely to be affected by discrimination, and in the light of the availability of variables in the dataset, together with the purpose of analysing the Syrian labour market, this research has adopted two methods to deal with these limitations:

The first is by employing the Oaxaca decomposition technique using wage equations for both men and women where three groups of variables are included successively in order to investigate the earning premium for each specification of the three groups. The criteria which the adding process uses, is the degree to which each group of variables is believed to be affected by gender discrimination. The second method is by employing GLM Univariate analysis which investigates the interaction effects among the three groups of variables and the gender impact

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[2] However, even human capital variables can be affected by different forms of discrimination, e.g. limited access to education for females and different training opportunities for both genders in the workplace.

upon them in determining both males' and females' earnings by developing a theoretical model to explain these relationships.

1.3 Research Aims, Objectives and Questions

The main aims of this study are to examine the main determinants of earnings for men and women in Syria, and to investigate the existence and extent of discrimination in the observed gender wage differentials there. This will be done by developing a theoretical model that allows us to test, among others, the indirect effects of the social factors on wages.

The following objectives are to be achieved in this study:

1- To examine the earning determinants for both males and females in the Syrian labour market.
2- To investigate the existence and determinants of gender wage differentials and discrimination in Syria.
3- To investigate the proposed theoretical model that illustrates the main and interaction effects of gender, human capital, job characteristics and social variables on wages for both males and females.

These objectives will be attained by addressing the following research questions (RQs):

1- What roles do human capital, job characteristics and social variables have on determining earnings for both males and females in the Syrian labour market?
2- What are the rates of return to education in Syria for both males and females?
3- What are the total effects of human capital, job characteristics and social variables in explaining the gender wage differentials and what is the portion of discrimination in these differentials?
4- Is there a correlation between the variables of social characteristics and the human and job characteristic?
5- What are the direct effects of gender, social, human, and job characteristics on Wages in Syria? And what are the interactive effects of gender and social characteristics with human and job characteristics in influencing wages in Syria?
6- Are there significant differences between males and females wages across variables?

1.4 Research Design

To achieve the aims and objectives of this research, two methods are used. Firstly, the Mincerian wage equation is used to analyse gender wage differentials and to help in finding out the relative importance of each specification included in the equation in explaining wage. After that, the wage differentials between males and females are separated using Oaxaca's decomposition technique into two components: the explained wage differentials which result from differences in attributes (education, experience...etc.) between the two groups, and the unjustified wage differentials (the discrimination). Secondly, to test the hypotheses, Pearson Chi-Square, Kruskal Wallis tests and General Linear Modelling Univariate ANOVA (GLM ANOVA) are employed. GLM ANOVA is tested to reveal the main and interaction effects of the factors specified in the theoretical model and finally, the Bonferroni-adjusted *t*-test (also called the Dunn test) is used to test pairwise comparisons of means between Gender and other variables. The data used in this research come from the Syrian Labour Force Survey (LFS) 2010 conducted by the Government through the Central Bureau of Statistics.

1.5 Significance of the Research

This thesis makes significant contributions to the field of gender wage differentials and discrimination. First, this research contributes to the literature on the gender wage differentials in developing countries in general and in Syria in particular as, in spite of the attention given to understanding the gender pay gap, studies investigating this issue in developing countries (particularly the Middle East) are lagging behind studies on developed countries. In addition, almost no research exists on the Syrian labour market since, despite the vast international interest in the topic, very few studies have been conducted in the context of the Syrian labour market. The studies become scarcer when they are narrowed to the topic of the gender pay gap or wage differentials. "Published research on the Syrian labour market is practically non-existent," according to Huitfeldt and Kabbani (2007, p.7). Searching the literature resulted in only one working paper by Huitfeldt and Kabbani (2007) in which the authors tried to understand the education-employment link in Syria and calculated the rates of return to education in Syria. Consequently, by studying the Syrian labour market, this study offers a substantial contribution to the literature.

Secondly, as stated earlier, achieving gender equality will lead to sustainable economic growth. Therefore, governments must create policies that guarantee equal pay and equal

treatment for women, as well as removing any barriers to women's education and entry to the labour market (Hausmann *et al.*, 2011). Hence, this research helps in achieving a better understanding of the nature and structure of the Syrian labour market, including an understanding of the extent of and reasons for gender pay inequality in Syria. This understanding will help policy makers in developing future economic policies tailored to narrow the gender pay gap, boost economic growth and gain an understanding of the potential effect of any policy change.

Thirdly, previous studies into gender wage gaps used a wide variety of different variables to explain the wage gap. In this research the variables are divided into three groups: human capital, job, and social characteristics; these were added successively to capture the full effect of each group on the wage.

Previous studies were inconclusive on returns to education and the gender pay gap as a result of using different model specifications, different data sets and different measures. Hence, this study contributes to the literature by using three sets of controlled variables that, added successively, capture the effect of each group in determining an individual's wage, investigate the earning premium for each specification of the three groups, and obtain multiple discrimination levels based on the groups included sequentially in the analysis.

Fourthly, this study has developed a theoretical model to estimate the interaction effects among three groups of variables, as well as the impact of gender upon them in determining both males' and females' earnings, thus explaining the gender pay gap. Although social norms and cultural factors play an important role in Syria (and in almost all developing countries) and contribute to the position of females in the labour market, almost all previous empirical studies have captured only the post-entry discrimination and have ignored the effect of those social norms on the other groups of variables, such as education and job positions. Consequently, this research addresses these gaps in the literature and makes an important contribution to the information on the gender wage gap.

According to Fernandez (2001, p.2), there is a lack of an empirical methodology that investigate the full effect of culture on economic outcomes and previous studies used either historical case studies, experiments or epidemiological approaches (tested behaviour of immigrants or their descendants). The method used in this study is unique as it uses General Linear Modelling Univariate ANOVA (GLM ANOVA) to capture the main and interaction effects of the factors specified in the theoretical model. To achieve the objectives, seven Custom Factorial UNIANOVA Models were tested. In this way, this research captures the effect of social characteristics on human capital, job characteristics, and wages.

1.6 Structure of the Remainder of the Thesis

This thesis is structured into eight more chapters. The next chapter gives a brief background of the Syrian economy, the economic reforms and development prior to 2011, the educational system, and the wage structure. Chapter 3 reviews the literature relating to the gender pay gap, labour market discrimination, factors influencing gender wage differentials, and trends in gender differentials. Factors influencing gender wage differentials are divided into: 1) human capital characteristics, 2) job characteristics and 3) institutional and societal characteristics. Chapter 4 reviews a number of economic and social theories that try to explain gender wage differentials, as none of them can alone give a full explanation of this phenomenon. After that, the chapter draws on those theories to develop a theoretical framework and related hypotheses for this research. This is followed by Chapter 5 which explains and justifies the research approach and the research methods used for data collection and analysis. The data collection method section includes a detailed description of the sample and the data set used in this study. Then, data analysis procedures, which include the statistical tests, a modified form of the Mincerian earnings model and then the Oaxaca decomposition technique, are used to determine the portion of gender wage differentials that can be attributed to discrimination. A brief explanation of the General Linear Modelling Univariate ANOVA (GLM ANOVA) used in testing the hypotheses is also outlined in this chapter. In Chapter 6, the characteristics of the Syrian labour market are outlined while Chapter 7 presents the findings of the Mincerian earnings equation and Oaxaca's decomposition. Chapter 8 presents the results of the GLM ANOVA. This is followed by a discussion and conclusions in Chapter 9.

Chapter 2: Background of Syria

2.1 Introduction

Syria was described as a lower-middle income country with income per capita (adjusted for purchasing power parity) of around $3,400 in 2003 (Kabbani and Kamel, 2007; Kabbani and Al-Habash, 2008). "This placed it well ahead of poor countries of the region such as Yemen ($840) and Sudan ($1,805) and nearly on a par with Egypt ($3,700) and Morocco ($3,800), but behind most other countries of the region, such as Iran ($6,600), Lebanon ($4,800), and Jordan ($4,100)" (Kabbani and Kamel, 2007, P.12).

In 2008, the Syrian population was estimated to be 21 million people[3]; of which around 7.8% (1.5 millions) were Iraqi refugees, 2.4% Palestinian refugees and 1.8% non-citizen Kurds (Aita, 2009a, b). It was mentioned in the Syrian Central Bureau of Statistics (2006) that 40% of the Syrian population was under 15 years and 62% are under 25 years at that time.

Syria is a resource-rich country. The Syrian economy is agrarian-led, as agriculture has the highest share of all other sectors, not only in the gross domestic product (GDP) but also in the total labour force and earnings from exports (El- Ghonemy, 2005). In the early 1990s, oil was discovered in Syria which led to strong economic growth as, in the first half of the 1990s, 7% was the average growth in the economy a year, with a peak of 13.5% in 1992 (El-Laithy and Abu-Ismail, 2005). However, between 1995 and early 2000s, this growth in the Syrian economy declined as a result of falling oil reserves and changing oil prices (El-Laithy and Abu-Ismail, 2005; Kabbani and Al-Habash, 2008). In fact, its economic growth descended as low as -3.6% in 1999 (El-Laithy and Abu-Ismail, 2005). Moreover, the oil resource was unsustainable and Syria would become a net oil importer in a few years later (Kabbani and Tzannatos, 2006). The top two sectors that contributed to the growth of the 1990s were mining and manufacturing (due to oil), and agriculture with their share in the total GDP growth being 62.1% and 34.8% respectively in 1996. These rates then changed to 31.5% and 109.6% in 1999 (El-Laithy and Abu-Ismail, 2005).

Poverty in Syria is moderated and was in the range of 15% before 2005 with around 30% of the population clustered around the poverty line[4] (El-Laithy and Abu-Ismail, 2005; Kabbani and Kamel, 2007). Syria suffers from a high inflation rate which reached around 10%

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[3] The population suffered 15% drop (As a result of the conflict) to just 17.65 million at the end of 2014 and is still dropping.

[4] As a result of the conflict, now the poverty in Syria is over 80%.

in 2006 and 15% in 2008[5] (Gebel, 2012). However, the inequality is high in Syria, as in 2004, "the bottom 20 per cent of the population consumed only 7 per cent of all expenditures in Syria, and the richest 20 per cent consumed 45 per cent" (Aita, 2009a, p.32).

Agriculture sector is an important economic sector for employment in Syria but was over represented by the poor and illiterate adults (El-Laithy and Abu-Ismail, 2005; El-Ghonemy, 2005). "In 2004, the economic activity of 56.02 per cent of the total rural poor was mainly agriculture" (El- Ghonemy, 2005, p.41). However, this sector has suffered significant losses in its labour force, especially with regards to women, as a result of the privatisation of agriculture which lead to a significant migration from rural to urban areas (Aita, 2009b).

2.2 Economic Reform Processes and Development

Previously, the Syrian economy was categorised as a highly centralised and state-led one with many restrictions imposed by the Government in areas such as foreign investment and foreign trade. Export orientation was limited except for some relations with markets in the former Soviet Union (Abu-Ismail and Valensisi, 2005). However, in the last 20 years the Syrian government has undertaken significant economic reforms to move the country from a centrally-planned or public sector-led economy (i.e. with much government interventions) to a more social market economy (i.e. with private sector solutions) (Aita, 2005; Huitfeldt and Kabbani, 2007; Kabbani, 2009). The social market economy "aims at empowering the market but maintaining a role for the state in terms of safeguarding social equity" (Thanawala, 2002; p. 669).

This new social contract, which was introduced by the Syrian government, depends more on private sector settlements and less on government intervention (Kabbani, 2009). To achieve this, the government removed the restrictions imposed on private sector entry into most industries in Syria; this included banks, schools and universities. Additionally, the government reformed the public education system, the labour laws and the social protection programs (Kabbani, 2009). In the Syrian government's effort to reform the economy and increase the private sector's ability to create jobs, it pursued certain polices of economic openness, such as revising the key Investment Law Number 10 in 2000 to make investment in Syria more attractive, to strengthen the private sector and to initiate trade liberalisation through

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[5] After the crisis the official inflation rate reached 43.02% in October of 2015 (thus the actual rate is estimated to be over 300%).

participating in regional free trade arrangements (i.e. the Arab Free Trade Area and the Euro-Mediterranean Free Trade Area) (Aita, 2005; Huitfeldt and Kabbani, 2007; Gebel, 2012). However, the social part of the reform emphasised strengthening social services and sustaining a central role for the state (Huitfeldt and Kabbani, 2007).

Moreover, the Government, in the effort to move Syria from a public sector-led economy to a more social market economy, "is reviewing many elements of the social contract that obliges it to guarantee services, employment, and other public goods" (Kabbani and Al-Habash, 2008, p.5). For example, the Government has been trying to minimise public expenditure by limiting growth in public sector employment and leaving the private sector to create the desired jobs in the coming years (Huitfeldt and Kabbani, 2007). Hence, the Government modified its policy regarding mandatory government service for university graduates' policy in the early 1990s and then gradually limited the guaranteed jobs in the public sector for many educational levels (Huitfeldt and Kabbani, 2007). Also, according to Albers and Peeters (2011), the Syrian government was spending more than 20% of its expenditures on subsidies (i.e. food and fuel) and so, since 2008, the Government has decreased energy subsidies by increasing fuel prices (Kabbani, and Al-Habash, 2008). However, despite the efforts to reduce public spending on services, the Government's expenditures on infrastructure and public services increased, mainly as a result of the many increases in the public sector wages since the 2000 (Kabbani, and Al-Habash, 2008).

In general, the economic environment in Syria has been slowly moving toward liberalisation in the last twenty years or more although many features of the previous state-led, centrally planned system are still in place (Abu-Ismail *et al*., 2005). Nevertheless, Abu-Ismail *et al*. (2005) view the slow pace of the Syrian economy transition to a market economy to be more pro-poor than the more aggressive policies of Eastern Europe.

2.3 Structure of Education

The education system in Syria begins with the voluntary-paid, pre-school education (Huitfeldt and Kabbani, 2007). After that, the Syrian education system was (before 2002) divided into four main levels: primary school (grades 1-6), preparatory school (grades 7-9), vocational, technical and general secondary (grades 10-12), and higher education, which could be either technical intermediate institutes for two years or universities for four to six years (Kabbani and Kamel, 2007), then post-graduate studies (Diploma, Masters and PhD). The

primary school (grades 1-6) were compulsory and free for children aged 6-12. In 2002, the primary and preparatory levels were combined into one "basic" schooling level, and these 9 years of basic education (grades 1-9) were made compulsory and free for children aged 6–15 years. Students had to pass a national examination at the end of their primary (or basic - grade 9) level to determine whether or not they could access general or vocational secondary education. This decision was mainly made according to the scores achieved in the exam, with the general secondary requiring higher marks as it was greatly preferred by students. Again, at the end of the secondary school (12th grade) students had to pass another national examination whose scores determined whether the student could study at intermediate technical institutes or at universities. Moreover, the scores also determined the field of specialisation that the student would study at the intermediate institutes or at universities. However, Syrian students preferred the general secondary track as it allowed them to enter a university after passing the 12th grade national exam. This was unlike the vocational secondary track where students could only continue to two-year intermediate institutes which were considered to be a dead-end (Kabbani and Salloum, 2010).

Kabbani and Salloum (2010) stated that the choice of field of specialisation at the intermediate institutes or at universities had little regard to do with personal decision or abilities. As Kabbani and Salloum (2010, p.107) stated, "students with the highest scores select medicine, those with the second highest scores select engineering, etc.". Given that, the choice of their field of specialisation depends on exam scores, as well as the influence of society, family and friends, secondary school students did not spend much time in examining different career choices or gain enough knowledge about the disciplines they were going to pursue at university (Kabbani and Salloum, 2010).

		Primary	Preparatory	Vocational secondary	General secondary		Intermediate institutes	University
Pre 2002	Grades	1,2,3,4,5,6	7,8,9	10.11.12	10,11,12		13,14	13,14,15,16 (17,18)
		Basic education		Vocational secondary	General secondary	Technical college	Intermediate institutes	University
Post	Grades	1,2,3,4,5,6,7,8,9		10.11.12	10,11,12	13,14,15	13,14	13,14,15,16 (17,18)

Table 2.1: The education system in Syria pre and post 2002 (adapted from Huitfeldt and Kabbani, 2007).

2.3.1 Education System Reform

All Syrian schools are under the responsibility and close supervision of the Ministry of Education, which is responsible for all aspects, including their curricula and textbooks. Before 2002, public schools dominated the education system in Syria and only private primary schools that are used the public school curricula were allowed. This was with the exception of a few private secondary schools linked to foreign embassies; these were allowed to teach their own curricula (Huitfeldt and Kabbani, 2007). Similarly, all Syrian universities are under the responsibility and close supervision of the Ministry of Higher Education. Higher education was provided solely by public universities until 2001. Therefore, these public universities were operating above capacity which, in turn, motivated the Government to limit entry into universities by preventing most vocational secondary school students from entering public universities by increasing the enrolment requirements (Kabbani and Kamel, 2007). The authors explained that this resulted in the perception among students that vocational schools were a dead-end in terms of education and that unemployment rates for completers were high. This led to high dropout rates from vocational schools.

In 2002, private secondary schools and private universities were allowed to open (Huitfeldt and Kabbani, 2007; Kabbani and Salloum, 2010). Also, semi-private higher education was introduced where students paid for part of the tuition and study at the public universities in parallel or paid for open education (Kabbani and Salloum, 2010). Since allowing private universities in Syria, twenty universities have opened compared previously to the existence of five public universities and one virtual public university.

Kabbani and Kamel (2007) noted that, after the introduction of private education and after reducing the restrictions on entry into public universities, enrolment rates at secondary schools increased to a similar level at their 1985 peak. Moreover, Kabbani and Salloum (2010) stated that private higher education is attracting increasing number of students each year since its introduction as, in 2008, an estimate of 17000 students enrolled at private universities compared to 11000 students in 2006. However, the total number of students enrolled in public universities (free and with tuition fees) is much higher at 309,000 students in 2006. This gives the relatively low share of private enrolment at only 3.4% of the total higher education enrolment in Syria (Kabbani and Salloum, 2010).

The education system in Syria does not provide students with the required occupational skills for the labour market as the focus of public schools is to prepare students for the national exams to increase their odds of obtaining public sector jobs, rather than helping them to develop

the key skills demanded by the private sector (Kabbani, 2009). This mismatch between the skills of recent graduates and the needs of the labour market have contributed to low labour productivity and low returns to education (Huitfeldt and Kabbani, 2007). The current labour market conditions have induced the Syrian government to launch a reform of the educational system (Kabbani and Kamel, 2007). Some of the reformative steps taken by the Syrian government includes: allowing private universities, the foundation of the virtual university (the first in an Arabic country), and the construction of the necessary Information and Communications Technology infrastructure (El-Araby, 2010). Additional reforms include: revising public schools' syllabuses at all levels; rewriting textbooks with the help of specialists from outside the government; making the educational content more responsive to the labour market's needs by adopting some inputs from the private sector, especially for the vocational education curricula; and increasing the training period for teachers by two years (Kabbani and Kamel, 2007; Kabbani and Salloum, 2010). For public universities, a 100% increase in university professors' salaries was endorsed by the government (the Ministry of Higher Education) with the condition they devoted more time to their university; information and communications technology was developed by opening the faculty of IT engineering in 2000; and the Syrian Higher Education & Research Network was established in 2002 to provide access to online libraries and research data centres for both students and staff (Kabbani and Salloum, 2010).

2.3.2 Educational attainment

Syria's public spending on education is relatively high as in 2007 it represented 16.7% of the total public spending and 4.9% of the GDP (El-Araby, 2010). This high public spending on education, combined with mandatory schooling laws and free public schools, has led to increased educational attainment as this has increased from 1 year in 1960 to nearly 6 years in 2000 (Huitfeldt and Kabbani, 2007). Also, between 1960 and 1985, Syria made outstanding advances in terms of primary and secondary schooling, as the net enrolment rates for primary school reached 95% in 1985 and the net enrolment rates for secondary school increased from less than 30% in 1970 to more than 50% in 1985 (Kabbani and Salloum, 2010). Gender imbalances in educational attainment have been reduced as, in 1985, the net enrolment rates for primary school were 100% for boys and 90% for girls while the net enrolment rates for secondary school were 59% for boys and 43% for girls, up from 40% for boys and 18% for girls in 1970 (Kabbani and Salloum, 2010).

However, between 1988 and 1998, Syria has experienced a significant decline in the enrolment rates at secondary level (Huitfeldt and Kabbani, 2007; Kabbani and Salloum, 2010). A possible reason that might have been behind this trend was that the increased level of educational attainment at primary school had increased the loads on the secondary schools and public universities. Hence, in response to limited spaces, the Syrian government had introduced some policies to attract students towards vocation secondary education (which has higher dropout levels) and away from general secondary schools. They did this by raising the minimum marks required to join the general secondary track in the test at the end of the primary level (Huitfeldt and Kabbani, 2007; Kabbani and Salloum, 2010). An additional reason might be that the Syrian government has increased the difficulty of the Baccalaureate examinations (at the end of the secondary level) to reduce the number of students at public universities (Huitfeldt and Kabbani, 2007). However, later on, the Syrian government have revised the previous policies and increased its spending on education which led to an increase in the number of students in general secondary schools between 1998 and 2005 (Kabbani and Salloum, 2010). Moreover, in 2001, the Syrian government initiated comprehensive reforms to the public education system, allowing the opening of private secondary schools and universities; this, in turn, had a positive effect on the school enrolment rates (Kabbani and Salloum, 2010).

The enrolment rates in the higher education institutions have been constantly rising since the reform (nearly tripling), especially between 2002 and 2007, mainly due to the introduction of private and semi-private (paid access to public universities) education which does not require a corresponding increase in public spending on higher education (Kabbani and Salloum, 2010). However, the traditional tuition-free public university system remains the dominant provider of higher education in the country (Kabbani and Salloum, 2010).

2.4 The structure of the Labour Market in Syria

The conditions of the Syrian labour market, to a great extent, are similar to those of other Middle Eastern and North African (MENA) countries. A fast-growing labour force with elevated unemployment is one similarity shared by all MENA countries. In fact, the MENA labour force is the fastest-growing labour force of any region in the world (World Bank, 2004). According to the World Bank (2004), the labour force of the region reached 104 million workers in 2004 and was expected to reach 146 million and 185 million by 2010 and 2020

respectively. Given the unemployment rate (15%) in the region in 2004, 100 million jobs need to be created by 2020 to absorb the unemployed workers as well as the new comers (World Bank, 2004). Also, the MENA region shares a growing demographic wave of young people in their populations which has led to this rise in the labour force growth rates in the region (World Bank, 2004; Huitfeldt and Kabbani, 2007). The rapid growth of the working-age population came about as a result of high growth in population between the 1950s and the 1980s, together with longer life expectancy (World Bank, 2004). Syria is no different, as the labour force growth rates were over 5% per year in 2005 (and estimated to be between 250,000–300,000 workers per year in the period between 1990 and 2020). Similar to other nations in the MENA region, this high growth rate in the labour force resulted from the rising demographic wave of young individuals in the populations. During the 1970s and 1980s, the Syrian population increased by about 3.5% each year because of high fertility rates, longer life expectancy and lower infant death rates (Huitfeldt and Kabbani, 2007). As a result, the share of young people (15-29 years) in the population rose from around 25% in 1970 to just over 32% in 2004 (Kabbani and Al-Habash, 2008) and in 2005 the majority of the Syrian labour force consisted of young people since the 20-34 year age group made up 42% of the male labour force and 43% of the women's (Islam and Abdel Fadil, 2005).

However, this rapid increase in the working-age population, accompanied with insufficient growth in employment opportunities, has caught the Syrian labour market in what is called a 'double squeeze' (El-Laithy and Abu-Ismail, 2005). This resulted in a rise in unemployment rates from 5% in 1981 to 11.6% in 2002 and 14.9% in 2004[6]. This phenomenon is concentrated mainly among the young (i.e., those between 20-24 years) as they represent 24% of the unemployed (El-Laithy and Abu-Ismail, 2005; Islam and Abdel Fadil, 2005). Taking into consideration the whole youth group (15-29 years), these represented 60% of the unemployed in Syria in 2005 (Kabbani and Al-Habash, 2008). At the same time, unemployment is much lower for the older age group (adults) than for young people since "there is very little unemployment among males over the age of 30 and females over 40" (Huitfeldt and Kabbani, 2007, p.10).

In terms of education, the unemployment rate is higher among the less educated job-seekers as 57% of the unemployed come from the lower educational categories and only 3% are highly educated (i.e. to university level) (El-Laithy and Abu-Ismail, 2005, Islam and Abdel Fadil, 2005).

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[6] This rate rose to 57.7% in 2014 as a result of the crisis.

The increasing rate of female participation in the labour force is another factor that has contributed to the high labour force growth rates in the region. For example, the participation rate of females in the labour force in Syria rose from 11.9% in 1983 to 21.3% in 2001 (International Labour Organization, 2004). Indeed, this increase in the participation of women has affected the gender composition and size of the labour supply in Syria as well as in the region (World Bank, 2004). This new labour structure in Syria has increased the pressure on specific occupations that appeal to female workers, which has, in turn, resulted in female unemployment rates that are three times higher than those for males' (Huitfeldt and Kabbani, 2007).

However, the international emigration has alleviated some of the pressure on the Syrian labour supply while the destination of the Syrian emigrants is greatly affected by their educational attainment and skills. The Syrian workers with lower skills usually head toward the neighbouring Lebanon while the more educated Syrian workers with higher skills move mostly to Gulf countries and, to a lesser extent, to Europe and north America (Huitfeldt and Kabbani, 2007; Kabbani and Kamel, 2007). Most of the Syrian workers in Lebanon are seasonal migrants (or so called circular migration) who work for only a few months of the year. However, the Syrian workers in Lebanon constitute a large percentage of the Lebanese work force (around one third) and represent one seventh of the total Syrian labour force (Aita, 2009a). There is no official number for Syrian workers in Lebanon although, in 2005, there were estimated to be between 350,000 to 1 million (Huitfeldt and Kabbani, 2007; Kabbani and Kamel, 2007). However, the number of Syrian workers in Lebanon has declined (by more than 40%) following the political situation in Lebanon which was affected by, the assassination of the former Lebanese Prime Minister in 2005; this was followed by the withdrawal of Syrian troops from Lebanon in April 2005 (Huitfeldt and Kabbani, 2007; Aita, 2009a). Similarly, although there is no information about the emigrants to the Gulf countries, they are believed to be mainly highly skilled, young, educated and highly motivated males (Kabbani and Kothari, 2005). Even though the international emigration has alleviated some of the pressure on the Syrian labour supply, it drains the brain and human capital resources from the country. For example, while more than 4000 Syrian students travel abroad to continue their education each year, only one half are estimated to return back (Huitfeldt and Kabbani, 2007). At the same time, those emigrants contribute to the Syrian economy through the remittances they send back to their families (Kabbani and Kothari, 2005).

Finally, Syria has experienced inward immigration. Since the US invasion of Iraq in 2003, Syria has experienced a significant immigration of Iraqis as, in 2006, the number of Iraqi

refugees reached 1.5 million, constituting 7% of the total Syrian population (Aita, 2009a, b). Also, Syria has experienced the migration of thousands of foreign domestic workers (mainly from Ethiopia, Sri Lanka, Somalia, etc.) (Aita, 2009a, b) and, in addition to the Iraqi and foreign workers, 2.4% of the total Syrian population are Palestinian refugees and 1.8% are non-citizen Kurds; all of these benefit from the Syrian public education and health systems and contributes to the labour force (Aita, 2009 b).

2.4.1 Wage Levels and Minimum Wages

Salaries in Syria are relatively low compared with those in neighbouring countries and are far behind European salaries. Moreover, the purchasing power of the Syrian salaries is declining sharply, especially after the1986 Syrian financial crisis which hindered the payment of Syria's international debts (Aita, 2009a). During that period, the currency depreciated and lost its purchasing power, moving from 1 US Dollar equalling 6 Syrian Pounds (SYP) to 22 SYP and then to around 50 SYP in the early 1990s[7]; inflation in Syria also rose (Aita, 2009a).

Syria has suffered from rising inflation levels (15% in 2008) although, until 2000, public sector salary levels were almost fixed at their face value (Aita, 2009a). Syrian wages levels are not negotiable. They follow those in the public sector and wage policies are initiated on impulse through presidential decree or "gifts"; they are not linked to inflation or social bargaining (Aita, 2009a, b). For example, the President has made several bulk increases in salaries since 2000 as a presidential 'gifts'. Those increases were 25% in 2000, 20% in 2002, 20% in 2004, and 25% in 2008. The President also issued a once-a-year salary bonus equal to 85% of a month's salary in 2000 and 50% of a month's salary in the following years. These increases in the public sector salaries place pressure on private employers to offer similar increases in wages. However, in spite of the several "presidential" increases in salaries, Syrian salaries are still low and do not follow inflation (Aita, 2009a). For example, the average monthly salary in 2007 was around €148 for men and €154 for women.

Before 2002, the minimum wage in Syria differed according to sectors, occupations and even according to rural and urban regions; and before 2006, private sector workers received a lower minimum wage than those in the public sector (Kabbani and Kamel, 2007). In 1985, the minimum wage was 625 SYP, which was equal to US$ 104, by the exchange rate at that time (Aita, 2009a). Many increases to the minimum wage took place after 2000 but it was not until 2007 that the minimum wage was made the same in both the public and private sectors.

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[7] To around 600 SYP in 2016 as a result of the crisis.

This was achieved by increasing the minimum wage of the public sector by 26% and the private sector by 37% (Kabbani and Kamel, 2007). For example, the minimum wage in the public sector more than doubled over a 6-year period as, in 2000, the minimum wage was 2645 SYP (US$ 53), then 4,805 SYP (US$96) in 2006, and in 2008 it increased from 5000 SYP (US$ 100) to 6250 SYP (US$ 130) (Kabbani, and Al-Habash, 2008; Aita, 2009a).

This minimum wage is considered low compared with other Middle Eastern countries (e,g. US$220 in Morocco) (Kabbani and Kothari, 2005). Additionally, the minimum wage monthly salary (e.g. in 2008 it was equivalent to US$ 134) cannot sustain an average Syrian family of 5 or 6 persons above the poverty line as they need at least 13,580 SYP (US$ 290) for food and 22,063 SYP (US$ 458) if other needs are included (Aita, 2009a). The average Syrian wage in 2008 was 20% below such a poverty line (Aita, 2009b). The minimum wage system in Syria is not very efficient. For example, in 2008, 6% of the public sector employees and 27.1% of those in the private sector were receiving wages below the minimum level (Gebel, 2012).

In Syria, public sector employment is more attractive than work in the private sector with the difference in the minimum wage between the two sectors (before 2007) increasing the attraction of government jobs (Kabbani and Kamel, 2007). In addition, the variance in implementing the minimum wage system between the two sectors is another reason for public sector jobs to be preferred (Gebel, 2012).

2.4.2 The Social Dimension of Employment

The social dimension has a great effect on employment chances and participation in Syria as the Syrian labour market is characterised by a significant labour supply with considerably less labour demand. These have led to high levels of unemployment and make it very hard for young Syrians to enter the labour market (Huitfeldt and Kabbani, 2007). Therefore, 90% of young Syrians depend on informal methods to secure a job, such as connections through family, relatives, and friends (Kabbani and Kamel, 2007). Even though, by law, public sector vacancies should be filled according to applicants' qualifications and their performance in tests, jobs in the public sector actually depend greatly on informal connections (Kabbani and Kamel, 2007). At the same time, strong family support may account for part of the high unemployment among young people since this may allow them more time to find the most appropriate jobs to match their skills and qualifications (O'Higgins, 2003). However,

according to Kabbani and Kamel (2007), family connections are not the only thing that is needed to secure a good job as high educational attainment can play a major role.

Moreover, it has been suggested that a person's community and neighbourhood may have an effect on his/her work chances. Kabbani and Kamel (2007) suggested that the level of neighbourhood wealth affects the employment chances in that neighbourhood; additionally, the community or neighbourhood may have an effect on the availability of informal job networks, positive role models, and the proximity of work locations. Assaad and Arntz (2005) emphasised the last point and noted that this is especially true in Middle Eastern countries. The authors illustrated how young Egyptian women wanted, or were compelled, to find jobs close to their homes.

Additionally, marital status has a strong effect on labour force participation in Syria. Men tend to participate more in the labour market after marriage, while women's participation rate tends to decrease (Ovensen and Sletten, 2007). The main reason for the strong effect of marriage on labour force participation is the social dimension of marriage. Marriage in Arab countries in general is seen as a "social and economic contract between two families" (Rashad *et al*., 2005), and children are not supposed to be born outside of marriage. Furthermore, families expect husbands to be responsible for most domestic costs (especially housing) and for the household income. Hence, young, newly married females may withdraw from the labour force, even if they were employed beforehand (Kabbani and Kamel, 2007).

Personal attitudes and priorities form another social dimension which affects employment in Syria. The top life priority for young men is work (40% of young men said this), followed by family and marriage (25%) compared to 12% of young women who said they preferred work while 50% chose family and marriage as their top aim in life (Kabbani and Kamel, 2007). This is a result of the traditions and societal norms in the Middle East in general where women are raised to become good mothers and wives. However, this view is now changing and there is an increase in women heading households in Egypt and Morocco (Kabbani and Kamel, 2007).

2.5 The Public Sector

Public sector jobs are usually preferred to private sector ones, especially for young Syrians, mainly because of the Government's job incentives. Public sector jobs offer job stability and security, benefit packages, social status, better maternity leave policies and more

flexible working hours (Kabbani and Al-Habash, 2008; Kabbani, 2009). The Unemployment Survey (2003) indicated that over 80% of unemployed young Syrians (15-29 years) were attracted to public sector jobs, this percentage rising to 90% among unemployed young females. 60% of the unemployed young Syrians wanted jobs exclusively in the public sector compared to less than 10% who were hunting for jobs solely in the private sector.

The Syrian government used to guarantee jobs in the public sector for all graduates of intermediate institutes. However, in 2001, the Government stopped this scheme (Huitfeldt and Kabbani, 2007). Unemployment rates among young Syrians are relatively high. The Unemployment Survey (2010) indicated that the unemployment rate was over 36% among those aged 15-24 years while this was just over 23% among 25-29 year-olds; it dropped to 11.5% for those between 30-34 years old.

The rising participation rates of young women in the labour force have contributed to the high unemployment rates among young Syrians while another factor that has played a role in the high unemployment rates, especially among young Syrians, is the mismatches between the skills demanded by the private sector and the actual skills of young Syrians (Kabbani and Tzannatos, 2006). Public schools in Syria generally aim to help their students pass the national exams rather than enhancing their skills and development, which enhances their chance of gaining a public sector job rather than a private sector one (Kabbani, 2009). Hence, young Syrians are left queuing up for government jobs. Some young Syrians tend to pursue higher educational attainment levels in order to increase their odds of obtaining a job (Kabbani, 2009).

As a result of queuing up for jobs in the public sector, unemployment spells in Syria tend to be lengthy. As stated by Kabbani, and Al-Habash (2008, p. 6), "over 70 percent of the unemployed have searched for 12 months or longer and over 40 percent have searched for 24 months or longer." The public sector workforce is not highly qualified as 54.1% of the workers in the sector had only secondary level qualifications or less in 2010. Employees with a primary certificate represented 18.3% of the total workforce, 13.5% had a preparatory level education and 16.4% had secondary level qualifications (Central Bureau of Statistics, 2010).

The salaries of the Syrian labour force in general are low and, in most cases, not enough to cover basic needs. The average salary for public sector employees in 2010 was SYP 13,375 a month (just over $260), while it was SYP 9,793 in the private sector (around $190) which makes the situation less severe in the public sector (Central Bureau of Statistics, 2010). Especially when taking into consideration that a normal Syrian family needs on average SYP 13,000 ($250) per month to spend on food only and a total of SYP 30,000 (about $600), it means that almost a majority of the labour force in Syria are living below the poverty line

(Middle East Online, 2011). This situation has driven heads of the households to look for other means of finance by finding a second job or accepting bribes from private citizens (Ehsani, 2009). The salaries in Syria have increased considerably in the last 10 years. However, they have been accompanied by high price jumps which have caused a fall in the real purchasing power in spite of the rising salaries (Ehsani, 2009).

2.6 Conclusion

This chapter has provided some background information about Syria. Particularly, it has focused on the economic situation in the country, the educational system and certain reforms which concern them. Moreover, the conditions of the Syrian labour market have been covered including wage levels and minimum wage policies. This chapter discussed the social dimension of employment and the public sector jobs in Syria for their particular importance in the context of this study.

Chapter 3: Literature Review

3.1 Introduction

This chapter provides a critical review of the relevant literature related to labour market discrimination, how gender wage gap is measured and what factors could influence the gender wage differences. Different studies in both developed and developing countries are reviewed. The chapter is structured into five main sections. Section 3.2 outlines the definition and measurement of discrimination in the labour market. Section 3.3 explores gender wage gap empirical studies and the different estimation methods of this gap while the subsequent section, 3.4, is dedicated to identifying factors that could influence the gender wage differences; those are organized into three main groups: human capital characteristics, job characteristics and institutional and societal characteristics. In section 3.5, the trend in gender differentials is reviewed. The final section, 3.6, concludes the chapter.

3.2 Labour Market Discrimination: Definition and Measurement

Before we can investigate the gender wage differentials it is important to define discrimination. Labour market discrimination happens according to Elliott (1990), when distinguishing between individuals "using criteria that have little or no bearing on their performance in the labor market" (Elliott 1990, p. 383). Economists outline that labour market discrimination happens when equally productive persons are treated unequally based on an observable characteristic, such as gender, race or ethnicity (Altonji and Blank, 1999). This will result in those persons (belonging to specific gender, racial or ethnical groups) being paid lower wages and less employment opportunities.

The most influential (important) work on the economics of discrimination is based on the work of Becker (1957, 1971). According to Becker, there are three models of discrimination (employees, employers or customers). Employers will hire workers from certain groups (e.g. black or women) only if they can pay them lower wages than workers of the preferred groups, employees require higher wages to work with co-workers from certain groups and customers who will avoid buying from companies or sellers who hire certain types of workers. Those

groups do not want to come into contact with or work with members of other racial groups or with women (Becker, 1971).

There are two levels of Discrimination pre-labour market discrimination and post-labour market discrimination. The *Pre-labour market* discrimination happened before entering the labour market; such as access to higher education, family background and social roles (Altonji and Blank, 1999). *Post-labour market* discrimination occurring after entering the labour market. One of widely studied indicators of labour market-discrimination is wage discrimination (discrimination theories will be reviewed in the next chapter).

In the context of the current research, gender wage discrimination can be defined as the difference in wages between genders that cannot be justified by differences in productivity (or human capital) characteristics such as training and education.

Most empirical studies measuring gender wage differentials decompose the gap into explained part and unexplained one. The explained part is attributed to differences in labour productivity characteristics between men and women and the un-explained part is attributed to differences in how men and women are rewarded for those characteristics, which is believed to be a possible evidence of wage discrimination. However, according to Heckman (1998) measuring discrimination is not easy or a straight forward process. The author continued to explain that, empirically, labour productivity is not directly observed, and instead, researchers use proxies from available data to control for the relevant productivity characteristics. However, the use of proxies embraces some problems such as whether they systematically capture productivity differences or whether omitted characteristics differ between genders (Heckman, 1998).

3.3 Gender Pay Gap

Since Becker (1957), an extensive body of empirical studies has emerged on gender wage gap (for extensive reviews or surveys see for example, Cain, 1986; Stanley and Jarrell, 1998; Altonji and Blank, 1999; Blau and Kahn, 2003; Weischselbaumer and Winter-Ebmer, 2005). Various authors have studied the gender wag differentials across a range of countries, occupations and sectors. Most previous studies found that females earn considerably less than males even after controlling for the different characteristics (Robinson 1998; Bell and Ritchie 1998; Blau and Kahn, 2003).

Empirical research on gender discrimination mainly focus on estimating the amount of discrimination or the wage gap between gender (e.g. Goldin 1990; Blau 1998; Arrazola and De

Hevia, 2006) and on the determinants of discrimination (productivity-related and non-productivity-related factors) (e.g. Groshen 1991; Meng, 2004; Thomson, 2006; Mumford and Smith, 2009). Blau and Kahn (1992) gave two explanations to inter-country gender gap differences. First, gender-specific factors (differences in the qualifications and differences in the treatment or discrimination), second, differences in pricing of skills (observed and unobserved) between countries. Women are found to receive lower rates of pay in both developing and developed countries regardless of their educational attainment and other productive characteristics (Blau and Kahn 1992; 2003). For example, in the UK the gender pay gap is relatively very low, yet the men's median hourly earnings are 10.2% higher than women's (Office for National Statistics, 2010). Many studies have emerged highlighting gender pay gap after the study of Blau and Kahn in 1992. However, previous studies reached different findings according to model specifications, different data sets and/or different earnings measures used.

3.3.1 Wage Differentials Estimation

The magnitude of gender wage differentials varies significantly according to how wage differentials are measured. Different estimation methods have been used by labour economists in order to explain gender wage differentials. Though, the most extensively used econometric method for studying the wage gap is Blinder-Oaxaca (Oaxaca, 1973; Blinder, 1973) decomposition technique (e.g. Juhn *et al*., 1993; O'Neil and Polachek, 1993; Harkness, 1996; Blau and Kahn, 1997, 2001). This method decomposes the mean differences in earning between two groups (such as males and females) into two elements: the first is attributed to differences in observable characteristics (e.g. education, experience) between the two groups and the second is due to differences in remunerations to those characteristics. Many extensions have been developed for Blinder/Oaxaca decomposition (e.g. quantile analysis as in Albrecht *et al*., 2003; the full conditional distribution as in Juhn *et al*., 1993; DiNardo *et al*., 1996).

However, the decomposition and its elaborate extensions have been subject to a range of criticism. Some authors criticized the model specification (Rosenzweig and Morgan, 1976; Jones, 1983; and Oaxaca and Ransom, 1999, Atal, Nopo and Winder, 2009); others criticized the choice of the independent variables (Altonji and Blank, 1999; Riach and Rich, 2002).

Critics argue that Blinder-Oaxaca decomposition only measures the discrimination in the labour market. For example, if pre-labour market discrimination happened like women have lower access to education than men then the decomposition tends to underestimate the

discrimination degree (Madden, 1999). Also, the decomposition gives information only about the average wage differences, neglecting the distribution of this unexplained differences (Fitzenberger and Wunderlich, 2001; Atal, Nopo and Winder, 2009). Hence, the relative positions of female wages to male wages could be wrongly interpreted (Machin, 1996). Moreover, some unobserved productivity differential (variable) between male and female could contribute to the pay differences and can be interpreted as discrimination (Becker, 1985; Altonji and Blank, 1999). Hence, some authors (such as Pudney and Shields, 2000) preferred calling the differences "pay disadvantage" rather than as "pay discrimination". However, other scholars have found clear evidence of gender pay discrimination (see for example, Wood *et al.*, 1993; Graddy and Pistaferri, 2000; Bertrand and Hallock, 2001).

As a result of the methodological drawbacks other techniques have been suggested to directly examine the labour market discrimination (Altonji and Blank, 1999). Those techniques are experimental approaches (Fershtman and Greezy, 2001; Riach and Rich, 2002) and audit studies- mainly used for hiring discrimination- (Neumark *et al.*, 1996; Bertrand and Mullainathan, 2003). However, those types of studies do not adequately reflect real life situations and "Inferences from such studies are quite fragile to alternative assumptions about unobservable variables and the way labour markets work" (Heckman, 1998, p. 102).

As mentioned earlier, gender wage gap is usually estimated at the mean (using Blinder-Oaxaca decomposition) which hide the variation in the pay differentials along the wage distribution. Consequently, recent studies (e.g. Albrecht *et al.*, 2003; Machado and Mata, 2005; Autor *et al.*, 2005; Albrecht *et al.*, 2009) started to use the quantile regression method to study gender pay gaps along the wage distribution using different points. This method is the same as the traditional Oaxaca decomposition, thus it studies the distribution of the individual characteristics and the distribution of the rewards to these characteristics (Machado and Mata, 2005). Quantile regression studies, in general, found different results of gender wag gap according to different studied points in the wage distribution[8]. For example, in a study of gender wag gap in OECD countries, it was found that at the top end of the wage distribution, the gender wage gap tend to be larger than the average gap and on the lower end of the wage distribution the gap narrows down or do not exist (OECD, 2012).

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[8] There is also a vast range of literature using quantile regression approaches showing precisely this point but that discussion lies outside the focus of the current chapter.

3.4 Factors Influencing Gender Wage Differentials

A review of previous literature revealed a large range of factors that could influence the gender wage differences (e.g. Harkness, 1996) and, hence, determine the gender wage discrimination. Those factors could be classified into three major categories: human capital characteristics (i.e. education, experience, and training) to Job characteristics (i.e. occupations, sector, industry, union and full or part-timer) and institutional and societal characteristics (i.e. marriage, children and household). According to Elliott (1990), work characteristics and the relative value or human capital characteristics determine the differences in in individuals' wages and labour market participation. Discrimination may exist, when the different in wages are higher than what would be predicted to emerge due to those characteristics.

The gender gap could be as a result of the differences in individual attributes and returns to these attributes. Many of the previous researches (such as Krueger and Summers, 1988; Fields and Wolff, 1995; Albrecht *et al*.; 2003; Dougherty, 2005) used the decomposition techniques to assess the extent of gender pay differentials and determining the cause of these differentials. Using decomposition techniques helps in dividing the wage gap into two parts, one associated with differences in individual characteristics (the explained part) and one associated with differences in returns (the unexplained part). However, authors (see for example Nasir, 1998) concluded that differences in human capital characteristics are the principal cause for wage differentials. The different factors that could influence the gender wage differences will be discussed next.

3.4.1 Human Capital Characteristics

Human capital variables are viewed as the most commonly variables that explain wage differential. Labour economics perceives human capital as a set of skills (characteristics) that increase employee's productivity (Acemoglu and Autor, 2011). For example, Nasir (1998) analysed the effect of human capital factors and non-human capital factors on earnings, and found that human capital variables explain a considerable part of the earning difference. Human capital is usually measured by educational attainment of individual (years of schooling) before entering the labour market and by the individual employment experience.

There is extremely large empirical literature on returns to human capital variables (i.e. education, training). Hence, this section will try to summarize the main studies concerning the effect of human capital variable on gender wage differentials. To achieve this goal, this section starts by reviewing returns to education; after that it reviews returns to experience and training.

3.4.1.1 Returns to Education

A vast literature exists on the rates of return to education, the seminal work in this area is attributed mainly to the work of Schultz (1961), Hansen (1963), Becker (1964) and Mincer (1974). For example, Becker (1964) found that males with high school education got returns of (16%, 20%, 25% and 28% for the years 1939, 1949, 1956 and 1958 respectively) which are higher than those with college degree (14.5%, 13%, 12.2% and 14.8% for the years 1939, 1949, 1956 and 1958 respectively). Since then the literature of rates of return to education has increased enormously. A large extent of this literature focus on the different estimation methods of the rates of return, the interpretation of the results and some criticisms to the estimation methods and data used. Those three themes will be presented in this sub-section in additional to summarizing and discussing the findings of the available and relevant studies on rates of return for the developing, developed and multi-countries; and explained some key criticisms found in the literature.

In more recent time, the literature of labour economics has thoroughly estimated the rates of return to education (see for example, Psacharopoulos, 1985, 1994a; Card, 1999; Psacharopoulos and Patrinos, 2004; Weichselbaumer and Winter-Ebmer, 2005). This attention to the return to education is completely reasonable as the topic interests both public and private decision makers to know how much to invest in the sector (Martins and Pereira, 2004).

Over time, many studies have documented that individuals with higher education level are more productive and, on average, earn higher wages and have higher employment rates than their less-educated counterparts (see for example, Card, 1999). Psacharopoulos and Patrinos (2004) suggested that, on average, another year of schooling could add extra 10% as a return. Returns to education have been estimated since the late 1950s; however, the 1980s and 1990s have witnessed increase in earnings inequality which has led to a renewed interest in estimating returns to education (Psacharopoulos and Patrinos, 2004). Several researchers have suggested that the increase in wage inequality is, to a large extent, due to the increase in changes in the production process which have increased the demand for more educated and skilled labour (Katz and Murphy, 1992). As a consequence, the 1990s has witnessed an increase in average schooling levels, hence an increase in the supply of education, which, in turn has led to a lowering the education returns (Psacharopoulos and Patrinos, 2004).

According to Human Capital Theory, schooling has productivity-enhancing effects on individuals which lead to higher earnings (McMahon, 1999). According to Human Capital Theory people invest now in education in exchange for future returns (Becker, 1964).

Education enhances labour productivity through increasing their cognitive abilities and providing them with variety of skills and knowledge useful in the workplace. Additionally, employers often used educational qualifications as a signal of potential employees' productivity before hiring them as the employers do not have enough information on the applicants' ability.

Education investment could yield two rates of return: the social rates of return and the private rates of return, the former captures the benefits from investing in education to society (Todaro 1982); while, the latter captures the benefits of individual investment in education (Schultz 1988). The private rates of return are calculated by estimating the benefits from education to individual (using the increase in individual wage or extra lifetime incomes as a result of an extra year of education) and estimating the schooling costs incurred by individuals. Private rates of return are usually greater than the social rates of return, as the social rates are estimated by subtracting the social costs from the private rates of return (Psacharopoulos and Patrinos, 2004). For data limitation, the empirical part of this study focuses only on the private rates of return (as the additional data required for the social rates of return are not available for Syria).

Before estimating the rates of return to education, it is essential to know how education is measured. Empirical studies used the total number of years of education completed, or the highest educational qualification achieved, by individual in the formal system as a measurement of education called "Educational attainment" (Behrman, and Stacey, 1997).

According to Psacharopoulos (1994a) rates of return to education are usually assessed, in previous literature, using two different basic methods: (1) the elaborate or discount method, and (2) the earnings function method originally proposed by Jacob Mincer (1972). In theory, both methods should give similar results (Psacharopoulos, 1994a; Heckman *et al*., 2005). Though, Mincerian earnings function model is the benchmark for estimating the returns to education and it (or its derivatives) has been used by most researchers as it is more convenient, easy to use and requires less data (Psacharopoulos, 1994a). However, as any other method the Mincerian earnings function method suffers from some hurdles. For example, Bennell (1996c) stated that the Mincerian method does not include the direct costs of education; hence, it overestimates the rates of return to education. Furthermore, Psacharopoulos (1994a) stated that most previous researchers, using this method, reported the rate of return to the typical year of education, not to each level of education. Moreover, both Dougherty and Jimenez (1991) and Psacharopoulos (1994a) pointed out that the average rate of return to education is underestimated by this method as it assesses the wrong age-earnings profile to young workers.

Mincerian method automatically calculate the rate of return for the whole schooling cycle of the individual whereas children in primary education (6-12 years), do not earn during their studies (Psacharopoulos, 1994a). The estimated rate of return to schooling may be significantly biased (upwards or downwards) as the years of schooling may not be the perfect indicator of human capital achieved when school quality varies widely (Glewwe, 1996). Though, this method is easy to estimate, hence, its popularity (Dougherty and Jimenez, 1991). Moreover, the effect of the estimation method has insignificant effect on the estimated rate of return (Psacharopoulos and Patrinos, 2004). Though, researchers must take caution not to include too many irrelevant independent variables as they shift some of the effects of education on earnings (Psacharopoulos and Patrinos, 2004; Bennell, 1996c).

A number of criticisms have been articulated in the literature (see Bennell, 1996a and 1996c) on the deficiencies of computing rates of return to education. Bennell (1996a and c) questioned the studies calculating rates of return to schooling for developing countries as they suffer from theoretical and empirical deficiencies (i.e. omitted variable and the biases in sample selectivity) which resulted in overestimating rates of return to education. Bennell (1996c) argued that good standard datasets are hardly available in developing countries. Unemployment among the student graduates specific group is a good example of omitted variable, if high and not taken into account when calculating the rates of return to education could seriously biases the return estimates upwards (Bennell, 1996c). Bennell (1996c) added that the calculated rates of return to education are usually used as a diagnostic tool to provide policy recommendation, hence, those rates need to be accurate otherwise the educational policies would be potentially flawed. Moreover, Bennell (1996c) criticized using the rates of return as a comparison tool between continents as there are too many endemic variations; hence, they are not very effective or informative.

There is an extensive empirical literature, in both developed and developing countries that estimated rates of return to education. More research is conducted on the rate of return to education in developed country. Sullivan and Smeeding (1997, p. 524) suggested that "differences in the extent of earnings inequality among full-time workers in high-income countries are heavily influenced by the rewards for educational attainment". Blau and Kahn (1992) analysed the disparities in the gender pay gap in ten industrialized countries. The authors found that Italy has the highest female-male earnings ratios with 82.3% followed by Sweden, Austria, Australia and Germany with ratios of 77.2, 74.1, 73.3, 71.4 and 70.9% respectively, towards the end of the ranking comes USA, Switzerland, Hungary and the UK.

For example, In Czech Republic, Chase (1998) uncovered that the returns to an additional one year of education had improved from 2.4% to 5.2% for males between 1984 and 1993, and from 4.2% to 5.8% for females in that period. Similarly, Vecernik (1995) found that the returns to one year of education in Czech Republic had raised from 4% to 5.3% for males and from 5.7% to 6.7% for females between 1988 and 1992. Likewise, Flanagan (1998) studied the Czech labour market pre-revolution in 1988 and post-revolution in 1996. The author found the estimated return to education increased by a third from 4.3% in 1988 to 5.7% in 1996. The larger increase in the return to schooling occurred for female as the ratio rose from 5.1% to 7% while for male it increased from 3.7% to 4.5%. In Slovak, the returns to extra one year of education had raised from 2.8% to 4.9% for males and from 4.4% to 5.4% for females between 1984 and 1993 (Chase, 1998). In both countries, it is noted that women, in general, had higher returns to education than men. Atkinson and Micklewright (1992) concluded that Czechoslovakia has the least earnings inequality in Eastern Europe, thus, it possesses the highest degree of gender inequality.

Similarly, in Hungary, Campos and Jolliffe (2003) estimated pre and post revolution returns to a year of schooling in 1986 and 1998 and found that it has increased by two-thirds from 6.4% in 1986 to 11.2% in 1998. Varga (1995) established that the private return to secondary schooling in Hungary have almost doubled between 1971 and 1993, while the returns to higher education has increased by 350%. In Greece, Tsakloglou and Cholezas (2001) estimated returns to a year of schooling by 6.3% for males and 8.6% for females in 1995. In Portugal, Pereira and Martins (2001) estimated returns to a year of schooling by 9.7% for males and 9.7% for females in 1995. In Poland, Rutkowski (1994) estimated the return to schooling in 1987 by 5% (for both sexes combined).

In Estonia, Noorkoiv et at., (1998) found rapid increases in returns to higher education during transition period between 1989 and 1995. "Within five years, the age premium for university educated over primary educated workers rose from 11 per cent to 69 per cent" (Noorkoiv et at., 1998, p. 491). Stanovnik (1997) estimated the returns to education in Slovenia for 1978, 1983 and 1993 and found that it remained low in 1978 and 1983 for all educational levels and for both men and women. However, in 1993, the returns increased significantly, yet they are still lower than most developed economies return. In Poland, Rutowski (1996), studied the returns to educational attainment before and after the transition and market reforms in 1985, 88, 92 and 93. The authors revealed significant returns to education, for example, in 1988 university education yield on average 37% more earning than primary education and 19% more than the vocational education. The ratios increased to 52.5% and 46% respectively in the year

1992. Arrazola and De Hevia (2006) estimated the rates of return to schooling for men and women in Spain and found that women have higher education returns than men's and the increase in return with additional educational level is higher in females.

In the USA, the rate of return to schooling has been increasing over time (e.g. Blackburn and Neumark, 1993; Cawley *et al*., 1995; Murnane *et al*., 1995), and the gender wage differential has been narrowing (O'Neill and Polachek, 1993)[9]. Blau and Kahn (1997) found that during the 1980s, the U.S. labour market witnessed a rising level of inequality and though male-female pay gap was falling (e.g. female-male ratio was 62.4% in 1967 and 1979 rose to 74.0% in 1991). Similarly, Machin (2003) found that pay disparity has been increasing in the USA since early 1970.

In the UK, returns to graduate education were high and increasing over the 1980s and 1990s (Machin, 2003). However, there is evidence of slight decline in the returns in recent years (Green and Zhu, 2010). In 1997, Dearing (1997) have estimated the annual private return to education in the UK between 11% and 14%. Additionally, researchers (e.g. Joshi and Paci, 1998; Mumford and Smith, 2007; Connolly and Gregory, 2008; Mumford and Smith, 2009) have concluded that a considerable gap in earning exists between men and women employees. However, this gap seems to be declining (Mumford and Smith, 2007). The gender gap in earnings, according to Harkness (1996), was 40% in 1973, 27% in 1983 and 22% in 1992. McRae (2008) found 37% gender earnings gap in the UK in 1970, 23% in 1990 and 18% in 2000. Thus, this decrease in the gender pay gap in the UK is considerably larger than the decrease in the gender earning gap in the USA (Blau and Kahn, 2003). Yet, the UK's rate of change has fallen behind many European countries (Wilborn, 1991). About 50% of the gender pay gap in Britain before 1992 was unjustified by productivity enhancing characteristics (considered as discrimination), this rate ascended to 60% in 1992 (Harkness, 1996). Similarly, Mumford and Smith (2005) found 26.5% gender earnings gap in the UK in 1998 of which 30.9% is justified by the individual characteristics of women that is related to lower earnings (69.1% unexplained).

However, in more recent times, authors have started to extensively analyse the rates of return to schooling in developing countries (e.g. Psacharopoulos 1973, 1985, 1994a and Psacharopoulos and Patrinos, 2004). Reviewing empirical literature indicates that, the average returns to schooling in developing countries are higher than the average returns in developed countries (for example see Psacharopoulos and Patrinos, 2004). This could be justified by the

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[9] For a thorough review of trends in US gender pay gaps, see Altonji and Blank (1999).

scarcity of education in developing countries which has led to the rewarding of individuals with that scarce skill in the form of higher wages in return to their educational investment. Additionally, considerable gaps in returns to schooling could be found between lower and higher educational level in the developing countries (Psacharopoulos and Patrinos, 2004). Additionally, in general females receive higher returns to their educational investments (Psacharopoulos, 1994a).

Reviewing the literatures on developing countries revealed that some studies have estimated the rate of return to schooling. For example, in Pakistan Nasir and Nazil (2000), Jamal *et al*. (2003) and Hyder (2007), they all supported a positive relationship between schooling and earnings. In 1995-96, Nasir and Nazil (2000) found that one more year of schooling brings about 7% extra return. For Jamal *et al*. (2003) the increase in the earning for extra year of schooling is about 6.4% for 2001-02. Also, Jamal *et al*. (2003) found that higher secondary education gives the highest rate of return (16%) followed by tertiary technical (13%) and tertiary general (11%) education respectively.

Different results were found for Russia, Cheidvasser and Benitez-Silva (2007) concluded that the rates of return to education are low, around 5%, and that between pre-and post reform era (1992-1999) there is nearly no development in returns to schooling. One more study for Russian labour market was conducted by Clark (2003) to assess the rates of return to education for the years 1994-1998. The author concluded that one more schooling year yielded returns of 6% and 13% for the years 1994 and 1998 respectively.

A similar study for Vietnam in 1992-93 by Moock *et al*. (1998) revealed that the rates of return to schooling was still relatively low with the average private rates of return of 11%, 13%, 4% and 5% to university, primary, secondary and vocational education levels respectively. Though, females gain higher return to their higher education 12% compared with only 10% for males (Moock *et al*., 1998).

In China, Heckman and Li (2004) estimated 11% annual increase in earning (43% lifetime increase) as a result of university attendance in 2000 compared with 9% increase for non-attendant (36% lifetime increase). The authors showed a considerable increase in education returns in China since the early 1990s. Furthermore, Li *et al*. (2005) demonstrated that methodology used in previous studies played a significant role in justifying the low rates of returns to education. As a result, in order to estimate rates of return to schooling in China, Li *et al*. (2005) measured the hourly wages and controlled for sample selectivity. Li *et al*. (2005) concluded that the calculated rates of return to schooling (close to 10%) was higher than

earlier studies' estimated rates in China and was completely consistent with other developing countries (see for example, Psacharopoulos, 1994).

Asadullah (2006) assessed private returns to schooling in Bangladesh and found that extra year of education increases the earnings by 7% on average. When the author separates the estimate for rural and urban samples he found that workers in urban areas have (8.1%) higher returns than their rural counterparts (5.7%). Asadullah (2006) also estimated males and females' rates of returns and found that females have higher returns to education (13.2%) than males (6.2%). However, females still earn significantly less relative to the males.

In Bogota (Colombia) Psacharopoulos and Velez (1992) concluded that, even after controlling for ability, education is still an important determinant of earnings and the authors presented a return to education for males of 17.3% in 1965 and 11.1% in 1988.

Nearly no research exists on the Syrian labour market. Searching the literature, a working paper by Huitfeldt and Kabbani (2007) was found, in which the authors try to find the link between education and employment in Syria using data from the Syrian Labour Force Survey for 2001 and 2002. Huitfeldt and Kabbani (2007) found that Syrian rates of return to education are lower than the international levels. Huitfeldt and Kabbani (2007) results indicate that the average rates of return to education for workers in the public sector is between -2% for males with primary education and over 8% for female with an intermediate institute or university degree. Similarly, in a study of Higher Education in Syria, Kabbani and Salloum (2010) found very low returns to education in Syria; on average around 2% for preparatory schooling, 2.5% for secondary school, and 4.5% for higher education. However, according to Huitfeldt and Kabbani (2007) and Kabbani and Salloum (2010) returns to education increase by the level, which is similar to most countries in the MENA region (Psacharopoulos and Patrinos, 2002) while contradict with the findings of many researches in other countries in the world where they found that the best rates of return is found at the primary schooling (e.g. Fiszbein and Psacharopoulos, 1993 in Venezuela; Moock *et al.*, 1998 in Vietnam; Heckman *et al.*, 2003; Trostel, 2005). This situation could be explained by the significant role of the public sector employment in the MENA region, in where salaries are not related to improved productivity rather they pay scales (Kabbani and Kothari, 2005). Though, the Syrian rates of return to schooling is to a large extent lower than the international average rates of around 10% - 15% or the average return in the region of around 6% (World Bank, 2008).

In general, in both studies (Huitfeldt and Kabbani, 2007 and Kabbani and Salloum, 2010) it was found that the education rates of return are higher for females than for males, which is similar to many international evidence (e.g. Flanagan, 1998 in Czech Republic; Chase,

1998 in Slovak; Tsakloglou and Cholezas, 2001 in Greece; Arrazola and De Hevia, 2006 in Spain; Moock *et al.*, 1998 in Vietnam; Asadullah, 2006 in Bangladesh and Psacharopoulos, 1994a). As an explanation of the results in Syria, larger numbers of females tend to work in the public sector rather than the private one and higher returns to education were found in the public sector with no gender-biased against women. Also, it was found that women in the public sector get higher returns to their education, while men's returns in the private sector are higher for all educational levels (Huitfeldt and Kabbani, 2007 and Kabbani and Salloum, 2010).

Additionally, Huitfeldt and Kabbani (2007) calculated the "marginal rates of return" to education, which estimates the rates of return of moving up one level of education, and found that "the marginal rates of return" for primary schooling are between 0% and 4% and "the marginal rates of return" for secondary schooling are around 5%. Additional year of intermediate institute level for females working in the public sector gives them the highest rate of return; while for male the highest rate of return was found for university degree in the private sector. Huitfeldt and Kabbani (2007) found that Syrian is attracted to higher education mainly as it increases the odds of finding a job especially in the sought-after the public sector, reduces job queuing time and enhance the opportunity to find a job abroad. In general, the returns to one more year of education in Syria have been estimated at between 8 and 15%; in MENA, the rates range between 4 and 50% (Kabbani and Kothari, 2005).

While other researches have estimated the rate of return to schooling for multiple countries, for instance Psacharopoulos provided comprehensive reviews for multiple countries (see, Psacharopoulos, 1973, 1985, 1994a and Psacharopoulos and Patrinos, 2004). In those reviews, it was found that: private returns to education generally exceed the social returns; rate of return to schooling in the developing countries (especially Latin America and Africa) are higher than in the developed countries; within a country, the rates of return are normally higher for the lower levels of education (for example, the return is the highest for primary schooling then for secondary schooling). Over time, the education returns patterns have slightly declined and finally women return to education, in general, are higher than men's. This is true for secondary education as well, however, when it comes to return to primary education, men receive much higher return than women

Psacharopoulos and Patrinos (2004) estimated the rates of return to schooling for 98 countries and found they significantly differ by gender. The authors found that females have higher average rates of return than males in two-thirds of countries. Psacharopoulos and Patrinos (2004) also found that the OECD countries (Organisation for Economic Co-operation

and Development) and the Middle East and North Africa recorded the lowest rates of return for primary, secondary and overall educations.

Similarly, Weichselbaumer and Winter-Ebmer (2005) conducted a meta-analysis of the international gender pay gap from the 1960s to the 1990s covering 63 countries. The authors fund that raw gender earnings differentials have decreased substantially since the 70s from around 65% to 30%, they attributed this decline to female workers acquiring more productive characteristics such as better education and training. Moreover, Weichselbaumer and Winter-Ebmer (2005) noticed that the unexplained component of the gender pay gap (discrimination) does no decline over time. A similar explanation to the declining gender pay gap was reached by Goldin (1986). The author found that, between 1890 and 1970, the increasing educational attainment of females, the increasing value of education and the reduction in the emphasis on physical attributes in works explained 85% of the decrease in the gender wage gap.

Trostel *et al*. (2002) estimated the rates of return to schooling in 28 countries worldwide from 1985 through 1995. The authors estimate suggested an average rate of return to schooling of men as just below 5% and 6% for women, with a large variation in the return to schooling across studied countries. The authors found no evidence for a worldwide rising rate of return to education over the studied period; instead, they found that worldwide rate of return has declines slightly.

Previous studies demonstrated that in both developing and developed countries females are generally paid less than males. Those results are true regardless of females' educational attainment and other productive characteristics (Blau and Kahn 1992; 2003). However, Polachek (2004) suggested that as time passes on and with economic development the gender wage differential narrows.

Other studies tried to identify the influence of finishing a specific education level on earnings. Some authors argued that the marginal rate of return is constant over all educational levels (Trostel, 2005). Others assumed that rate of return increases at low educational levels and decreases at high educational levels (Heckman *et al*., 2003). Using quantile regressions, Martins and Pereira (2004) have tried to establish the link between education and wage disparity for male workers from 16 western countries during the mid- 1990s. The authors found that for higher educational levels, the dispersion of returns increases. Trostel (2005) assessed the marginal private rates of return to educational investment in 12 countries. Significant nonlinearity was found in the return to education and the results indicated that "the marginal rate of return" significantly increases at lower level of education (till around year 12) and then declines significantly at higher levels of education. Compared with standard "linear estimates

of the rate of return to education", show that "the marginal rates of return" was understated at middle levels of education and considerably overstated at both top and low educational levels.

Other strand of literature compared rate of return of vocational secondary education with the rates of return of general secondary education (for example reviewed by Psacharopoulos 1987; Tilak, 1988) and the results were mixed. For example, Psacharopoulos, and Chu Ng (1992) assessed private and/or social rates of return for both general and vocational education from 18 Latin American countries and found that, in most countries, returns to the vocational secondary education exceed the returns to general. The 1995 World Bank Education Sector Review showed that the rate of return to general secondary schooling was much higher than in vocational secondary education (IBRD, 1995). Examining the social rates of return in developing countries for both general and vocational secondary schooling, Bennell (1996b) found no significant differences between the two returns.

Similarly, in the Republic of Suriname, Horowitz and Schenzler (1999) estimated both the social and private rates of return to technical, vocational, and general schooling over the period 1990-1993. The authors found that returns to general schooling (i.e. mathematics and language) are higher than those to technical or vocational schooling for both genders. However, in the language track females' returns surpass their returns in the mathematics track. While, for males it was the opposite as their returns in the mathematics track exceed returns in the language track. In the same vine, Psacharopoulos and Patrinos (2004) analysed the rates of returns by educational level for 98 countries and found that females earn lower returns for primary and university education, while they earn higher returns to secondary education investment than males. In Trinidad and Tobago, Bourne and Dass (2003) investigated the social and private returns for educational investment in science and technology compared with other major of studies in 1999. The authors found that private rates of return are significantly higher in engineering, medicine and natural sciences followed by non-science and technology and finally comes the agriculture education with the lower rate of return. Bourne and Dass (2003) also found that, in general, private rates of return are significantly higher than the social rates of return. Also, Fiszbein and Psacharopoulos (1993) investigated earnings by educational level in Venezuela to accomplish "cost-benefit analysis of educational investment". The authors found that primary education yielded the highest private return, while Higher education yielded the lowest returns and Secondary education return lies in between.

3.4.1.2 Return to Training and Experience

Historically, experience on the job was viewed as the source of skills (Mincer, 1962). Nowadays, training is believed to provide workers with more skills and enhance their productivity.

Similar to the education investment, training is viewed as an investment in human capital and was included in the early works on human capital investment (e.g. Schultz, 1960; Becker, 1964 and Mincer, 1974). Schultz (1960) listed on-the-job training as one of five major areas of human capital investment beside education; adult study programmes; health facilities and services and migration to adjust employment opportunities. Becker (1964) is considered the seminal work that shaped the current thinking on training. Becker (1964) distinguished between general training (applicable to any job at any firm) and firm specific training (applicable only to the current job in a specific firm). The former is transferable whereas the latter is not. Hence, employers usually provide firm specific training for free, while they expect the worker to pay for the general training by giving him/her less wages over the training period. All in all, most of firms training investment are a combination of both. Mincer (1974) used data from 1960 census and run a least squares regression of log earnings on schooling. The author found that the annual return to schooling was 7%. After that, Mincer added experience (calculated as age minus years of schooling minus 6 years) and its square to the regression. The results showed that the estimated return to education increases to 10.7% with positive return to experience.

Many researches have studied the relationship between earning and cumulative work experience (measured as the years of employment) (Light and Ureta, 1995; Boraas and Rodgers, 2003; Gabriel, 2005; Blau and Kahn, 2006). As experience is not directly measured in many datasets; hence researchers are using proxies of experience (Altonji and Blank, 1999). For example, as mentioned earlier, O'Neill and Polachek (1993) stated that the gender wage differential has been narrowing in the USA. The authors indicated that the major factor behind this trend is women being able to close the education and experience gap. Blau and Kahn (1997) showed that a large share of the male-female pay gap decline between 1979 and 1988 can be explained by enhancements in females' experience than do changes in education. In a later study, Blau and Kahn (2006) found that, during 1980s, women's work experience helped in narrowing the gender wage gap and accounted for one third of the total gender wage gap narrowing at that time. Beblavy *et al*. (2013) investigated education and training participation among selected European countries and found that, Scandinavian countries Denmark, Sweden

and Finland, along with the UK have the highest rate of participation in education and training while this rate is the lowest in the Mediterranean countries.

Traditionally, females acquired lower level of education and training which have led them to choose occupations requiring less training and allowing for more flexibility, those occupations are generally characterised by lower earnings compared to males (Blau 1989). As Human Capital Theory suggests that women get less valuable on-the-job-training because of their lower labour market experience. Also, womens' skills become out of date as a result of interruption of labour market participation for women mainly as a result of child-bearing (e.g. Arrow, 1972; Royalty, 1998). Hence, the gender pay gap may exist as because of differences in skills between males and females not as a result of gender discrimination (Mueser, 1989).

Joshi and Davies (2002) studied the effect of differences in skills, education and childbearing on the lifetime earnings of females in the UK and found a big earning gap between women and men over their lifetime. The authors stated that when women acquire high skill levels their lifetime earning level will be close to those of men. Further, women with lower skill levels (mostly with children) tend to have lower lifetime earnings than men. Juhn *et al*. (1993) documented a growing in wage inequality for men over 30 years (between 1963 and 1989) in the USA to analyse how much of it is due to related increases in the market return to skill (observed and unobserved). The authors found that the unobserved components of skill have a different level of effect depending on the worker position on the distribution. Juhn *et al*. (1993) showed that the average weekly wages have dropped by about 5% for the least skilled workers whereas the wages of the most skilled workers have risen by about 40%. Juhn *et al*. (1993) explained wage inequality growth for males as a result of the increase in the return to the unobserved portion of skill. Similarly, Autor *et al*. (2005) found that education and experience characteristics of USA workers have a different level of effect on the wages of workers at the top or bottom of the distribution. The authors found that the steady increase of upper tail inequality since the late 1970s is due to changes in labour market prices (particularly by education).

Arabsheibani *et al*. (2003) examined the returns to human capital through the earnings distribution for men in Brazil between 1988 and 1998. The results indicated that additional years of schooling yield a very high return (7% to 26%), in accordance with prior experience and education. Though, returns to education have been higher at the upper end of the earnings distribution, for example, 4-7% higher at the 90th percentile compare to the 10th percentile. However, increases in returns to education have not led to increased inequality, this is because the impact of increased returns to education have been offset by increased in human capital

investment (Arabsheibani *et al*., 2003). Bedi and Born (1995) estimated the effect of educational attainment and experience on earnings inequality in Honduras using data from 1990 survey. The authors found that education and experience have a significant positive effect on wage differentials. Bedi and Born (1995) results contradicted prevailing view on rates of return as the authors found that returns to education increase with education levels. The prevailing view is that primary schooling returns are usually higher than other levels of schooling (e.g. Psacharopoulos, 1994).

Previous studies have established that human capital characteristics on their own do not fully explain the wage differences between men and women and these differentials have been attributed to other factors as well which will be discussed in the next sections.

3.4.2 Job Characteristics

According to competitive theory, job characteristics (e.g. occupation, industry, hours worked) are essential factors influencing the differences in earning and labour market participation for individuals and hence, determine the relative value of individuals' human capital (Elliott 1990).

Many studies (Groshen 1991; Bayard *et al*., 2003; Meng, 2004; Manning, 2006; Thomson, 2006; Mumford and Smith, 2009) supported the notion that job characteristics such as occupational segregation, industries segregation and women working part time are important contributor to the gender wage differences. Job characteristics may include firm size, industry or sector, working time, occupation and working conditions.

3.4.2.1 Part-Time Work

Part-time work is a key factor in explaining the gender pay gap. Traditionally, women are mostly responsible for caring and the domestic work at home which resulted in more women working part time than men as an alternative to not working at all (Buddelmeyer *et al*., 2005; Manning and Petrongolo, 2008; Connolly and Gregory, 2008). According to the International Trade Union Confederation (2008), over 30% of EU women work part-time, which are mostly low-paid, as opposed to only 8% of men. Similar results were found in 2013 by the Eurostat (2014) for EU countries as 32.1 % of employed females work part-time as opposed to 8.8 % of males. the highest rate among the EU Member State for female part-time work was found in the Netherlands as more than three quarters (77.0 %) of employed women were working in part-time jobs in 2013 (Eurostat, 2014). In the UK, more than 40% of working women are in part-time jobs (Manning and Petrongolo, 2008; Connolly and Gregory, 2008).

According to the International Trade Union Confederation (2008) gender wage differential is high in countries with high rate of women in part-time jobs such as the Netherlands and the UK.

However, part-time work impact negatively on workers' earnings and help in widening the gender wage differential (Ermisch and Wright, 1993). This was confirmed by the Office for National Statistics (2010) as they showed that, in April 2010, part-time employees are getting 36.2% lower median hourly earnings than the full-timers. In the UK, women in part-time jobs have on average, about 25% less hourly earnings than that of full-time working women (Manning and Petrongolo, 2008). Similarly, wage penalties were found among part-time women workers in Canada, Germany, Italy, the UK, and the US by Bardasi and Gornick (2008). Moreover, part-time work is, usually, concentrated in low paid and low status jobs (Connolly and Gregory, 2008). Also, part-time jobs provide fewer benefits, lower security in job and less promotion opportunities (Rosenfeld and Birkelund, 1995). However, some researchers (e.g. Rosen, 1989; Blau, 1989) suggested that even when equal hours are worked by men and women, women tend to work in less demanding and less intense jobs to be able to balance their work demand with their home responsibility and demand which may have a negative impact on women's earnings. Some women tend to switch at some point (maybe after having a child) from full-time to part-time employment, which, according to Connolly and Gregory (2008), may be associated with occupational downgrading (i.e. moving to an occupation requiring lower education, lower responsibilities, lower status and/or lower payment).

3.4.2.2 Labour Market Segregation

Labour market sex segregation contributes significantly to gender wage gap in the labour market (Kreimer, 2004). When women and men are unequally distributed to different sectors, industries, and occupations this significantly affect the gender wage gap (García-Aracil, 2007). According to the dual labour market theory by Piore (1973), the labour market could be separated into two segments: the primary and the subordinate labour market. In the former, better jobs with more training, more opportunity and higher wages could be found, while jobs in the later are less favourable as they give lower wages and less opportunities of promotion. When more women are attached to the subordinate labour market the gender wage differential would be broadened. Recently, European countries are trying to close the gender earning gap by putting strategies and police to reduce labour market segregation (Kreimer, 2004; García-Aracil, 2007). Labour market segregation researches have focused on

occupational, sectorial, industrial and regional divisions of the labour market; those will be discussed in the next sub-sections.

3.4.2.2.1 Occupational Segregation

Occupational segregation attracted a great attention from both policy-makers and labour economics researchers as it has an adverse effect on women's labour market outcomes (such as earnings, work positions and expected rewards to human capital investment) and when women are attached to lower waged and/or lower status jobs, this increase the gender pay gap (see for example, Watts, 1998; Bayard *et al*., 2003; Manning, 2006). Moreover, in female dominated occupations, lower wages tend to be offered compared to male dominated ones (MacPherson and Hirsch, 1995; Baker and Fortin, 2001; Bayard *et al*., 2003). Additionally, occupational segregation explains a part of the gender pay gap (Blau and Ferber, 1987; Baldwin *et al*., 2001). This is evident in the International Trade Union Confederation (2008) as it stated that gender pay gap is greatest in the more segregated countries (such as Slovakia, Cyprus and Estonia) and in sectors usually dominated by males (such as industrial sector).

It is essential to start by defining the concept of occupational gender segregation, according to Siltanen *et al*. (1995) it refers to the orientation of males and females to be employed in different occupations. Chakravarty and Silber (2007, p. 185) define occupational gender segregation as the "inequality in the distribution of male and female workers across occupational groups". Segregation may seem similar to "concentration", however they are different. Concentration refers to overrepresentation of one sex (men or women) in a particular occupation or set of occupations, whereas segregation refers to the separation of the two sexes across the entire occupational structure (Siltanen *et al*., 1995). Thus, they are overlapping concepts as "segregation measures the combined effect of concentration in all the occupations involved" (Blackburn and Jarman, 2006, p. 290).

Gornick and Jacobs (1998) found that occupational segregation contribute significantly to the explanation of pay gap in Germany and to a less degree in the UK. The authors found that females in the UK tend to work in professional occupations more than their Germans counterparts. The results are in consistence with Miller's (1987) who found that occupational segregation explains relatively a small part (10-15%) of the UK gender gap differential in 1980, mainly as less females reached senior levels within the same occupation. In the same vine, Dex *et al*. (2008) investigated males and females' occupational distributions changes in the UK between 1981 and 2001 and found that women tend to move out of typically female

occupations however at a lower rate than men moving into them which remained very low over the studied period. In gender wage gap study for 22 industrialised countries over the 1985-1994, Blau and Kahn (2003) found insignificant positive effect of occupational segregation (after controlling for some factors such as collective bargaining and parental leave). Dolado *et al*. (2003) found that occupational segregation in the EU is higher than in the US in 1999 mainly because of a lower share of women in executive and managerial jobs.

Though, it is crucial to distinguish between the two types of segregation: Horizontal and Vertical segregation. Horizontal segregation usually associated with gender stereotypes (Becker, 1971) and refers to the occupations or sectors that have traditionally been occupied by a certain group (men or women), such as nursing and cleaning for women and engineers, and builders for men (Hakim, 1996; Charles, 2003; Fortin and Huberman, 2002; Bettio and Verashchagina, 2009). If the horizontal segregation is distributed to that women are segregated into lower skilled jobs such as cleaning and clerical while men are segregated into the higher-level jobs such as managers and doctors, this will contribute largely to the gender pay gap (Grimshaw and Rubery, 2007). Then the segregation will explain the part of the gender wage gap that is associated with the labour market structure rather than discrimination (International Trade Union Confederation, 2008). For example, and according to the European Working Conditions Survey 2005 as cited in Eurofound (2006), the European labour markets, with around 40% of the workforce are females, was found to be highly segregated as only 26% of Europeans are working in mixed occupations. Moreover, about 50% of the female labour force work in two sectors (i.e. 34% in education and health, and 17% in retail and trade). On the other hand, 50% of men's jobs are in three sectors as 22% work in manufacturing, 14% in wholesale and retail trade and 13% in construction.

Vertical segregation is now more commonly known as "hierarchical segregation" (Bettio and Verashchagina, 2009, p 32). It indicates to the hierarchy segregation within occupations where females are located at lower positions (that needs less authority and power) compared to their men counterparts (Charles, 2003). In the literature, vertical segregation is usually known as the "glass ceiling" which indicates the existence of barriers that prevents women, after reaching a certain level, from progressing further in their career (e.g. Hakim 1996; Arulampalam *et al*., 2007; De la Rica *et al*., 2008). Which lead to scarcity of women at certain jobs at the highest power, decision positions and pay levels. For example, even in the sectors where women are well represented, such as education and health, fewer women are in decision-making positions and/or the highest paid levels, than men (Eurofound, 2006; Brodolini, 2011). This was proofed in the UK by Connolly and Gregory (2007) as they found

that even though 50% of teaching staff are women, only 30% of head and deputy head teachers are females; also, they found that female constitute only 5% of board directors of public companies. A similar conclusion in EU was found by Brodolini (2011) as the author reported that women are only 32% represented at managerial level, 3% among chairmen and presidents of company, 10.9% among highest decision-makers of the largest publicly quoted companies on the national stock exchange. Glass ceiling is completed by the concept of "sticky floor" which refers to constrain of women at the lowest pyramid hierarchy and pay levels (see foe example, Booth *et al*., 2003).

Authors investigated the presence of glass ceilings; for example, Arulampalam *et al*. (2007) investigated the gender pay differentials across the earnings distribution for 1995-2001 in 11 EU countries. The authors concluded that, even with similar observed characteristics as males, in all of the studied countries, females are rewarded less along the wage distribution. Also, the results showed glass ceiling effect in all studied European countries (except Spain) whereas sticky floors were observed in Italy and Spain. On the contrary, De la Rica *et al*. (2008) investigated the gender pay differentials across the wage distribution in Spain in 1999. The results were in contrast with most other European countries results of highly increasing gender pay gaps as in Spain they were lower and flatter. Additionally, De la Rica *et al*. (2008) found that glass ceiling effect exists for the highly-educated workers only. Nicodemo (2009) examined the gender pay differentials along the wage distribution in five European Mediterranean countries to find if glass ceiling and/or sticky floor exits over 2001 and 2006. The author found considerable gender wage gaps in all studied countries, most of which is as a result of discrimination rather than the characteristics effect. Additionally, the gender pay gap is more considerable at the bottom of the wage distribution which means that women suffer from sticky floor effect with less and decreasing glass ceiling effect. Albrecht *et al*. (2003) analysed the gender pay gap across the earnings distribution for the Swedish labour market in 1998 and confirmed the presence of a significant glass ceiling in Sweden as the gender gap is bigger at the top of the wage distribution. The authors found that, at the top of the wage distribution, around half of the gender pay gap is due to differences in returns to characteristics and the other half is due to characteristics distribution differences. In a later study Albrecht *et al*. (2009), investigated the gender wage gaps in the Netherlands among full-timers and found evidence to support the existence of glass ceiling. They found that a great deal of the gap is resulted from differences in the distribution of characteristics returns.

Previous literature showed the existence of large gender occupational segregation in all regions of the world, however, the gender occupational horizontal segregation has been

decreasing in recent decades (Semyonov and Jones, 1999; Baunach, 2002). Similarly, Blau and Kahn (2000) found that the gender occupational segregation declined after the 1970s as large numbers of women are moving into predominantly male jobs throughout the occupational spectrum. In the same vine, Semyonov and Jones (1999) analysing data from 56 countries found that in some countries women tend to participate more in the labour market which lowered the horizontal segregation, however, in those countries women are still restricted from accessing highly ranked occupations. However, some studies found that the gender pay gap persists even with similar occupational distributions for men and women workers. In this case, for example, Miller (1987) found that the gender pay gap would decline by only 5% from the observed 60% gap and it was found by the Office for National Statistics (2010) that the hourly earnings of female are 22.7% lower than men's in the same position. Alternately, Hakim (1996) proposed that vertical gender segregation that happens in the workplace may explain the pay gap. Similarly, Blackburn and Jarman (2006) argue that in the central of the inequality studies is the vertical segregation.

However, in spite of the attention placed on occupational segregation in understanding gender pay gap, studies investigating this relationship are very rare in developing countries (with some exceptions such as, Oliveira, 2001 for Brazil; Calonico and Nopo, 2008 for Mexico; Isaza-Castro and Reilly, 2011 for Colombia and some cross-countries studies such as Semyonov and Jones, 1999). No studies in the Middle East. The main reason for this scarcity may be detailed data availability and reliability.

Ovensen and Sletten (2007) grouped the main occupations in Syria into five main categories, those are: managers and professional; clerks; manufacturing, technical and construction workers; sales and service personnel; and agricultural workers. The authors found that gender distribution among those occupations vary significantly, for example, women dominate the agricultural occupation (46% vs. 22% of men) and managers and professional occupation (31% vs. 10% of men); while men dominant occupations such as manufacturing, technical and construction workers (39% vs. 8% of women) and Sales and service personnel (22% vs. 7% of women). This gender differences between occupations would affect the wage differences between the genders and this effect should be accounted for when explaining the gender wag differences.

3.4.2.2.2 Public/Private Sector Wage Differentials

Another aspect of the labour market segregation is the sectorial division into public and private sector. Employment in public sector composes a large portion of total employment in most economies, especially in the developing ones (Van der Gaag and Vijverberg, 1988; Terrell, 1993; KIPPRA, 2013). Workers with similar productivity characteristics have different pay rewards in public and private sectors as promotion and the process of wage determination differ between the two sectors. Private sector companies are motivated by growth and profit; hence, they set their workers' wages to be consistent with workers' productivity; while public sector is not profit maximizing agent hence their pay rewards are generally based on other criteria (Hyder and Reilly, 2005). Though, public sector employment is attractive as it offers attractive wages, pensions, on the job training, more job security, flexibility in working time, promotion opportunities and is more likely to implement equal opportunities legislation and family-friendly practices than private sector (see for example, Fogel and Lewin, 1974; Wright *et al*., 1995; Rubery *et al*., 1999).

Public sector employment is more vital in MENA region than in other developing ones (Kabbani and Kothari, 2005). In Syria, this importance arise from high wages, benefits, pension coverage, and job security in the public sector (Kabbani and Kamel, 2007; Kabbani, 2009). Particularly, public sector jobs attract young females because they offered flexibility in working hours, better policies for maternity leave and higher wages than in the private sector (Kabbani and Kamel, 2007; Kabbani, 2009). For men, the main benefit of public sector seems to be job security as "dismissal of public sector employees is very difficult once they are granted "fixed contracts," which occurs after they have completed a yearlong training period (Article 17 of Law No. 50)" (Kabbani and Kamel, 2007, p 33). In 2003, it was estimated that 28% of the Syrian civilian labour force are working in the public sector (24.8% of males and 39% of females), 35% in the private formal sector (38.7% of males and 16.3% of females) and 37% in the private informal sector, which is businesses not registered with the government (36.1% of males and 44.4% of females) (Huitfeldt and Kabbani, 2007; Ovensen and Sletten, 2007). From the Unemployment Survey of 2003, Kabbani (2009) stated that, over 80% of unemployed young (15-29 years) were attracted to jobs in the public sector and 60% are looking only for jobs in the public sector; for unemployed young women, 90% of them are seeking public sector jobs.

Usually, public sector employees tend to earn more than the private sector workers (Pedersen *et al*., 1990; OECD 1994; Gornick and Jacobs, 1998). Nevertheless, the gender wage differentials are more noticeable in the private sector than in the public sector (Rosenfeld and

Kalleberg, 1991; Whitehouse, 1992). In term of wages in Syria, it was found that public sector employees enjoy 22% extra average monthly salaries compared to the private sector salaries in 2007 (Kabbani, 2009). Additionally, differences in the minimum wage polices between the public and private sectors contributed to the increased attraction to government jobs in Syria as before 2006 public and private sectors had separate minimum wages, with a lower minimum wage in the private sector (Kabbani and Kamel, 2007). The authors continue to explain that in 2006 the minimum wage in both public and private sectors was brought into alignment by increased the public sector minimum wage by 26% and the private sector by 37%.

It has been found that high levels of female employment are generally found in the public sector (Whitehouse, 1992; Gornick and Jacobs, 1998). This may be because public sector provides "good jobs" and beneficial opportunities for women (Kolberg, 1991). Additionally, public sector is better than private sector in rewarding (i.e. better wages) workers with lower occupational, educational and skills level (Katz and Krueger, 1991; Poterba and Rueben, 1994; Gornick and Jacobs, 1998; Lucifora and Meurs, 2004), in which women are more represented. For example, Lucifora and Meurs (2004) found that the low skilled employees are paid higher in the public sector than the private sector in France, Britain and Italy, unlike the high skilled workers. The more women are over- represented in the public sector, the wider the gender pay gap will be, depending on the size of the public sector in the economy.

However, the effect the public sector upon wage gap is decreasing over time as the result of governments' tendency to control their spending over the last two or three decades. As a result, public sector employees' growth and pay increases have been restricted (for example the finding of Rosholm and Smith, 1996 in Denmark).

Even though Syrians youth have low returns to their education, which may motivate students to drop out of schools, they continue to seek higher education to a certain degree to increase the chances to find a public sector job (Kabbani and Kamel, 2007; Kabbani, 2009). Indeed, previous research's results has proved a positive relationship between educational level and public sector employment in Syria (Kabbani and Kamel, 2007; Kabbani, 2009). In 2003, only 7% of illiterate males and 4% of illiterate females worked in the Syrian public sector in opposite to 86% of university holders of both men and women while the ratios are around 30% of illiterate men, over 50% of illiterate women and around 16% of university holders for both males and females worked in the formal private sector (Kabbani and Kamel, 2007). The relationship between educational level and securing a job in the public sector is stronger for females than males. In 2003, 76.4%, 94.1%, and 78.3% of women with university, intermediate

and secondary degrees respectively worked in the Syrian public sector compared to 62%, 73.2% and 49.3% of men with university, intermediate and secondary degrees respectively (Islam and Abdel-Fadil, 2005). The correlation between educational attainment level and public sector employment in Syria may be because university graduates mainly pursue public employment for the job benefits and security it provides or because private businesses are reluctant to hire young people as a result of rigid labour laws and regulations in addition to that universities do not provide graduates with the required skills (Ovensen and Sletten, 2007; Kabbani and Kamel, 2007; Kabbani, 2009).

The wage differentials between public and private sector can have severe implication in both the short and long term output of the disadvantaged sector. For example, if the wage differences are in favour of the private sector, this may result in "brain drain" (talented and highly skilled employees) from the public towards the private sector, low morale among public sector employees and increased corruption in the public sector which in turn lead to diminishing output and affect the productivity and efficiency of the public sector (KIPPRA, 2013). On the other hand, when the wage differences are in favour of the public sector, workers would prefer the higher wages and long term stability of the public sector jobs, hence, the unemployment "wait" time will increase (the case in most developing countries).

Extensive literature exists on public-private wage differences, especially in the developed countries. This literature records significant wag differences presence in most developed countries, thus, part of which could be attributed to differences in individuals' characteristics. Studies on wage differential between public and private sectors in Europe revealed mixed results. Though, "the wage differential is generally found higher for women than for men, for low-skilled workers and at the bottom tail of the wage distribution. While the magnitude varies with the econometric specification and across countries, typically the pay gap is found to be insignificant or small for Austria, Belgium, France and Germany, and relatively high for the remaining countries." Depalo *et al*. (2013, p. 4). Among authors who investigated the public-private wag differentials across-countries (especially European countries) are: Portugal and Centeno (2001) (European Union member states); Lucifora and Meurs (2004) (for France, Britain and Italy); Ponthieux and Meurs (2005) (for ten EU countries); Strauss and Maisonneuve (2007) (in 21 OECD countries); Giordano *et al*. (2011) and Depalo *et al*. (2013) (for ten EU countries). For example, Portugal and Centeno (2001) found a wider wage gap in Portugal, Ireland, Luxembourg, Spain and Italy; it is narrower in Austria, Belgium, and Germany; and slightly negative in Denmark. Giordano *et al*. (2011) and Depalo *et al*. (2013) found larger pay gap in the private sector, bigger for females and at the low end of the

distribution. For Giordano *et al.* (2011), the public sector premia is higher in Greece, Ireland, Italy, Portugal and Spain than other countries. Depalo *et al.* (2013) found that the wage gap between public and private is above 35% in Greece, Portugal and Spain; is around 30% in Italy, Ireland and Slovenia, and ranges between 6 and 16% in Belgium, France, Austria and Germany.

Though, returns to education for females are higher than males' in the Syrian public sector (Kabbani and Salloum, 2010). In 2007, young men (20-29 years) with either low levels of educational attainment or university degrees get higher average hourly wages in the private sector compared to the public sector; while young men with intermediate institute (post-secondary vocational school) degrees in public sector have higher average hourly wages than in the private sector; and for secondary education both sectors give similar wages. For young women, the hourly wages on average were higher in the public sector than the private sector for all levels of education (Kabbani, 2009). When comparing the hourly wages between sexes it was noted that young women get substantially lower wages than males in the private sector, and considerably higher wages than males in the public sector (Kabbani, 2009).

Other studies compare public-private wage gaps in a selected developed country; such as: Adamchik and Bedi (2000) for Poland; Henley and Thomas (2001) and Disney and Gosling (2008) for the UK; Jurges (2002) and Melly (2005) for Germany; Bargain and Melly (2008) for France; Cai and Liu (2008) for Australia; Kelly *et al.* (2009) for Ireland; Depalo and Giordano (2010) for Italy. The wage gap between public and private sectors have been confirmed by all studies (even by controlling for workers' characteristics). For example, Adamchik and Bedi (2000) found that males with university degree in private sector earn 28% more than their counterpart in the public sector. Melly (2005) found that men wages in public sector are lower than their private sector counterpart, while women wages in public sector are substantially higher than their private sector counterparts; and the raw public-private wage gap reduces at the higher end of the wage distribution (similarly to Jurges, 2002).

However, the volume of studies on the public-private sector wage gap for developing countries are more modest and started many years after the developed countries studies. Wage differentials between public and private sectors have also been confirmed by the following studies, such as: Assaad (1997) for Egypt; Boudarbat (2004) for Morocco; Tansel (1999) and Tansel (2005) for Turkey; Gong and van Soest (2002) for Mexico; Christofides and Pashardes (2002) for Cyprus; Glinskaya and Lokshin (2005) for India; Hyder and Reilly (2005) and Aslam and Kingdon (2009) for Pakistan; Coppin and Olsen (2007) for Trinidad and Tobago; Anos-Casero and Seshan (2006) for Djibouti; and Nielsen and Rosholm (2001) for Zambia.

For example, Boudarbat (2004) found that public- private sectors wage differentials are in favour of the public sector in Morocco which resulted in increasing unemployment time while waiting for employment in the public sector. The author also indicated that the "wage premium" of the public sector is over 42.5%. Similar findings were found for Egypt by Assaad (1997). The author found that wages in the public sector is equals to wages in the private sector; however, the attraction is in the non-wage aspects of government jobs which resulted in graduates queuing for those jobs and increasing the graduate unemployment rates as a consequence. Also, females with secondary school get higher pay in public sector as they are discriminated against by the private sector. Likewise, Tansel (1999) found that females are discriminated against in the private sector.

3.4.2.2.3 Inter-Industry Wage Differentials

Significant wage differentials exist among different industries, which in turn affect the gender wage gap (Fields and Wolff, 1995). It has been found that employees in different industries might be rewarded differently even when they have similar productivity characteristics. The empirical literature on inter-industry wage differentials found evidence of high-paying and low paying industries- after controlling for worker characteristics- (i.e. firms belonging to specific industries pay their workers - both low skilled and high skilled- wages that are considerably higher than those in other industries, Osburn, 2000). Additionally, wage differentials patterns across industries, in different countries, have been found to be stable over time and similar across industrialised countries (e.g. Krueger and Summers, 1988). There is, some acceptance that these effects are permanent and follow the same pattern between countries (Helwege, 1992), thus, of different magnitudes in the industrialised countries (Hartog *et al.*, 1997).

Many studies have assessed the wage differentials across different industries, focusing on the industrialised countries. Such as Dickens and Katz (1987); Krueger and Summers (1988); Haisken-DeNew and Schmidt (1997); Zanchi (1998) and Reilly and Zanchi (2003) for the USA; Teulings and Hartog (1998) and Benito (2000) for the United Kingdom; Gannon and Nolan (2004) for Ireland; Goux and Maurin (1999); Abowd *et al.* (1999) for France; Haisken-DeNew and Schmidt (1997) for Germany; Rycx and Tojerow (2002); Plasman *et al.* (2007) for Belgium and Vainiomaki and Laaksonen (1995) for Finland. However, the wage differentials across industries have been little addressed in the developing countries such as Arbache (2001) for Brazil and Erdil and Yetkiner (2001) for a group of countries.

For example, Krueger and Summers (1988) found that industry structure has an impact on an employee's wage. Also, the authors noted that the pattern of wage differentials across industries in developed economies is relatively unchanging over time

Previous researches have proved the existence of inter-industry wage differential however, the reasons behind those differentials are not clear yet as Hartog *et al*. (1999, p. 1) stated "the existence of these differentials is still not clearly understood and remains an intricate and unresolved puzzle". Though, many explanation could be offered for the inter-industry wage differentials. According to Gibbons and Katz (1992) one reason could be the non-random distribution of the "non-observed" individual characteristics of the workers among industries. The sector with the highest "non-observed" quality of the labour force would be the most well paid sectors. Also, those differentials may originate from the special characteristics of the employers in each sector.

Nevertheless, to shed a light on the labour market experience of the developing countries, studies need to analyse the wage differentials in those countries along with the developed ones. For example, Ovensen and Sletten (2007) have grouped the main industries in Syria into five main groups: 1) typically male and physically demanding industries: construction, infrastructure, mining and manufacturing, 2) services: trade, hotels, restaurants, transport, communications and "other" services, 3) education and health 4) public administration and police, and 5) agriculture. Thus, according to the authors, agriculture is considered to be the dominant industry in rural areas, particularly among females; while industries such as: services, manufacturing and construction are mainly dominated by males in urban areas. Females dominate education & health and public administration industries in urban areas (Ovensen and Sletten, 2007). In the same vine, Islam and Abdel-Fadil (2005) noted that in 2003, female's employment in agriculture was dominating (46% vs. 22% for males) and for services (40% vs. 23% for males); while males dominate hotels, restaurants and trade (17.6% vs. 3.5% for females), mining and manufacturing (15.2% vs. 6.6% for females) and buildings and construction (13.3% vs. 1% for females). The differences between gender representations in industries could affect the wage differences between the genders and should be considered when explaining the gender wag differences.

3.4.2.2.4 Inter-Regional Wage Differentials
Wages may differ between regions; those differences may be as a result of differences in the costs of living, differences in workers' characteristics across regions or differences in

region-specific characteristics (such as amenities and climate). For a review of the theory of regional wage determination see Molho (1992), and Dickie and Gerking (1989)

At the beginning of the 1990s, the interest in the regional wage differentials increased, especially in European countries; for example, Dickie and Gerking (1989) and Topel (1994) for the USA; Hemmings (1991) and Blackaby and Murphy (1991) for the UK; Burda (1991) for Germany and Groot *et al.* (1992) for the Netherlands.

In Syria, public sector is larger (in absolute and relative terms) in urban than rural areas; also, gender differences arise between urban than rural areas in terms of employment distribution. For example, in 2003, the percentages of men working in the Syrian public sector were 26% in urban areas and 24% in rural areas; while for women the percentages were 70% of urban female employment and 20% of rural (Ovensen and Sletten, 2007). In 2003, for the Syrian formal private sector, 44% of urban employed men and 18% of urban employed women work there in return of 33% of rural employed men and 17% of rural employed women (Ovensen and Sletten, 2007). The authors also noted that the majority of the rural workforce works in the private informal sector (self-employed or unpaid), 43% of rural employed men and 63% of rural employed females. Those differences should be taken into consideration when studying the gender wage gap as they could affect the wage differences between the genders (as a result of distributions not gender discrimination).

3.4.2.3 Other Factors

Some other factors may affect the gender wage differentials such as promotion, administrative position, working times and trade unions membership. Some companies give wage promotions to male workers more than females' or promote male workers to administrative or managerial position (which offers higher pay) more than they do for females. This phenomenon is associated with the glass ceilings situation (discussed in occupational segregation). Unusual working hours are paid at premium. However, women have less chance in accessing such work, hence, wage difference may occur. Trade unions are another potential explanation for gender pay gap; see for example, DiNardo *et al.* (1996) for the USA and Machin (1997) and Haskel (1999) for the UK.

3.4.3 Institutional and Societal Characteristics

Social norms and cultural factors would have strong effect on the gender wage differential, as they may control the behaviours of men and women differently. According to

Boserup (1989), pay differences may exist as a result of how males and females are grouped into different social roles. Social norms and traditions in the county would influence the decisions made by women both in life and labour market as those decisions are shaped by stereotype and acceptable behaviours in that society. Social norms may influence women's social status, women decision on educational investment and women job (Vella, 1993 and 1994). In the same vein, Loury (1998) stated that social norms may shape human capital development for job searches.

For example, religious preferences were suggested to affect women's educational attainment (Dollar and Gatti, 1999) as well as the traditional conventions in society (Becker, 1985). In some MENA countries (e.g. Pakistan, Saudi Arabia), low female labour force participation could be attributed to norms or religious practices (such as, Miles, 2002 in Jordan; Assaad and Arntz, 2005 in Egypt); while in other MENA countries (such as Lebanon, with a large Christian population) there are no evidence to support this (Hajj and Panizza, 2002). In Syria, social norms play an important role in preventing women from entering the labour market. Relying on a survey by the International Labour Organization (ILO) that was collected by the Syrian Central Bureau of Statistics, Kabbani and Kamel (2007) indicated that the majority of young women listed housework, childcare responsibilities and family refusal as the top three reasons for economic inactivity. The majority of studied young women pointed out that their main aim in life is to get married and have a family (Kabbani and Kamel, 2007).

Additionally, due to gender stereotypes believes that men are better at mathematics than women (Nosek *et al*., 2002) females do not tend to study fields that need mathematical skills (Bertrand *et al*., 2010; Haveman and Beresford, 2012). In Syria, according to Kabbani and Salloum (2010), a much higher number of males graduate from medicine and engineering specialization than females. On the side of job preferences, Human capital theory suggest that men prefer jobs with high income, more job security and better opportunities for advancement while women would prefer jobs that give them the sense of achievement, and have shorter working hours (Tolbert and Moen, 1998; Haveman and Beresford, 2012). As for work experience, in general females have lower accumulated work experience than males. What could explain this is the cultural differences in the role of females and males. Traditionally, women are responsible for the housework and childcare while men are the bread-winner and women are forced to take more time out from work to raise her children. This, in turn, affects the accumulated work experience women acquire (Bertrand *et al*., 2010; Haveman and Beresford, 2012).

Institutional factors may affect gender wage differential as well, such as marriage and having children. The wage differential between single males-females is usually small around 10%, however, this differential rise to around 40% for married males and females (Blau and Kahn, 1992). The differential would be even larger for workers with children (Harkness and Waldfogel, 2003). Waldfogel (1995), for example, found that female-male wage ratio to be around 70%, 50% of which the author attributed to the effects of marriage and children.

As mentioned above, women (especially married) are mostly responsible for caring and the domestic work at home, hence, according to Polachek (1975a) and Becker (1985); married men are expected to work more years over their lifetime than married women. Consequently, married men invest more in human capital than married women and hence have higher wages while for singles men and women wages are roughly similar. For example, Polachek and Xiang (2014) found that the female-male wage ratio was about 78% in the USA, however, when examining for different marital status groups the results revealed that single female-male wage ratio was about 90% while it was around 60% to 70% for married female-male. In the UK, Greenhalgh (1980) found that the single female-male wage ratio was 85% in 1971 and 97% in 1975; while this ratio was 51% in 1971 and 62% in 1975 for married. Similarly, Dolton and Makepeace (1987) found that, as a result of marriage, the earning of the UK men graduates increased by 5.8% while it declined by 4% for women. Likewise, Wright and Ermisch (1991) estimated the married female-male wage ratio for about 67%.

Furthermore, married females with children have lower wages than married females without children (Harkmess and Waldfogel, 2003) while married men with children have higher wages (Polachek, 1975b). Children caring are wildly seen as of women responsibilities. Hence, women are forced to take time out of employment after childbirth; these breaks of the labour market negatively impacted on the lifetime earnings of those females (Mincer and Polachek, 1974). Usually, women tend to resort to part-time jobs as a way to balance their work-family conflict, which also have negative impacts on women's professions (Crompton and Lyonette, 2008). Several researches have been conducted on the relationship between motherhood and women's earnings focusing on the "motherhood penalty" (e.g. Waldfogel, 1998; Budig and England, 2001; Baum, 2002; Anderson *et al*., 2003; Johnson, 2008). For example, Waldfogel (1998) found that, after controlling for age, education, experience, ethnicity, race and marital status, having children decreases women's pay by around 10%. Budig and England (2001) indicated that having children reduces the mothers' earning by around 7%. Anderson *et al*. (2003) found that the wage penalty of motherhood depends on the age of the children, the younger the children the larger the wage reduction and vice versa.

Remarkably, the authors found that mothers with high level of educations (such as college) do not encounter reductions in wages. Similar results were found by Dey and Hill (2007).

From the previous discussion, it could be concluded that marriage negatively affect or sometimes does not affect female wages, while it positively influence male wages (wage premium) and having children does not affect male wages and negatively affect female's.

3.5 Trends in Gender Differentials

Researchers have found that gender pay gap vary with time and they have studied its development over time (such as, Harkness, 1996; Blackaby *et al*., 1997; and Bell and Ritchie, 1998 in the UK; Gunderson 1989, in Germany; Blau and Kahn, 2000 in the USA; and Weichselbaumer and Winter-Ebmer, 2005, International Trade Union Confederation, 2008, 2012; and ILO, 2013 internationally).

Harkness (1996) studied the gender wage gap in the UK between 1973 and 1993 using data from the Family Expenditure Survey and found that female/male average hourly earnings ratio was 0.59 in 1973 and increased to 0.71 in 1993 (mainly due to laws for equal opportunities). Further, the author revealed that the hourly earnings ratio for full time workers was 0.66 in 1974 and increased to 0.80 in 1992-93 (mainly due to reduction in the skills gap). However, Harkness (1996) showed that 90% of the differentials in 1974 and 1992-1993 are unexplained and attributed to discrimination. Similarly, Blackaby *et al*. (1997) using the General Household Survey for Great Britain for the years between 1973 and 1991 found that the wage differential was narrowing strongly after 1983 mainly due to the decline in the skills gap. Likewise, Bell and Ritchie (1998) used the New Earnings Survey for Great Britain to model hourly wages of full-time females for the years from 1977 to 1994 and found that both male and female earnings structure have been significantly changing over time. For example, the authors found that the female to male hourly wage ratio in 1977 was 75.2% and increased to 79.1% in 1994 mainly as a result of the increase in private sector wages relative to the public sector and more benefit granted to females from collective agreements. In Germany, Gunderson (1989) estimated the changes in the wage gap between 1960 and 1980 and found that the wage gap is narrowing of 7%. In the USA, Blau and Kahn (2000) found that female-male earnings ratio was roughly stable at about 60% from the late 1950s to about late 1970; then the ratio began to increase in early 1980s to reach 76.5% in 1999. Internationally, Weichselbaumer and Winter-Ebmer (2005) suggested a decline in the raw gender wage differentials over the 60 countries they study from about 65% in the 1960s to 30% in the 1990s.

For a sample of 62 countries, the International Trade Union Confederation (2008) found that the average international gender pay gap was 16.5% in 2008; it increased to 18.4% in 2012 in the International Trade Union Confederation (2012) report covering 43 countries. More recently, the ILO (2013) report examined the changes in the average gender pay gap before and after 2008 crisis and found that the gap declined in the crisis years in most countries. However, the IOL (2013) suggested that this decline is not as a result of improvement of female labour market situation, rather as a result of the "composition effect" or the deteriorating situation of males.

Previous studies found that the changes in wage gap differentials over time (mainly declining) could be as a result of the introduction of equal opportunities legislation and equal pay laws (Gunderson, 1989; Harkness, 1996), decline in the skills gap (Harkness, 1996; Blackaby *et al*., 1997) and female better schooling, work experience and skills (Katz and Murphy, 1992; O'Neil and Polachek, 1993; Manning and Robinson, 2004). For example, in the UK, Joshi *et al*. (1998) compared the earning gap for full-time workers before and after the "Equal Pay Act" and found it was 58% in the mid-1970s, 40% in 1980 and 25% in 1992. Though a substantial gender pay gap still exists. Moreover, changes in fertility and maternity leave patterns and changes in women's attitudes toward career and family have also played key roles in closing the gender pay gap (Goldin and Katz, 2000; Johnson, 2008). For example, Johnson (2008) found that women these days have stronger attachments to the labour force as mothers' average age for having their first baby has increased, they tend to work more portion of their pregnancy (almost until the childbirth) and they are increasingly returning to work shortly after the birth.

The same previously mentioned factors that could affect the participation rates and the wage gap are true as well in Middle East and North Africa (MENA) region in general and in Syria in particular. Kabbani and Kothari (2005) have noted that the participation rates of adult females in the labour force in the MENA region are the lowest in the world at 29%. However, the participation rates are improving by time, for example in Syria the rate was 23% in 1960, 26% in 1980 and increased to 32% 2000. This improvement in the participation rates of the female labour force are believed to be as a result of a decline in the fertility rates and increase in female educational attainment. For example, the fertility rate in the MENA declined by over 50% in the last 40 years as it was 7.2 children per woman in 1960 and dropped to just 3.3 children in 2002 (Kabbani and Kothari, 2005). In Syria, the fertility rates declined by 54% between the years 1989 and 2002 (Kabbani and Kothari, 2005) the rates were 4.2 children per women in 1993 and plunged to 3.6 in 2004 (Kabbani and Salloum, 2010). Similarly, female

educational attainment has increased dramatically in the last years in the MENA region more than any other region in the world (Kabbani and Kothari, 2005). As in the MENA region, the average school years for female was 0.83 in 1960 and increased by 465% to 4.69 in 2000; while the indicator was 4.31 in 1960 and increased by 42% to 6.13 in 2000 for the whole world (Barro and Lee, 2000). In the MENA region, the years of schooling ratio for female-to-male has improved as well from 51% in 1960 to 76% in 2000 (Barro and Lee, 2000); this ratio in Syria was almost 30% in 1960 and increased to 70% in 2000 (Kabbani and Kothari, 2005). In Syria, the average schooling years increased from 1 year in 1960 to arround 6 years in 2000 (Kabbani and Kothari, 2005; Huitfeldt and Kabbani, 2007). In Lebanon, Hajj and Panizza (2002) confirmed the association between female labour force participation and educational attainment. However, the authors did not find any association between child-bearing and Lebanese females' labour force participation. In Syria, having a child does not affect the participation rates of females working in the public sector to the same degree it affect the ones working in the private sector as a result of more benefits to working mothers (in public sector) such as social protection and maternity leave. Even though females' labour market outcomes seem to be improving, the gender pay gap is persistent (Blau and Kahn, 1997).

3.6 Conclusion

Reviewing the literature revealed some gaps that need to be addressed. Most of the gender pay gap literature is dominated by studies examining the issue in the developed economies and labour market discrimination has not received the research attention it deserves in developing countries in general and in Syria in particular. Very few studies have been conducted in the context of the Syrian labour market and the studies become more scarce when narrowing them to the topic of gender pay gap or wage differentials. Consequently, this research tries to fill this gap in the literature.

Moreover, previous studies on the gender wage gap and returns to education were unable to reach firm conclusions and instead arrived at a vast range of outcomes as they used a wide variety of different variables, different model specifications, different data sets and different measures to explain the gap in wages. Therefore, this research will overcome this shortcoming by using three sets of controlled variables: Human capital, and Job and Social characteristics, which are added successively to capture the full effect of each group in determining an individual's wage and to investigate the earning premium for each specification of the three groups. These gaps are addressed in the first three research questions:

1- What roles do human capital, job characteristics and social variables have on determining earnings for both males and females in the Syrian labour market?

2- What are the rates of return to education in Syria for both males and females?

3- What are the total effects of human capital, job characteristics and social variables in explaining the gender wage differentials and what is the portion of discrimination in these differentials?

Previous research has tried to find the determinant of wages for males and females and to explain the pay gap. However, most research used variables belonging to the first two groups (i.e. Human capital and Job characteristics). Some researchers tried to explain the gap by further including some social factors (such as marriage and having children). For example, Waldfogel (1998) found that, after controlling for age, education, experience, ethnicity, race and marital status, having children decreases women's pay by around 10%. In the UK, Greenhalgh (1980) found that the single female-male wage ratio was 85% in 1971 and 97% in 1975, while this ratio was 51% in 1971 and 62% in 1975 for married people. Similarly, Dolton and Makepeace (1987) found that, as a result of marriage, the earning of UK graduate men increased by 5.8% while it declined by 4% for women. Likewise, Wright and Ermisch (1991) estimated the married female-male wage ratio at about 67%. Blau and Kahn (1992) found that the wage differential between single males-females is usually small at around 10%. However, this differential rises to around 40% for married males and females. The differential would be even larger for workers with children (Harkness and Waldfogel, 2003). Waldfogel (1995), for example, found the female-male wage ratio to be around 70%, 50% of which the author attributed to the effects of marriage and children. However, those studies ignored the interaction effect of the social factors on the job choices and human capital achievements themselves (i.e. on other factors in the model). Therefore, by developing a theoretical framework that study those links, this study fills this gap in the literature. This will answer the last three research questions:

4- Is there a correlation between the variables of social characteristics and the human and job characteristic?

5- What are the direct effects of gender, social, human, and job characteristics on Wages in Syria? And what are the interactive effects of gender and social characteristics with human and job characteristics in influencing wages in Syria?

6- Are there significant differences between males and females wages across variables?

This research addresses these gaps in the literature by studying the factors affecting gender wage inequality in the context of the Syrian labour market using two different methods: the Oaxaca's decomposition technique, which is based on the inclusion of successive variables using groups in the basic Mincer model; and GLM Univariate analysis, which investigates the interaction effects among three groups of variables and the gender impact upon them in determining both males' and females' earnings. A theoretical model was developed to explain these relationships and different economic, social, and institutional theories are used to explain those relationships.

Chapter 4: Theoretical Framework and Hypotheses

4.1 Introduction

This chapter is dedicated to outlining the main economic, social, and institutional theories which address the phenomenon of gender wage differentials in order to present a comprehensive theoretical framework of the economics of discrimination in the labour market. The earliest attempts in explaining gender wage differentials can be tracked back to the middle of the last century in the forms of ideas. Then, the earliest formulated theories emerged in the sixties and seventies with the work of Gary Becker (1962, 1964 and 1971), Jacob Mincer (1974), Welch (1967), Arrow (1972), Phelps (1972), Bergmann (1971, 1974), Schultz (1971), Chiswick (1973), Docringer and Piore (1971), Harrison (1972), Thurow (1975) and others. Since then, economists have kept trying to produce models to illustrate this complicated issue, with an agreement among them that each theory is an attempt to achieve a better understanding of the gender pay gap, with the notion that none of the theories alone can offer a complete justification of the differentials (Altonji and Pieret, 2001; Rubery, 1995; England, 1992).

The theories to be reviewed in this chapter are organised as follows: Becker's Taste of Discrimination Theory is presented in Section 4.2; it is followed by Human Capital Theory in Section 4.3. Statistical Discrimination Theory is explained in Section 4.4. Crowding Theory is clarified in Section 4.5, and then Labour Market Segmentation or Institutional Theory in Section 4.6, Family Wage Theory, Patriarchy Theory and Preference Theory are reviewed in Sections 4.7, 4.8, 4.9 respectively. A theoretical model is proposed in section 4.10 to test the direct and interaction effects of studied variables on wages. Section 4.11 concludes the chapter.

4.2 Becker's Taste of Discrimination Theory

The seminal work of this theory is introduced in Gary Becker's book "The Economics of Discrimination, 1957" while the work of Welch (1967), Arrow (1973) and Goldberg (1982) consider the demand side of the neoclassical explanation of the labour market. Becker (1971) investigated racial discrimination (wage differentials between blacks and whites) and sex discrimination (wage differentials between males and females) in the labour market. Becker has studied the economic consequences of discrimination on the competitive labour market and introduced the term "taste for discrimination" to the economics of discrimination.

According to Becker's Taste of Discrimination Theory, there are three types of prejudice or "taste" of discrimination imposed by employers, employees and customers. These are looked at in some detail below.

4.2.1 Employer Discrimination

Employer discrimination occurs in the labour market when an employer is not seeking to maximise his profits, but to maximise his utility by hiring certain types of worker, even by paying them higher wages than their marginal product value, and/or even if their productivity is less than their counterparts from a more unfavourable group. Clearly, the motivation of the employer is not an economic one; rather, employers prefer to employ workers from certain groups (and pay them higher wages) and avoid workers from other groups (paying them lower wages) in order to "indulge their tastes about the composition of the labour force" (Becker 1971, p. 312). Having perfect information about the productivity of each applicant, employers are willing to offer different wages to comparably equal positions for applicants with the same human capital (i.e. the same productivity). It should be noted that the above-mentioned human capital is a nominal one (based on the acknowledged qualifications) which may fluctuate considerably around the actual human capital which represents the real ability of employees and contributes to the productivity of worker for certain jobs where firms are hiring employees.

Becker's main proposition concerned preferring an advantaged group (whites, the majority) compared to a disadvantaged group (non-whites, the minority), though, it is usually applicable to the case of males and females in the labour market. Hence, employers prefer men over women with the same human capital, and pay women lower wages compared to men. This prejudice (taste of discrimination) against women cannot be justified by economic factors as the preference for hiring equally qualified men rather than women does not maximise financial profits. This is because employers offer women lower wages than men even if some women have higher qualifications or more experience and consequently, if they are more productive than the average productivity of men. Nevertheless, the prejudice against women can be justified by non-economic factors as the employers try to increase their utility of discriminatory tastes. Becker also pointed out that the extra costs incurred by a discriminatory employer by paying higher wages for the favourable group (men) are offset by the utility achieved from not hiring from the less favourable group (women).

Employers are unwilling to hire employees from unfavourable groups unless their wages are low enough to balance the disutility they experience from employing them.

Moreover, firms are happy to hire them only at lower wages, or workers from unfavourable groups must be more productive to get the same wages of the favourable group.

The taste of discrimination against females in the labour market is translated into wage underpayment. As mentioned above, employers with a taste of discrimination are not interested in maximising their profits so, in the competitive market (which is one of the assumptions of the neo-classical model adopted by this theory), the discriminatory employers' businesses find it difficult to survive due to the "overpayment" of men's wages which does not reflect their productivity. On the other hand, employers with no taste of discrimination are interested in employing both men and women and set their wages solely according to their productivity. This increases their profits, and consequently their competitive power in the market.

Becker has introduced the discrimination coefficient (d_i) which represents the cost to the employer of hiring women. An employer with no bias against women will hire both men and women according to their productivity only, and will perceive the cost of employing them as W_m and W_f for men's and women's wages respectively. However, a discriminating employer will hire men and offer them wages, W_m, based on their marginal product value: i.e. $MP_m = W_m$, and employ women only if their wages are low enough so that their marginal product value is equal to their wages plus the discrimination component ($d_i.W_f$), this represents the disutility the employer incurs from employing women: i.e. $MP_f = W_f(1+d_i)$.

Becker's theory specified the determinants of the wage gap between a majority and a minority in the labour market (which can be used for men and women) in two factors: the first is the dominance of discriminating employers in the labour market compared to non-discriminating ones, and the second is the size of the minority (women) compared to the majority (men) in the labour market. Actually, the former is expresses the demand and the latter represents the supply side of the labour force in the process of workers' employment. To clarify this, Becker supposed that we have a given amount of non-discriminating employers and a given amount of job seeking women in a particular labour market. If there is a small number of women seeking jobs, and their supply can be absorbed by non-discriminating employers demand (with discrimination coefficient di = 0), then women will get the same wages as men and employees will be compensated according to their marginal product value. However, any extra number of women who could not find jobs in non-discriminating firms, have to find jobs in discriminating firms (with positive discrimination coefficient di) where their wages are less than men's, and less than their marginal product value by an amount ($d_i.W_f$), this is equal to the discriminating employer's disutility from employing women.

As mentioned previously, a taste for discrimination by employers reduces their competitive ability in the labour market, as they are paying the cost for their preferences for less well qualified men against more qualified women in the forms of more money paid and less productivity gained. Consequently, their expenses penalties are larger than for non-biased employers and their ability to survive in a competitive labour market is in doubt. Hence, the competitive power amongst employers will force the discriminating employers to act rationally and reduce their tastes of discrimination to sustain their businesses and maintain their profit. Ultimately, a taste for discrimination (a gender differential gap) will be determined in a given labour market according to the minimum number biased employers and any employer with a higher level of the taste of discrimination will be rejected from the competitive labour market (Arrow, 1972).

To sum up the factors influencing the wage gap between males and females in the labour market: the greater the domination of the taste for discrimination among employers, the more gender wage differentials are observed. Similarly, the more women are seeking jobs in the labour market, the more resulting wage differentials are seen between men and women. Finally, Becker noted that the greater the competition in the labour market, the less gender wage differentials are observed.

Becker's Taste of Discrimination Theory has been criticised in that it could not justify the persistence of wage differentials in the long run (Thurow, 1975), although Becker's theory expected discrimination to be eliminated over a period of time due to the extra expenses incurred by the discriminating employers which would force them gradually to reduce their tastes of discrimination in order to continue in a competitive labour market. However, it could be argued that we have not yet reached the "long run", nor have we achieved a fully competitive labour market as predicted by Becker's theory (Arrow, 1998). Another critique is the assumption of homogeneity in employers' tastes of discrimination in any industry or any labour market yet it is improbable that the same degree of tastes of discrimination exists amongst all employers as they are disparate and their tastes are not identical. Ultimately, a taste for discrimination (gender differentials gap) will be determined according to the minimum number of biased employers in any given labour market.

4.2.2 Employee Discrimination

Employee discrimination occurs in the labour market when a group of workers dislike working alongside another group. The discriminating workers are unsatisfied and ask for higher wages to outweigh the disutility that occurs from working with the unfavourable group. They may perceive their actual wages to be less than the wage they would get if they worked for a firm whose employees came from the favourable group.

In the case of gender discrimination, a male worker with a discriminating taste against female workers usually hates to work in mixed-gendered firm and views his actual wage to be less compared to working in a male-only firm. As with employer taste of discrimination, Becker presented an employee discrimination coefficient (d_i) which represents the monetary expression of an employee's disutility resulting from working with women. Hence, if an employee with a bias against women earns (W_m) in a male-only firm, he will perceive his wage in a mixed firm as $W_m (1 - d_i)$. Consequently, he will ask the mixed firm to pay him a premium wage in order to compensate for the disutility component ($d_i W_m$): i.e., he will ask for a wage higher than his marginal product value. It does not benefit integrated firms to pay a premium to discriminating workers so instead, firms tend to segregate their workers by gender or employ only non-discriminating workers. In this way, firms gain the maximum marginal product value of each worker and keep their profits level (Kershner, 1997).

Employee discrimination is unlikely to persist over time as it is difficult and costly to segregate employees in the workplace (Arrow, 1972; Chiswick, 1973) as long as they have the same equal marginal product values.

Becker's theory detailed the determinants of the wage gap between men and women in the workplace into two factors: the first is the dominance of discriminating employees in the labour market compared to non-discriminating ones, and the second is the number of females looking for jobs. The greater the domination of the taste for discrimination among employees, the more gender wage differentials are detected. Similarly, the more women seeking jobs in the labour market (specifically in mixed-gendered firms with discriminating employees), the more wage differentials between men and women can be observed. Similar to the predictions regarding employers' taste, employees' taste for discrimination is likely to gradually diminish and be eliminated in the long run by competitive market forces, but will be replaced by labour market segregation.

4.2.3 Customer Discrimination

The last potential type of taste discrimination is customer discrimination. This is where customers of firms request to buy goods and/or services from certain groups of workers, desire to purchase goods and services produced by the preferred group, and prefer to be served by favourable groups.

Similar to employer and employee discrimination, Becker used a discrimination coefficient for customer discrimination (di). When a discriminating customer buys goods or services from a firm, he/she perceives the price to be (p) if served by members of the preferred group of workers and perceives the price to be higher p(1+di) if served by members of an unfavourable group. Hence, the discriminating customer in this case feels if he/she is paying a higher price for commodities and services, he/she will consequently get less utility from being served by the disadvantaged group of workers and move to buy from firms which maximise their utility (Kershner, 1997). Therefore, this type of discrimination represents the personal preferences of customers and profit-maximising behaviour on the part of firms, with no power to stop any of these two factors; customer taste of discrimination is likely to persist in the long run, even if the labour market under consideration is fully competitive.

Shifting customer discrimination to the issue of gender, firms employ workers from the preferred group (men) and pay them higher wages if they feel that their customers are happy to deal with men. On the other hand, profit maximising firms whose customers demonstrate a taste of discrimination against interacting with women will avoid employing women unless their wages are low enough. This is because firms will incur a cost for employing women and this will undoubtedly manifest itself as a reduction in profit from not selling to discriminating customers. So, a wage differential between men and women results, even if employers have no prejudice against women and are rather acting as profit maximising firms and responding to their customers' preferences.

Finally, Fleisher and Kniesner (1984) summarised three main factors that generated wage discrimination in the labour market; firstly, the lack of productivity information available for employers about the disadvantaged groups (blacks and women); secondly, the dislike of employees to interact with co-workers from minority groups; and finally, the employer's aspiration to become better off at the expense of disadvantaged workers. This is referred to by Becker as "a taste of discrimination".

4.3 Human Capital Theory

One of the main supply-side theories of gender wage differentials is Human Capital Theory which argues that gender wage differentials can be seen as a result of different levels of educational attainment, training and experience that both men and women bring with them when they move into the labour market. Human capital is the variety of educational achievement, training, skills and experience that enable individuals to produce goods and services in the labour market.

The idea of human capital started in the eighteenth-century classic school of Adam Smith and Smith's writings formed the basis on which Human Capital Theory was built later in two ways: firstly, he suggested that individuals can increase their income by investing in themselves through acquiring the knowledge and skills needed in the labour market, (Elliot 1991). In his words: "Work which he learns to perform, it must be expected, over and above the usual wages of common labour, will replace to him the whole expense of his education, with at least the ordinary profits of an equally valuable machine" Smith (1776), cited in Polachek (1993).

Secondly, Smith initiated the concept of equalising differences. He argued that employers, in order to offset undesirable conditions, have to include compensation in their employees' wages if their working conditions are not favourable compared to other jobs in the labour market (Polachek, 1993).

After that, Human Capital Theory was formulated more completely during the twentieth century by the early neo-classical theorists starting with the work of Gary Becker and Jacob Mincer in the mid-fifties. The main notion of Human Capital Theory is that workers' incomes depend on their productivity which, in turn, depend on their past investment in their human capital, assuming that they will get a return on their investment (Wharton, 2004).

Therefore, people endeavour to possess human capital by attending schools, carrying on with their development via training, obtaining qualifications, increasing their experiences, and following on-the-job training, in order to be in demand in the labour market. They continue toaccumulae human capital until they equalise the marginal cost of their human capital building with the expected return from their investment in their own human capital (Becker, 1964).
Hence, human capital theorists insist on the importance of formal education as a key to increasing the productivity of both developed and developing counties (Psacharopoulos and Woodhall, 1997; Schultz, 1971; Fagerlind and Saha, 1997). Mincer (1974) was the first author

to estimate a function linking earnings and learning (years of schooling). The basic Mincerian model takes the form:

$$Ln\ W_i = RS + Ln\ W_o$$

Where: $Ln\ W_i$: is the natural log of the hourly wage of an individual, i, with S years of schooling.

$Ln\ W_o$: is the natural log of the hourly wage of an individual, i, with no schooling.

R: is the rate of return on schooling.

S: is the number of years of schooling.

According to the basic form of Mincerian model outlined above, wage differentials among individuals are explained by their education (years of schooling) so, the more educated individuals are expected to earn more as a return on their past investment in building their human capital.

In terms of training to acquire skills, Becker (1962) distinguished between general training (applicable to any job at any firm) and firm-specific training (applicable only to the current job in a specific firm). The former is transferable whereas the latter is not. So, firms try to provide firm specific training for free, or general training at the worker's expense by paying him/her lower wages over the training period. All in all, the training that most firms invest in is a combination of both.

According to Human Capital Theory, gender wage differentials can be seen to be a result of the human capital differences between males and females (Browne, 2006; Roos and Gatta, 1999). Hence, their differences in wages are explained by their differences in productivity (Blau and Ferber, 1992).

Mincer and Polacheck (1974) pointed out that women's domestic responsibilities result in more interruptions and consequently less participation in the labour market. This, in turn, reduces their investment in building their human capital, This is called, in the literature, a "self-fulfilling prophecy" which leads women to invest less in their qualification building as their incentives to spend more on education and training are smaller than those of men (Lang, 1986; Moro and Norman, 2004; Coate and Loury, 1993). Consequently, women with relatively less human capital are likely to find jobs in accordance with the human capital they possess and receive the lower wages which create jobs for women. Hence, women will be segregated into jobs characterised mainly by minor wage growth and intermittent work histories than men's jobs (Trappe and Rosenfeld, 2004). Similarly, Blau and Jusenius (1976) indicated that the long-

term outcomes will be women's segregation in occupations that require less human capital, offer lower wages, and where their jobs can be interrupted without a high penalty.

4.4 Statistical Discrimination Theory

Statistical discrimination theory is one of the demand-side neo-classical theories based on the imperfect information which characterises the labour market. Statistical discrimination arises when firms/employers rely on average characteristics of categorised applicants (i.e. gender, race, ethnic background) rather than the actual ability of each applicant. Employers adopt this type of assessment to avoid the relatively high cost associated with gathering information regarding the productivity of each applicant, as well as to save their time and effort in collecting such types of information (Phelps, 1972).

Applicants' characteristics can be divided into two types: individual characteristics (such as education and experience) and general characteristics (such as gender and race). If the ability of workers is evaluated by means of general characteristics, this will result in statistical discrimination (Lundberg and Startz, 1983; Kershner, 1997).

In general, women and blacks are regarded by employers as less productive groups; consequently, they earn less than other groups (Arrow, 1973). This belief is supported by employers' experiences from hiring employees from the disadvantaged groups. Hence, Statistical Discrimination Theory justifies the observed gap between men's and women's wages.

The concept of Statistical Discrimination Theory initiated by Arrow (1972) and Phelps (1972) is that profit-maximising employers try to employ more productive workers but they do not have enough information about the productivity of each applicant, and it is costly and difficult (and sometimes impossible) to gather information extensively on each individual. So, they tend to estimate an applicant's productivity according to their past experience or on what is generally well-known and verified in the labour market: that women are less reliable, less attached to the labour market due to their family responsibilities, have higher turnover rates, and, most importantly, are less productive. Moreover, women not only experience prejudice in the labour market, they also grow up as a disadvantaged group in society and face different types of prejudice which limit their abilities to be equally qualified with men (Phelps, 1972).

So, cost-minimising firms hire women only at lower wages and offer them less training or any productivity-improving skills investment because they perceive it as a relatively risky investment to offer excess training for women when they may leave the firm upon the

completion of their training courses which will prevent the firm from retrieving the cost of their training.

As a result, according to Statistical Discrimination Theory, women receiving lower wages, and less training and promotion, can be seen, rather than discrimination, as rational behaviour by employers to reduce their costs and maximise their profits.

It is worth mentioning that, according to Statistical Discrimination Theory, an individual's productivity is assessed based on his/her group affiliation; in other words, as generalised group characteristics for individuals in this group. So, some members of the group (potentially highly productive employees) will be underpaid, while others (who are less productive) will be overpaid as a result of the statistical assessment of their productivity.

Hence, employers form stereotypes regarding the productivity of workers based on their demographic group affiliations, and use them in the process of hiring new employees and offering them wages accordingly. Therefore, according to Statistical Discrimination Theory, gender differentials in earnings are not caused by the prejudice of employers but by the rational desire to hire more productive employees in order to increase their profits. Although this type of discrimination is not caused directly by prejudice or gender bias, it is claimed that prejudice is imposed indirectly in two ways:

1- As women are disadvantaged by different types of constraints that limit their ability to acquire more human capital (by completing more educational attainments or training), this prevents them from increasing their average productivity, and consequently increasing their earnings (Aigner and Cain, 1977).

2- As women are under pressure from their domestic responsibilities (family and child bearing and rearing), this limits their potential continuance in any job which, in turn, boosts the prevailing stereotype of women's high turnover rate. This then pushes their wages lower than the average advantaged group of men.

In fact, both 1 and 2 represent forms of discrimination. The constraints mentioned in the first represent pre-entry discrimination which may occur prior to women's entrance into the labour market. This type is often ignored or mistaken in the process of estimating discrimination. On the other hand, the discrimination stated in the latter point denotes the pressure under which women are usually employed; this is called post-entry or labour market discrimination (Ehrenberg and Smith, 2009; Laing, 2011).

4.5 The Crowding Theory

This model is based on the neo-classical description of the labour market, with, however, a non-competitive environment prevailing in the labour market. Building on the occupational segregation resulting from Becker's Taste Theory, Barbara Bergman (1971) developed Crowding Theory. According to Bergman (1971; 1974), the observed wage differentials between men and women are a result of the differences in supply and demand for males and females in both crowded and not-crowded sectors.

Women are constrained in their employment opportunities to a narrow range of jobs, characterised mainly by being lower paid and labour intensive occupations, and those requiring fewer qualifications. This is due to a range of factors including: personal preferences, socially agreed traditions which create female jobs, cultural controls imposed upon women (e.g., family responsibilities), or by discrimination against women by employers, employees and customers (as discussed previously in Becker's Taste Theory). Whatever the causes of segregation, women are forced to be segregated and crowded into lower paid jobs (Blau and Jusenius, 1976). Consequently, this suggests the segregation of the labour market into women-dominated and men-dominated sectors. Sorenson (1990) argued that profit maximising employers would rely on relatively low-priced labour in sectors where women predominate, while they would rely more on capital in the male-dominated sectors as labour is relatively expensive. This creates labour abundant sectors (women's jobs) and capital abundant sectors (men's jobs).

The excessive supply of women, relative to demand in the labour abundant jobs or occupations, pulls down their wages, while the relative stability in the capital abundant sectors between supply and demand keeps wages on a higher rate. Consequently, wage differentials between men and women occur and are likely to persist in the long run.

Blau and Ferver (1992) explained the situation regarding the segregated labour market and its effect on gender wage differentials. See Figure (4.1) which assumes that we have equally qualified men and women workers, and there are men's jobs and women's jobs. Starting from the position of a fully competitive labour market where both men's and women's jobs are available for all (i.e., males and females), both the employment levels and wages are determined by labour supply and demand and shown in the curves for men and women where Lm_0 and Lw_0 stand for men's and women's employment respectively while W_0 is the mutual wage for men and women in equilibrium in a non-segregated labour market.

However, if the labour market is segregated by gender, women are not able to work in men's jobs as they have to move to women's jobs. This reduces the supply of labour in men's

jobs and the labour supply curve shifts from Sm_0 to Sm_s which increases men's wages from W_0 to Wm_s and decreases the employment level for men from $Lm0$ to Lm_s. Moving on to women's jobs, the excessive supply of women who recently moved to women's jobs causes a shift in the labour supply curve for women from $Sw0$ to Sw_s, which in turn raises the employment level for women from Lw_0 to Lw_s and reduces women's wages from W_0 to Ww_s. Thus, a segregated labour market will increase women's participation but will reduce their wages even if men and women are equally productive; it will thus broaden the gender wage differentials.

$L_{f0} = 25\%$ of the labour force $L_{m0} = 75\%$ of the labour force
$L_{fd} = 40\%$ of the labour force $L_{md} = 60\%$ of the labour force
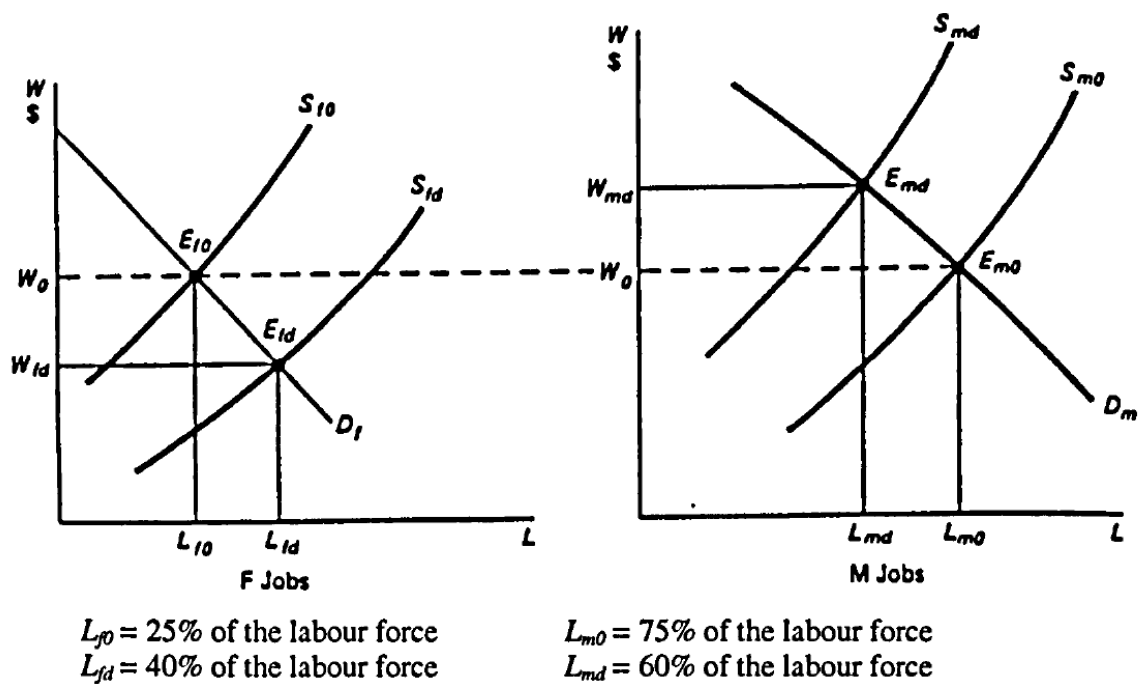
Figure 4.1: The overcrowding model (adopted from: Blau and Ferver, 1992, p. 214).

4.6 Institutional Theory

Labour Market Segmentation Theory (also referred to as Institutional Theory) was developed in order to explain the presence of wage differences and variations in employment rates observed in a firm, occupation or the whole labour market. Institutional Theory is considered part of the non-neoclassical framework as it attributes wage differentials to institutional factors rather than variations in productivity.

The seminal work of this theory is associated with Doeringer and Piore (1971), afterwards undergoing stages of development (Jenkins, 2004). The technological revolution and the accompanying changes in industrial organisations have divided the labour market into

external and internal market; the former is supposed to be competitive, the latter is not. Instead, the internal labour market is governed by administrative rules and procedures which control the entry and allocation of labour within it, rather than market impact (Doeringer and Piore, 1971).

If it is supposed that there are ports of entry to the internal labour market and exits from it, then consequently, employees in this market have the power of monopoly over their jobs. There are probably three types of discrimination in the internal labour market: 1) Entry: the disadvantaged groups (i.e. blacks and women) are prevented from entering the internal labour market jobs; 2) Allocation: where the disadvantaged groups cannot access certain positions occupied by discriminating colleagues; and 3) Wage discrimination the disadvantaged groups are segregated into low paid jobs. These three types can be imposed either by excluding workers through job interviews held by a discriminating evaluator, or by creating exaggeratedly high standards of productivity characteristics not achievable for those in the disadvantaged groups.

The basic form of segmented labour market theory is the dual labour market introduced by Doeringer and Piore (1971) and Piore (1971). This divides the internal labour market into the primary and secondary sectors where the primary labour market jobs are associated with favourable working conditions, good promotion prospects, firm specific skills required, lower turnover rates and higher wages. The secondary jobs are characterised by undesirable working conditions, poor promotion prospects, no specific skills required, higher turnover rates and lower wages (Mallier and Rosser, 1987; Bluestone, 1970; Harrison, 1972). With restrictions in terms of mobility between these two sectors, primary jobs are generally found in the unionised and more monopolistic industries and are dedicated for the desirable groups, i.e. whites and men. Conversely, secondary jobs exist in the less unionised and more competitive industries and are dominated by disadvantaged groups, i.e. blacks and women (Jenkins, 2004).

Women are segregated into the lower paid positions and those with inferior status; they are mainly represented in secondary segments in the internal labour market. Several factors can play a role in women's segregation into secondary labour markets. As mentioned previously, women's responsibilities in the family limit their opportunities in acquiring more human capital through educational qualifications or training. Moreover, social and cultural forces create barriers which prevent women from accessing the primary segments and keep them in secondary segments with lower wages (Dale, 1985; Dex, 1985; Rubery, 1987).

4.7 Family wage Theory

The Family Wage Theory (also called Male Breadwinner Ideology) was first introduced by Humphries (1977), Hartmann (1979) and Beechey (1977). The main concept of this theory is that the differences in men's and women's responsibilities in the family and in society create a kind of compensation for non-market labour (Rubery, 1987). According to this theory, women are paid in the labour market according to their social responsibilities, not according to their human capital characteristics. Thus, it is supposed that women are not responsible for earning wages equal to the main income source (i.e., men's wages). Rather, their main contribution is to support their families and societies by non-monetary ways, and even if they are employed, their wages are regarded as supporting income and they are not viewed as the main breadwinner in the family, which can explain the observed wage differentials between men and women. In other words, both males and females are paid wages in the labour market according to the social reproduction system rather than the production system (Rubery, 1987). This, in turn, creates a distinction between men's wages, which are supposed to be high enough to achieve at least the subsistence of the family, while women's wages are required to be sufficient only to support the employed woman herself (Siltanen, 1994).

Hence, the fact that men's wages are higher compared to women's can be attributed to their responsibilities as breadwinners for the family (May, 1982). Lewis (1984) warned of the consequences of the prevalence of family wage ideology, as the adoption of such an ideology will increase women's dependency on men economically and will reduce the labour force participation of married women.

4.8 The Patriarchy Theory

Patriarchy Theory, similar to the Family Wage Theory, attributes the observed gender wage differentials in the labour market to cultural and social structures. However, it differs from the previous theory in that it claims that the subordinate position of women in the family and society leads to a similarly subordinate position in the labour market (Hartmann, 1979). The definition of patriarchy is: "a system of social structures and practices in which men dominate, oppress and exploit women" (Walby, 1990, p. 20), as well as the control imposed by men on women's participation in the labour market (Hartmann, 1976).

Patriarchy Theory suggests that men are fully satisfied with their superior position in family and social systems and therefore they tend to generalise it to the economic structure by excluding women from highly paid jobs, restricting them to lower paid jobs in order to maintain

their domination of generously paid work (Walby, 1986). Hence, it is not the characteristics of the jobs, nor the characteristics of the female applicants for certain jobs or their degree of potential commitment to a job, it is the patriarchy in society that is at the heart of the wage differences between men and women, and maintains women's financial dependence on men. Furthermore, this exclusion of women from highly paid jobs results from the occupational segregation imposed by men to sustain their superior positions in the labour market (Hartmann, 1981).

Although considered a step forward in our understanding of the phenomenon of gender wage differentials, Patriarchy Theory suffers from some shortcomings. Firstly, it suggests that men are fully able to control women's labour; i.e. it overestimates men's ability to exclude women from highly paid jobs (Browne, 2006). It also assumes the existence of common interests among men to exclude women, which is not necessarily true and has never been the case. Secondly, patriarchy theorists seem to explain the terms of the theory as being a vicious circle. For example, the term "patriarchy" is used to illustrate patriarchy, even though the term has some validity as a descriptive term (Blackburn *et al.*, 2002).

4.9 Preference Theory

This was the first theory, introduced by Hakim (1998) and then (2004), to confront the individual preferences or choices made by women in their options for labour market participation. Distinguished from any previous theory, Hakim mentioned that women, regardless of the human capital they possess, select their own lifestyle, choosing to be home-oriented, work-oriented, or adaptive. Home-oriented women are concerned mainly with their families and privacy in their homes, especially after marriage and having children; however, these account for only a small portion of women. Unlike home-oriented women, work-oriented women prefer to get involved in labour market activities and do not prioritise their family responsibilities; they are also a minority group. The third type of lifestyle chosen by women is a mixture of the first two. The adaptive lifestyle combines family responsibilities and employment commitments and these account for the majority of women who are balancing their lives between a home and a job (Hakim, 2000, 2004 and 2006).

Without ignoring the impact of institutional determinants on women's employment, Hakim (2000) dealt with women as a heterogeneous group and not a homogenous one, as supposed by previous theories. Consequently, women's chosen life-style is a key in determining employment arrangements and job choices. It is noteworthy that women's

distribution in the aforementioned groups is not accidental as women are expected to be employed in the labour market in such jobs where they can create a balance between their jobs and family responsibilities (Reskin and Padavic, 1994). Furthermore, women are intended to build up their human capital (education and training) and even their values to fulfil their roles in both their families and jobs (Betz and O'Connell, 1989; Reskin and Padavic, 1994). Hence, both women's careers in the labour market and their roles in the family and society depend on their life style preferences (Hakim, 2002).

4.10 The Theoretical Framework and Hypotheses

From the previous theories, this study develops a theoretical model to test the direct and interaction effects of gender, human capital, job characteristics and social variables on wages. Six groups of hypotheses were developed. The first hypothesis group (H1) is related to the relationship between social characteristics and human capital characteristics while the second group (H2) is related to the relationship between social characteristics and job characteristics. The third group of hypotheses (H3) tests the relationship between human capital characteristics and wages, the fourth group (H4) is related to the relationship between job characteristics and wages, and the fifth group of hypotheses (H5) tests the relationship between social characteristics and wages. Finally, the last group (H6) test the indirect effect of social characteristics on wages through both human capital characteristics and job characteristics.
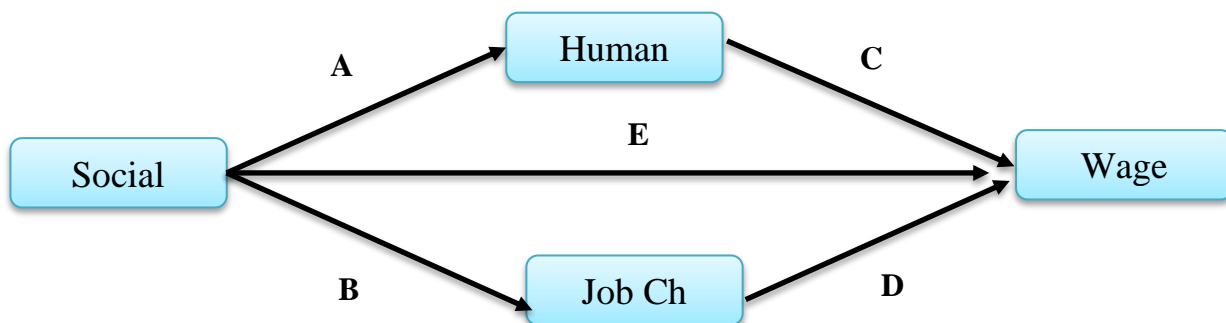
Figure 4.2: the theoretical framework

Group 1 (A): The relationship between social characteristics and human capital characteristics.

This relation could cause the human capital characteristics to differ between males and females prior to them entering the labour market. For example, a family might prefer to pay for its male children's education rather than their females'. The parents' role in children's future human capital was highlighted by Becker (1981, 1993). In Middle Eastern culture, it is the male's responsibility to take care (financially) of his elderly parents; hence, investing in males' education seem logical to parents and is why, in most of the developing countries, parents prefer having sons. Also, parents assess the potential outcomes of their investment in their children's education which may lead them to invest less in educating their daughters as the perceived return on their education is less than the sons'. Many studies have investigated the gender differences in parents' expenditure on children's education (e.g. Deaton, 1989; Behrman and Knowles, 1999). The inequality in human capital could be the result of pre-school cognitive and non-cognitive capabilities which in turn affect the future labour market outcome for the individual (Cunha and Heckman, 2009). Also, this relation is subject to Statistical Discrimination Theory as women will not get promoted because employers, out of rational behaviour, will spend less on women's training to reduce their costs and maximise their profits.

H1: *There is a correlation between social characteristics and human capital characteristics.*

Group 2 (B): The relationship between social characteristics and job characteristics.

This relationship is supported by Preference Theory: This handles the individual preferences or choices made by women in their options for labour market participation as women's chosen lifestyle is a key in determining employment arrangements and job choices. Hence, both women's careers in the labour market and their roles in their family and society depend on their lifestyle preferences (Hakim, 2002). Statistical Discrimination Theory (one of the demand-side neo-classical theories) arises when firms/employers rely on the average characteristics of categorised applicants (i.e. gender, race, ethnic background) rather than the actual ability of each applicant. Patriarchy Theory: this states that the subordinate position of women in the family and society leads to similarly subordinate positions in the labour market (Hartmann, 1979). It also refers to the control imposed by men on women's participation in the labour market (Hartmann, 1976). Crowding Theory: suggests that the observed wage differentials between men and women is a result of differences in supply and demand for men and women in both crowded and not-crowded sectors.

H2: ***There is a correlation between social characteristics and job characteristics.***

Group 3 (C): The relationship between human capital characteristics and wages.

This relationship is supported by the Human Capital Theory: that gender wage differentials can be seen as a result of different levels of educational attainment, training and experience that both men and women possess when they move to the labour market.

H3: ***Human capital characteristics have a positive effect on the wage for both males and females.***

H3.1: Human capital characteristics have a positive effect on the wages.

H3.2: Human capital characteristics have a positive effect on males' wages.

H3.3: Human capital characteristics have a positive effect on females' wages.

Group 4 (D): The relationship between job characteristics and wages.

This relationship is supported by the Institutional Theory: it explains the presence of wage differentials and the variation in employment rates observed in a firm, occupation or the whole labour market; it attributes wage differentials to institutional factors rather than variations in productivity.

H4: ***Job characteristics have a positive effect on the wage for both males and females.***

H4.1: Job characteristics have a positive effect on the wages.

H4.2: Job characteristics have a positive effect on males' wages.

H4.3: Job characteristics have a positive effect on females' wages.

Group 5 (E): The relationship between social characteristics and wages.

This relationship is supported by Becker's Taste of Discrimination Theory (pure discrimination) and Family Wage Theory: women are paid in the labour market according to their social responsibilities, not according to their human capital characteristics. It is also supported by Patriarchy Theory: this is similar to Family Wage Theory as it attributes the observed gender wage differentials in the labour market to cultural and social structures. However, it differs from the previous theories in that it claims that the subordinate position of women in the family and society leads to a similarly subordinate position in the labour market (Hartmann, 1979).

H5: ***Social characteristics have a positive effect on the wage for both males and females.***

H5.1: Social characteristics have a positive effect on the wages.

H5.2: Social characteristics have a positive effect on males' wages.

H5.3: Social characteristics have a positive effect on females' wages.

Group 6 (F): The indirect relationship of social characteristics on wages.

Empirical analysis, usually, captures only the direct effects and ignore the indirect effects social factors may play in determining individuals' wages. For example, Blinder-Oaxaca's decomposition only measures discrimination in the labour market resulting from differences in the measured variables and ignores other influences such as the feedback effects and the discrimination that happens outside the labour market. According to Fernandez (2001, p.2), "the role of culture in economic outcomes were largely absent in economic research. This was primarily the result of the absence of an empirical methodology that would allow one to investigate this issue". Fernandez (2011) explained that previous studies used historical case studies, experiments or epidemiological approaches (tested behaviour of immigrants or their descendants). Thus, including the cultural factor in a regression might resulted in some insignificant coefficient, however, this does not mean that the culture factor does not matter as their effect go beyond the direct effect (Fernandez, 2011). Therefore, the following hypotheses is proposed:

H6: The indirect interaction effects between social characteristics and Human & Job characteristics significantly influence wages in Syria.

4.11 Conclusion

The theories introduced in this chapter attribute the lower wages observed for women compared to men to different factors, with each justification making a contribution to our understanding of the phenomenon. The first theory discussed was Becker's Taste of Discrimination which can be imposed by employers, employees and customers. Then, Human Capital Theory, which attributes the gender pay gap to men's better educational attainments and experiences compared to women's, was outlined along with Statistical Discrimination Theory which contends that employers, based on their past experiences, form stereotypes about employees' potential productivity. Furthermore, Crowding Theory claims that women are crowded in certain jobs so that their excess supply in these jobs pushes their wages lower than those occupied mainly by men. Actually, the previous four theories, i.e. Becker's Taste of Discrimination, Human Capital, Statistical and Crowding theory, lie into the neo-classical

school of economics. However, they face a major criticism related to the existence and persistence of the gender pay gap with a discriminatory component in the long run, in spite of their expectation that competitive forces in a perfect labour market will eventually diminish and finally eliminate discrimination (Blackburn *et al*., 2002). To prove that the labour market is not perfect, the Labour Market Segmentation Theory was established to present a more realistic point of view of the labour market by dividing it into external competitive and internal non-competitive labour markets, with the latter having its rules and procedures to control the entry and allocation of labour away from the impact of the competitive market (Doeringer and Piore, 1971; Mallier and Rosser, 1987). The Family Wage and Patriarchy theories attribute the observed better earnings to beyond-economic factors and place them rather at the door of social factors which regard men as the primary wage earners or breadwinners of families; hence they are paid higher wages than equally productive women (Walby, 1990). Finally, as individual preferences contradict discrimination in the observed gender pay gap, Preference Theory was examined to establish a distinction among home-oriented, adaptive and work-oriented women who choose to be involved completely in the labour market.

Last but not least, each of the theories discussed in this chapter offers its own explanation of the gender wage differentials and contributes to increasing the continuously growing "explained component" of the gender pay gap, thus decreasing the "unexplained component" which is attributed to labour market discrimination.

Chapter 5: Research Design

5.1 Introduction

In this chapter, the research philosophy, approach and methods for collecting and analysing the data are outlined. Firstly, this chapter starts by considering different research design frameworks. Then, it discusses the research philosophies; this is followed by an identification of different research approaches. Section 5.5 gives a description of the methodology. Research methods are then described, including the data source and variables used in this research. Data analysis methods are examined in section 5.7 including the descriptive statistics, the wage equations, Oaxaca's decomposition and the GLM. The last section concludes this chapter.

5.2 Research Design

In order to understand the research design, the intersection of three framework elements needs to be considered, as proposed by Creswell (2009), namely: the knowledge claims (philosophy) made by the researcher, strategies of inquiry, and data collection methods and analysis specified, as in Figure (5.1).
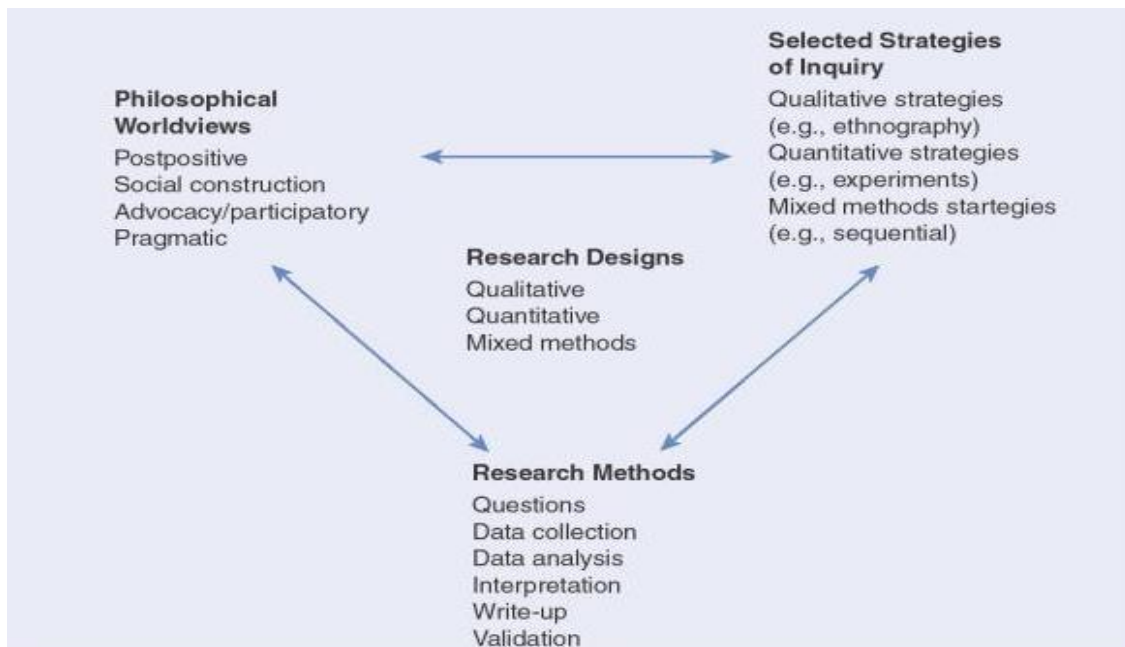
Figure 5.1: The research design (adopted from Creswell, 2009, p. 5)

Saunders *et al*. (2009) stated that design should be differentiated from tactics as design is interested in the overall plan for the research while tactics are concerned with the smallest detail of data collection and analysis.

5.3 Research Paradigm or Philosophy

A research philosophy holds significant assumptions about how a researcher views the world; those assumptions might be called paradigms or philosophical assumptions (Saunders *et al*., 2009). The term "paradigm" was defined by Collis and Hussey (2014, p. 43) as "a philosophical framework that guides how scientific research should be conducted". Moreover, the research paradigm should be determined before conducting the research as it describes how the whole research should be conducted, has key effects on the research methodology, and affects the research design and the data collection and analysis method (Collis and Hussey, 2003). The authors added that the research paradigm proposes a framework of an accepted group of theories, methods and data collection. Additionally, the research paradigm helps in distinguishing between a research design that may work and the ones that may not (Easterby-Smith *et al*., 1991). However, different authors use different terms when exploring research paradigms. Collis and Hussey (2003) gave some alternative terms for the two main research paradigms. The authors stated that the positivistic paradigm could be called quantitative, objectivist, scientific, experimentalist or traditionalist while the phenomenological paradigm could be called qualitative, subjectivist, humanistic or interpretivist. However, the authors preferred the use of positivistic and phenomenological rather than quantitative and qualitative paradigms as it is possible for the positivistic paradigm to produce qualitative data and vice versa. However, in general, quantitative methods are associated with positivism and qualitative methods are associated with the phenomenological paradigm.

5.3.1 Positivistic Paradigm

The positivistic paradigm looks for the reasons for social phenomena and thinks that the social world exists independently, regardless of individuals' awareness (Collis and Hussey, 2003). It "should be measured through objective methods, rather than being inferred subjectively through sensations, reflections or intuition" (Easterby-Smith *et al*., 1999, p. 22). In this type of philosophy, the researcher is independent of the data collection and uses existing theory to develop hypotheses to confirm or refine a theory (Saunders *et al*., 2009). Creswell (2003, p. 7-8) summarised the key assumptions of post-positivism, as identified in Phillips and

Burbules (2000), as follows: there is no absolute truth; researchers start by making claims and then revising or relinquishing them; data and evidence that are collected shape knowledge; the researcher creates relationships among variables and poses them as questions or hypotheses to test them; finally, the enquiry should be objective and bias free. According to Collis and Hussey (2003), the positivistic paradigm predefines variables in hypotheses and tests them by employing statistical procedures to confirm or verify a theory.

5.3.2 Phenomenological Paradigm

According to the phenomenological paradigm, reality is not objective and exists independently; rather, it is socially structured and has meaning given it by society (Easterby-Smith *et al*., 1999). This approach is concerned with comprehending human behaviour and how people realize the world around them by sharing their experiences with others through social constructions (Saunders *et al.*, 2009; Collis and Hussey, 2009). This is why phenomenology is seen as providing the basis for what is generally called "Interpretative Research" (Saunders *et al*., 2009). The phenomenological paradigm does not predefine variables, but tries to explain the data which will lead to generating or developing a theory (Creswell, 2003; Easterby-Smith *et al*., 1999). It requires robust knowledge about the phenomena under investigation (Creswell, 2003). The research tries to comprehend and clarify why people have different experiences, rather than explaining this behaviour (Easterby-Smith *et al*., 1999). Hence, "the challenge here is to enter the social world of our research subjects and understand their world from their point of view" (Saunders *et al*., 2009, p.116).

Thus, the positivistic and phenomenological paradigms are two extremes but the researcher may use an alternative paradigm, which is a mixture of the two (Collis and Hussy, 2014). However, these two paradigms play a significant role in business, and economic and management research (Saunders *et al*., 2000). Similarly, it has been suggested that the positivistic and phenomenological paradigms are the main research paradigms used to conduct research in business and the social sciences (Collis and Hussey, 2003; Easterby-Smith *et al*., 2002). However, choosing the appropriate research paradigm depends on the current knowledge of the topic under investigation, as well as on the research objectives (Collis and Hussey, 2003). As mentioned before, this study aims to investigate the main determinants of earnings (for both men and women) and the existence and determinants of gender wage differentials in Syria. To achieve those aims, and in accordance with what has been stated above, the positivistic paradigm was found to be the most appropriate.

5.4 Approaches

It has been argued that identifying whether a research mode is inductive or deductive is an important issue since it affects the definition of problems, the researcher's attitudes and the selection of the research methodology. Three important reasons for identifying whether the research is inductive or deductive were suggested by Easterby-Smith *et al*. (2008): firstly, it helps the researcher in taking a more enlightened decision about the research design which is considered to be more than data collection and analysis. "It is the overall configuration of a piece of research involving questions about what kind of evidence is gathered and from where, and how such evidence is interpreted in order to provide good answers to your initial research question" (Saunders *et al*., 2009, p. 126). Secondly, it supports the researcher when thinking about the research's strategies and choices. Thirdly, knowing about various research traditions allows the researcher to adapt the research design in order to overcome certain constraints (such as limited access to data).

5.4.1 Deductive Approach

Deduction has its origins in natural science research (Saunders *et al*., 2009). The deductive research process involves the development of theory and hypotheses, and then testing them by empirical observation (Saunders *et al*., 2009; Collis and Hussey, 2003). It is dominant in scientific research where research is carried out to explain causal relationships (Easterby-Smith *et al*., 1991). According to Saunders *et al*., (2009), the deductive approach tests hypotheses by employing some controls, uses a highly structured methodology, and follows the principles of reductionism and generalisation. Thus, "in order to be able to generalise statistically about regularities in human social behaviour it is necessary to select samples of sufficient numerical size" (Saunders *et al*., 2009, p.125).

However, according to Saunders *et al*., (2009), the deductive approach only states a cause and effect link between variables without any consideration of humans' interpretation of the social world; also, it uses a strict methodology with no room for any alternative explanations of the situation.

5.4.2 Inductive Approach

As a result of the development of the social sciences in the 20th century, researchers started to be cautious of the deductive approach. Therefore, the inductive approach tends to be

used more by interpretivist researchers. In this approach, data are collected first and then analysed; then, theory is formulated from the results of the analysis. This approach is more appropriate for small sample studies working with qualitative data collected using a diversity of methods (Saunders *et al*., 2009). Inductive research moves from general phenomena to more specific ideas, while deductive research moves from specific ideas to general phenomena (Figure 5.2).
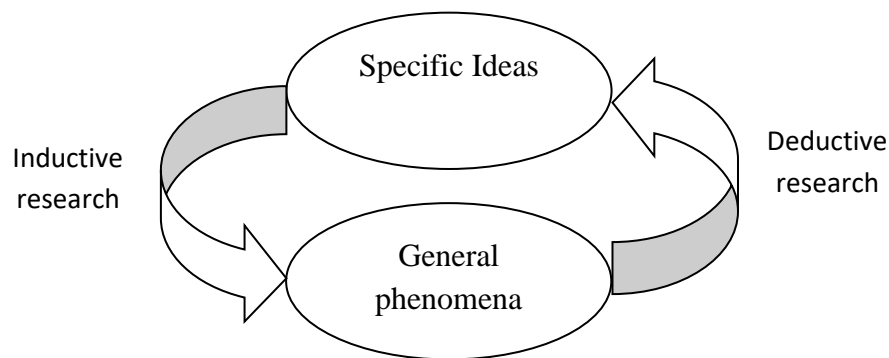
Figure 5.2: Inductive and deductive relations (adapted from Saunders *et al*., 2009)

According to Saunders *et al*. (2009), if the research starts with theory (from reading the literature) and develops a strategy to test the theory, then it is using a deductive approach. The deductive approach tends to be used more by positivist researchers than interpretivists (Ticehurst and Veal, 1999) and therefore, the approach used in this research is deductive.

5.5 Methodology

Choosing the most appropriate research methodology (strategy of inquiry) depends on the selected research paradigm (Collis and Hussey, 2014). Creswell (2009, p.11) defined strategies of inquiry as "types of qualitative, quantitative, and mixed methods designs or models that provide specific direction for procedures in a research design". However, there is no better or worse strategy; the vital thing is to use the strategy that will assist the researcher in answering the specified research question(s) and meet the desired objectives (Saunders *et al*., 2009). Collis and Hussey (2014) outlined some of the main methodologies that could be used in business research in accordance with the positivist paradigm, such as surveys, and cross-sectional and experimental studies.

As stated earlier, this research chose to adopt the positivistic paradigm as the most suitable paradigm for this type of study. Since choosing a methodology is affected by the research problem and the availability of resources (Gill and Johnson, 1997), and since the suitability of any methodology depends on the social phenomena under investigation (Morgan and Smircich, 1980), this research used an econometric methodology.

5.6 Research Methods

The research method "involves the forms of data collection, analysis and interpretation that researchers propose for their studies" (Creswell, 2009, p. 15). Distinguishing between method and methodology is necessary as methodology indicates the whole research process, from the theoretical background to data collection and analysis, while method refers to the techniques used for data collection and analysis (Collis and Hussey, 2014). Largely, quantitative "is used as a synonym for any data collection technique (such as a questionnaire) or data analysis procedure (such as graphs or statistics) that generates or uses numerical data", while qualitative "is used as a synonym for any data collection technique (such as an interview) or data analysis procedure (such as categorising data) that generates or uses non-numerical data" (Saunders *et al*., 2009; p. 151).

5.6.1 Data Source

Data collection methods enable the achievement of research objectives and hence, should be carefully selected as they can enhance the research value (Collis and Hussey, 2003). The data used in this research come from the Syrian Labour Force Survey (LFS) for 2010. The LFS is conducted by the Government through the Central Bureau of Statistics. The Central Bureau of Statistics (CBS) is a public organisation and is managed by an administrative council headed by the Deputy Prime Minister for Economic Affairs. This statistical agency is the main source of data and statistics about Syria and includes economic, social and general activities, the labour force, unemployment and migration in the country.

Labour Force Surveys (LFSs) are supposed to be performed yearly (except the census year) by the Central Bureau of Statistics although, some years, the survey is performed quarterly. However, according to Aita (2009a), between 1990 and 2003 only four surveys were found for the years 1991, 1998, 2001 and 2002 with no clear explanation why. In 2001 and 2002, the CBS carried out labour force surveys. However, in 2003, the CBS did not conduct an LFS but conducted instead an Unemployment Survey while, in 2004, data were collected

via the census (which is roughly performed every 10 years). However, the 2003 Unemployment Survey suffers from many shortcomings: not all respondents were asked all the questions (for example, people who were not working or those who were looking for part-time employment only were not asked about their availability for work) and no data on wages were available in that survey (Ovensen and Sletten, 2007).

The LFS is conducted through a standardised sequence of questions relating to labour activity and inactivity (Ovensen and Sletten, 2007). The aims of the LFS are to measure the size of the labour force and find its demographic, social and economic characteristics, such as the distribution of the labour force by provisions, economic activities, occupations, educational levels, gender, etc. However, the LFS does not report children's work. Furthermore, according to the LFS, a person is classified as unemployed if he/she is at the working age (over 15 years), does not have a job, is actively looking for a job, would accept a job that gives the normal wage rate, and has not worked at least one hour in the week prior to the survey. Conversely, a person is considered employed if he/she is over 15 years and has worked for at least one hour in the week prior to the survey. The Syrian LFS is not composed of panel data as the survey does not follow the same individuals over time.

5.6.1.1 Sample Design

The CBS has a frame for the census that includes digital maps of all governorates, regions, districts and other population agglomerates. The LFS covers the whole population in all governorates and so the sample size had to be big enough to produce data representative of each governorate. The sampling unit in the LFS is the household so the sample size was determined using the percentage of the total number of households in each governorate to the total number of households.

This survey used a stratified sampling technique as it reduces sampling errors. The population of Syria was divided into governorates and into rural/urban areas, then a two-stage sampling procedure was followed. In the first stage, cluster sampling was used to draw a total of just over 1000 clusters from the census areas (14 governorates, each being divided into rural and urban areas) in proportion to size. It was determined that each cluster would have 15 households (enumeration units). In the second stage, the sampling units (households) were randomly drawn in a regular but arbitrary manner. The sample was a self-weighted sampling design. Table (5.1) shows an example of the allocation of samples and clusters by governorate for 2010.

According to the LFS rules on data collection, all individuals living in the same house are considered as members of this household even if they are not related to each other; this even includes long-term visitors (anyone visiting for more than three months). Members of the family who do not live at the surveyed address are not counted (e.g. if they live away for study or work purposes or if they are in military service for longer than three months). No household is ever interviewed more than once. In 2010, the valid cases from the Labour Force Surveys numbered 15,195.

The results of the LFS are reliable as the data are collected by trained staff and supervised by experienced survey specialists. Also, the CBS utilises a standardised questionnaire to collect the LFS information.

The survey questionnaire contains 73 questions, including age, gender, marital status, educational attainment and place of residence, about each member of the household. It also asks about the labour force situation of the individual (e.g. employed or not, which sector, industry, earnings, etc.)[10].

Table 5.1: Number of Sample Clusters, LFS, 2010				
Governorates	Number of Clusters			Number of Sample Households
	Urban	Rural	Total	
Damascus	89	-	89	1335
Rural Damascus	91	50	141	2115
Aleppo	142	86	228	3420
Homs	45	38	83	1245
Hama	28	47	75	1125
Latakia	24	24	48	720
Deir Ezzor	25	30	55	825
Idleb	19	46	65	975
Raqqa	15	26	41	615
Hassake	26	49	75	1125

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[10] See Appendix 1 for LFS questionnaire.

Sweida	8	12	20	300
Daraa	20	24	44	660
Tartous	12	27	39	585
Quneitra	-	10	10	150
Total	544	469	1013	15195

In this study, the sample was restricted to working individuals who earned wages. Hence, the employment status included in this study was only "paid workers"; the "self-employed" were excluded as this would not reflect the differences in wage consistently. "Businessmen" and "unpaid workers" were also eliminated so that the results of this study reflected the source of the gender wage inequality and discrimination. Also, only the public and private sectors were included; the "others" category that included "the common, cooperative, family and domestic sectors" was excluded as it represents a very small portion, for example, 0.24% in 2010.

In order to obtain consistent results for the purpose of this study and to simplify the interpretation and comparison of results[11], all individuals in this sample were restricted to full-time only (data restrictions played a role in this decision). The sample was limited by working age and hence, anybody below the age of 15 (child) or over the age of 64 was excluded as well. Moreover, to obtain comparable results, only the main job of individuals was included (i.e. any secondary work and its income was eliminated)[12]. Some individuals with missing values in most of the variables were deleted from the sample as well leaving 2026 valid cases.

5.6.2 Variables Used in this Study

This section defines the variables used in this study, grouped into three groups namely: human capital, job and social characteristics.

5.6.2.1 Human capital variables

It is believed that human capital variables are the most important determinants of an individual's earnings for both males and females. Hence, they were the only variables included

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[11] According to DiNardo et al. (1996), previous studies that restricted their samples to full time did this to minimise the confounding effect of labour supply decision.

[12] More details on the restrictions imposed on wages (i.e. overtime and secondary jobs) can be found in the dependent variable section.

in the basic form of the Mincerian wage equation. Human capital variables are mainly specified to measure experience and education as Human Capital Theory argues that gender wage differentials can be seen as a result of different levels of educational attainment, training and experience that both men and women bring with them when moving into the labour market. So, it is reasonable in the analysis of the gender wage gap to control for differences between males and females in human capital variables. Actually, any analysis of wage equation and/or gender wage differentials is worthless unless it investigates the role of human capital variables in explaining earnings for both males and females. In this study, the human capital variables included were:

Variable	Description and purpose
Experience and age	
Age	Age of individual (15-64) years, used to capture the effect of age on earning.
Age^2	Age squared, used to represent the age-wage profile.
Job tenure	Number of years of employment with current employer, used to capture the effect of experience.
Education	
Educational qualification	Educational qualification was divided into 6 groups: (no study, elementary, preparatory, secondary, intermediate institute, and university and above); it was used to capture the effects of educational attainments on earning.

Table 5.2: Human capital variables.

Experience and age: Experience in the job is viewed as the source of skills (Mincer, 1962). Many studies have confirmed that experience is an important factor in determining earnings (e.g. Mincer, 1974; Blau and Kahn, 1997; Autor *et al.*, 2005). As experience is not directly measured in many datasets, researchers often use proxies of experience (Altonji and Blank, 1999). Mincer used experience (calculated as age minus years of schooling minus 6 years) and age squared. Age squared is used to capture the declining effect of experience on wage after a certain point in time. Age and earnings form an inverted U-shaped pattern as earning continues to increase with age until the peak (at around middle age); then, earnings start to decline after that. Also, age reflects the stage of life and the potential experience the

worker has. As there is no information on experience in the Syrian data, age and age2 were used as a proxy of experience.

Job tenure: Researchers have found that the cumulative work experience (years of employment) is an important factor in determining earnings (e.g. Light and Ureta, 1995; Boraas and Rodgers, 2003; Gabriel, 2005; Blau and Kahn, 2006). As a result of data availability, years of employment with the current employer (tenure) were used in this study to represent experience in the current job.

Education: Human Capital Theory perceives education as an investment of current resources in exchange for future returns (Becker, 1964). Education has productivity-enhancing effects on individuals which lead to higher earnings (McMahon, 1999). Additionally, employers often use educational qualifications as a signal of employees' potential productivity before hiring them if the employers do not have enough information on applicants' ability. Over time, many studies have documented that individuals with higher education levels are more productive and, on average, earn higher wages and have higher employment rates than their less-educated counterparts (see, for example, Card, 1999; Psacharopoulos and Patrinos, 2004). However, how is education measured? Empirical studies have used the number of years of education or schooling completed, or the highest educational qualification achieved by individuals in the formal system as a measurement of education; this is known as "Educational attainment" (Behrman, and Stacey, 1997). In this study, the highest educational qualification achieved was used. In the context of the Syrian labour market, for this study, educational qualifications were divided into 6 groups: i.e. no study, elementary, preparatory, secondary, intermediate institute, and university and above).

Dummy variables were created to measure the effect of educational qualifications on earning. Those dummy variables were:

No study (does not have any qualification: i.e. illiterate or can only read and write) was omitted and considered as the reference category for education dummy variables.

DUMELEM = 1 if workers graduated with an Elementary degree; otherwise =0,

DUMPREP = 1 if workers graduated with a Preparatory degree; otherwise =0,

DUMSEC = 1 if workers graduated with a Secondary degree; otherwise =0,

DUMINTER = 1 if workers graduated with an Intermediate Institute degree; otherwise =0,

DUMUNI = 1 if workers graduated with a University or above degree; otherwise =0.

5.6.2.2 Job Characteristics Variables

According to competitive theory, job characteristics (e.g. occupation, industry, hours worked) are essential factors in determining differences in the earnings and labour market participation of individuals and hence, the relative value or human capital that individuals have to offer (Elliott, 1990). Many studies (Groshen, 1991; Bayard *et al.*, 2003; Meng, 2004; Manning, 2006; Thomson, 2006; Mumford and Smith, 2009) supported the notion that job characteristics, such as occupational segregation, industries' segregation and women working part-time, are important contributors to gender wage differences. Job characteristics may include firm size, industry or sector, working time, occupation and working conditions. In the context of the availability and suitability of data to the Syrian labour market, the following variables were used for this group in this study:

Variable	Description and Purpose
Sector	Syrian sectors are divided into public and private and are used to capture the effect of sectorial segregation on earnings.
Industry	Syrian industries are divided into: agriculture, industrial, building & construction, hotels & restaurants trade, transportation & communication, money, insurance & real estate, and services. They are used to capture the effect of industrial segregation on earnings.
Occupation	Syrian occupations are divided into: administrators & clerks; professionals & technicians; sales & services; agriculture; and production. They are used to capture the effect of occupational segregation on earnings.
Job hours per week	Number of weekly hours worked by an individual; this is used to capture the effect of workload on earnings.

Table 5.3: Job characteristics variables.

Sector: One aspect of the labour market segregation is the sectorial division in the public and private sectors and labour market segregation contributes significantly to the gender wage gap in the labour market. Workers with similar productivity characteristics have different pay rewards in the public and private sectors as promotion and wage determination processes

differ between the two sectors (Hyder and Reilly, 2005). Usually, public sector employees tend to earn more than those in the private sector (Pedersen *et al*. 1990; Gornick and Jacobs, 1998). Nevertheless, the gender pay gap is smaller in the public than in the private sector (Rosenfeld and Kalleberg, 1991; Whitehouse, 1992). Extensive literature exists on public/private wage differentials (e.g. Portugal and Centeno, 2001; Ponthieux and Meurs, 2005; Strauss and Maisonneuve, 2007; Giordano *et al*., 2011; Depalo *et al*., 2013; Assaad, 1997; Boudarbat, 2004; Glinskaya and Lokshin, 2005; and Aslam and Kingdon, 2009). In Syria, it was found that the average monthly salaries in the public sector in 2007 were 22% higher than private sector salaries (Kabbani, 2009). Additionally, in Syria women are over-represented in the public sector. All those factors have an effect on the wage differentials between the genders and need to be considered. In this research, the public sector was set as the reference with the private sector for comparison:

Dummy value=1 if person works in the private sector otherwise = 0.

Industry: Systematic wage differentials exist among different industries which, in turn, affect the gender wage gap (Fields and Wolff, 1995). It has been found that employees with similar productivity characteristics might be rewarded differently depending on the industry in which they are employed. Many studies have assessed the wage differentials across different industries (e.g. Reilly and Zanchi, 2003; Benito, 2000; Gannon and Nolan, 2004; Plasman *et al*., 2007; Arbache, 2001; and Erdil and Yetkiner, 2001).

In this study, the grouping of the Syrian Central Bureau of Statistics for the main occupations in Syria is as follows: agriculture; industrial; building & construction; hotels & restaurants trade; transportation & communication; money, insurance & real estate; and services.

In Syria, agriculture is the largest industry in rural areas, particularly among women, while the industrial, and building & construction industries are mainly dominated by men in urban areas (Ovensen and Sletten, 2007). Moreover, women are highly represented in low-productivity activities, such as agriculture and services, which offer lower wages (Islam and Abdel-Fadil, 2005). The differences between gender representations in industries could affect the wage differences between the genders and should be considered when explaining the gender wage differences.

Dummy variables were created to measure the effect of industry on earning. Those dummy variables were:

Agriculture is omitted and considered as the reference category for the industry variables.

DUMINDUST = 1 if the person works in an industrial setting; otherwise =0,

DUMBUILDCON = 1 if the person works in building & construction; otherwise =0,

DUMHOTRES = 1 if the person works in the hotels & restaurants trade; otherwise =0,

DUMTRANCO = 1 if the person works in transportation & communication; otherwise =0,

DUMMONRE = 1 if the person works in money, insurance or real estate; otherwise =0,

DUMSERV = 1 if the person works in services; otherwise =0.

Occupation: Additionally, occupational segregation explains part of the gender pay gap (Blau and Ferber, 1987; Baldwin *et al*., 2001). When women are attached to lower waged and/or lower status jobs, this increases the gender pay gap (see, for example, Watts, 1998; Bayard *et al*., 2003; Manning, 2006). Moreover, in female-dominated occupations, lower wages tend to be offered compared to male-dominated ones (MacPherson and Hirsch, 1995; Baker and Fortin, 2001; Bayard *et al*., 2003). In Syria, Ovensen and Sletten (2007) found that gender distribution among those occupations varied significantly. For example, women dominated the agricultural occupations (46% vs. 22% of men) while men dominated occupations such as manufacturing, technical and construction work (39% vs. 8% of women).

In this study, the grouping of the Syrian Central Bureau of Statistics for the main occupations in Syria is as follows: administrators & clerks; professionals & technicians; sales & services; agriculture workers; and production workers. The gender differences between occupations affects wage differences between the two genders and this effect should be accounted for when explaining the gender wage differences.

Dummy variables were created to measure the effect of occupation on earning. Those dummy variables were:

Agriculture workers were omitted and considered as the reference category for the occupation variables.

DUMADMCL = 1 if the person works as an administrator & clerk; otherwise =0,

DUMPROFTECH = 1 if the person works in as a professional & technician; otherwise =0,

DUMSALSER = 1 if the person works in sales & services; otherwise =0,

DUMPROD = 1 if the person works as a production worker; otherwise =0.

Job hours per week: Women tend to work fewer hours than men. This affects their pay which, in turn, affects the wage differences between the two genders. This effect should

be accounted for when explaining the gender wage differences. In this study, it is equal to the number of weekly hours worked by an individual.

5.6.2.3. Institutional and Societal Characteristics

Social norms and cultural factors would have a strong effects on the wage differential between women and men in the labour market, as they may control the behaviours of men and women differently.

Variable	Description and Purpose
Region	Syrian regions are divided into: "*the Damascus region* (Damascus city); *the Southern region* (Rural Damascus, Sweda, Dara and Quneitra); *the Middle region* (Homs and Hama); *the Coastal region* (Tartos and Latakia); *the Northern region* (Edleb and Aleppo); and *the Eastern region* (Rakka, Der Elzor and Hasakeh)" (Ovensen and Sletten, 2007, p.9). This is used to capture the effect of the region of an individual's residence on earning.
Location	Syria is divided into rural and urban areas (all governorates "mohafazat" have both urban and rural areas except Damascus city (where there is no rural area) and Quneitra (where there is no urban area). This is used to capture the effect of the location of an individual's residence on earning.
Family number	Total number of people living in the household and its effect on earnings.
Head of the household	This ask if the individual is the head of a household and is designed to capture its effect on earnings.
The presence of a child under 5	Number of children aged (0-5) in the household and their effect on earnings.
Civil status	Individual's marital status divided into four different statuses: married single, divorced and widow. Capturing their effect on earnings.

Table 5.4: Social characteristics variables.

Civil status: According to the social norms in Syria, women are responsible for the domestic work at home and childrearing while men are responsible for providing for the family. Consequently, married men are expected to work for more years over their lifetime than married women; they are also expected to invest more in human capital than married women and hence have higher wages. For single men and women, wages are roughly similar (Polachek, 1975a and Becker, 1985). This is discussed in more detail in the sections on human capital and statistical discrimination theories. The wage differential between single males or females is usually small at around 10%; however, this differential rises to around 40% for married males and females (Blau and Kahn, 1992). A lot of research has found considerable gender wage gaps among married adults (e.g. Nicodemo, 2009; Gornick and Meyers, 2003; and Ray *et al.*, 2010). Therefore, this factor should be taken into account when studying the gender pay gap.

In this study the individual's civil status is described using four different statuses: married, single, divorced and widowed. Dummy variables were created to measure the effect of civil status on earning. Those dummy variables were:

The married status is omitted and considered as the reference category for civil status variables.

DUMSING = 1 if the person is single; otherwise =0,

DUMDIVO = 1 if the person is divorced; otherwise =0,

DUMWID = 1 if the person is widowed; otherwise =0.

The presence of a child under 5: Social factors, such as having children, may have an effect on the gender wage differential as well as child-caring is generally seen to be the responsibility of women. Hence, women are forced to take time out of employment after childbirth; these spells out of the labour market have a negative effect on lifetime earnings (Mincer and Polachek, 1974). The wage differential is even larger for workers with children (Harkness and Waldfogel, 2003). For example, married women with **children** have lower wages than married women without children (Harkmess and Waldfogel, 2003) while married men with children have higher wages (Polachek, 1975b). These differences in wage are affected by the child's age as well. Anderson *et al.* (2003) found that the younger the child(ren), the larger the wage reduction and vice versa. Therefore, in this study, the effects of the presence and numbers of children under 5 in the household have been studied.

Dummy variables were created to measure the effect of the presence of a child under 5 on earnings. Those dummy variables were:

The absence of a child under 5 was omitted and considered as the reference category for the "child under 5" variable.

DUMCHILD1 = 1 if there is one child under 5 in the household; otherwise =0,

DUMCHILD2 = 1 if there are two children under 5 in the household; otherwise =0.

Family number: The traditions and norms in Syria require women to be responsible for caring and for the domestic work at home. Also, Syrian families have very strong family ties. Hence, when the number of family members is large, women will not have enough time to work outside the house. Otherwise, they are forced to take more time out from work to finish their domestic work and raise the children. This, in turn, affects the accumulated work experience women acquire (Bertrand *et al*., 2010; Haveman and Beresford, 2012) and will increase the differences between men's and women's wages. Also, females in a large family with strong bonds will not be motivated to move away and look for a job (Alesina *et al*., 2010). Therefore, this factor cannot be ignored when studying the gender pay gap and discrimination. In this study, this variable represents the total number of people living in the household.

Head of the household: According to Boserup (1989), pay differences may exist due to how men and women are grouped into different social roles. Traditionally, women are responsible for the housework and childcare while men are the bread-winners, and women are forced to take more time out from work to raise their children. This, in turn, affects the accumulated work experience women acquire (Bertrand *et al*., 2010; Haveman and Beresford, 2012). The majority of young Syrian women in this study indicated that their main goal in life is family and marriage (Kabbani and Kamel, 2007). The head of the household is the one responsible for providing for the family and, because of the social and cultural norms in Syria, the majority of household heads are male. This responsibility will affect the wage differential between the genders as the head of the household (who is usually male) will look for jobs that pay better to be able to provide for his family. On the other hand, the non-head member (who is usually female), if working, will settle for any job, even with lower pay, if it offers her some other benefits, such as a shorter distance from her house and more flexible hours. Therefore, the effect of being the head of the household is included in this study to capture the gender pay difference.

The "not being the head" was set as the reference and "the head" for comparison:

Dummy value=1 if the individual is the head of the household; otherwise = 0.

Region and location: Significant differences in wages may be found among regions and between locations. This could be explained by differences in the cost of living or differences in the prevailing industries or occupations in that region. For example, agriculture is the largest industry in rural areas in Syria and is usually dominated by women; it is also associated with low pay. Therefore, regions and locations help to explain the wage differences between males and females.

In this study, Syria is geographically divided into six regions (in accordance with Ovensen and Sletten, 2007, p.9): "*the Damascus region* (Damascus city); *the Southern region* (Rural Damascus, Sweda, Dara and Quneitra); *the Middle region* (Homs and Hama); *the Coastal region* (Tartos and Latakia); *the Northern region* (Edleb and Aleppo); and *the Eastern region* (Rakka, Der Elzor and Hasakeh)". Hence, dummy variables were created to measure the effect of region on earnings. Those dummy variables were:

The Damascus region was omitted and considered as the reference category for regional variables:

DUMSOUTH = 1 if the individual lives in the Southern region; otherwise =0,

DUMMIDD = 1 if the individual lives in the Middle region; otherwise =0,

DUMCOAST = 1 if the individual lives in the Coastal region; otherwise =0,

DUMNORTH = 1 if the individual lives in the Northern region; otherwise =0,

DUMEAST = 1 if the individual lives in the Eastern region; otherwise =0.

Similarly, in terms of location, Syria can be divided into rural or urban areas. All governorates, "mohafazat", have both urban and rural areas except Damascus city (where there is no rural zone) and Quneitra (where there is no urban one). A dummy variable was created to measure the effect of location on earnings.

The "rural" was set as the reference and "urban" for comparison:

Dummy value=1 if the individual lives in a urban area; otherwise =0

Other variables, such as school quality, ability and parents' education were not included in this study for two reasons: 1) data constraints and 2) their effects have been previously found to be negligible (e.g. Glewwe, 2002; *Bonjour et al.*, 2003).

5.6.2.4 Variables Transformation to be used in the GLM.

In the second part of this study (General Linear Modelling Univariate ANOVA), some changes were performed to the continuous variables in order to transform them into categorical ones. This was performed as the independent variables in GLM ANOVA method should be categorical. The following table shows the variables that were transferred and the new categorical variables.

The continuous variables	The new categorical variables
Age	Age groups: 15-19 Years 20-24 Years 25-29 Years 30-34 Years 35-39 Years 40-44 Years 45-49 Years 50-54 Years 55-59 Years 60 and above Years
Job Tenure (Years in the job)	1-5 Years 6-10 Years 11-15 Years 16-20 Years 20 and above
Years in Education	0-3 Years 4-7 Years 8-11 Years 12-15 Years 16 Years and above
Job Hours per Week	1-20 Hours 21-40 Hours 40 Hours and above
Family Number	1-5 members 6-10 members

The Presence of a Child under 5	Yes
	No
Civil Status	Married
	Single
	Divorced or Widowed (in one group)

Table 5.5: Variables transformed to be used in the GLM.

5.6.2.5 Dependent Variable

This study follows the ILO's (International Labour Organisation) (1973) recognition of wages and earnings. The ILO considered earnings to include direct wages (the basic pay and overtime), holiday pay, bonuses and any extra allowances paid to the worker. The dependent variable used in this research was "wage (excluding overtime)" in its log form to be fitted in the model more reasonably and to allow for a clearer interpretation of the resulting coefficients. The wages' data came from the Syrian LFS 2010, Question 47: "What is the individual wage from your main job?"

An important issue needs to be discussed here: the measures of the wage variable. Some studies have measured earnings by including overtime and bonuses, for example. However, as this research is only interested in studying the source of gender wage inequality and discrimination, the actual (basic) wage, without adding any overtime or extra income, was thought more appropriate. According to Blinder (1973), using earnings instead of wage in discrimination studies could seriously bias the estimates. Previous studies also sometimes used hourly wage rates. According to DiNardo *et al*. (1996), wages should be preferred to earnings as the latter depend on the labour supply and the decision to work in more than one job. However, according to Manning (2000), this measure does not make a significant difference to the estimation. Moreover, Syrian LFS does not provide a measure of hourly wages as the prevailing wages' system in Syria is the monthly wage (not the hourly or weekly forms).

5.7 Data Analysis

Apart from the descriptive statistics, the empirical analysis has four sections. The first section explains the use of the Mincerian wage equation to find out the wage determinants for both men and women. Then, the method used to analyse returns to education is described. Oaxaca's decomposition technique is outlined next and after that, the method used to test the theoretical model and hypotheses is defined.

5.7.1 Descriptive Statistics

Descriptive statistics are used to describe the basic features of the data in a study. They provide simple summaries about the sample and the measures (Collis and Hussey, 2014). Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data. Descriptive statistics are used to present quantitative descriptions in a manageable form while univariate analysis involves the examination across cases of one variable at a time. The distribution is a summary of the frequency of individual values or ranges of values for a variable. The simplest distribution lists every value of a variable and the number of persons who had each value. One of the most common ways to describe a single variable is with a frequency distribution. Depending on the particular variable, all of the data values may be represented, or the values may be grouped into categories first. Distributions may also be displayed using percentages.

5.7.2 Wage Equation

Women's observed lower earnings compared to men's have been a focus for labour economists over the last few decades. Women's greater engagement in the labour market, together with a supply of an increasing number of educated women in the labour market, have triggered a great deal of research concerning the issue of gender wage differentials. Countless studies have been undertaken to investigate the presence of gender wage gaps in various contexts and at different levels in most countries around the world. The vast majority of those studies have noted that men earn significantly more than women. Hence, the presence of gender wage differentials has been proved (see, for example, Wood *et al*., 1993; Graddy and Pistaferri, 2000; Bertrand and Hallock, 2001). Consequently, attention has moved to estimating the extent of these gender wage differentials and the factors determining earnings for both men and women in the labour market. An individual's earnings is believed to result from overlapping factors reflecting human capital, social and job characteristics. So, the challenge for this study was to construct a wage equation to include a range of factors that had an impact on wages. A wage equation should reflect the characteristics of the labour market and incorporate personal and social factors that are believed to influence individuals' earnings.

A wage equation technique enables researchers to find out the relative importance of each specification included in the equation in explaining wage. In its basic form, it regresses the earnings of individuals on a set of explanatory variables to find out the role of each specification in explaining wage. Due to its simple nature, the Mincerian wage equation has

been widely used in the analysis of gender wage differentials. It was first introduced by Jacob Mincer (1974) who constructed a model regressing the individual's earnings in terms of both experience and education. As wages are generally skewed, the equation is usually transformed to a natural logarithm form to improve normality. The Standard Mincer equation takes the form below:

$$\ln (W_i) = \beta_0 + \beta_1 S_i + \beta_2 E_i + \beta_3 E_i^2 + \beta_4 X_i + u_i$$

where the i subscript refers to the individual worker, $\ln (W_i)$ is the natural logarithm form of individual wage, S is years of schooling, E is the potential experience, E_i^2 is experience squared, X denotes a set of explanatory variables to control for other characteristics, β is the market returns to those characteristics, and u_i is the error term. However, according to the availability of data regarding the Syrian labour market, the Mincerian equation was formulated in this study in the following form:

$$ln(Wi) = \beta_0 + \beta_1 age + \beta_2 agesquared + \beta_3 Education\ level\ dummies + \beta_4 job\ years +$$

$$\beta_5 week\ hours + \beta_6 Occupation\ dummies + \beta_7 Sector\ dummies + \beta_8 Industry\ dummies +$$

$$\beta_9 Head\ dummies + \beta_{10} Civil\ status\ dummies + \beta_{11} Child5\ dummies + \beta_{12} Family\ Count$$

$$dummies + \beta_{13} Region\ dummies + \beta_{14} Location\ dummies + error\ term$$

A brief descriptive summary of the variables used in the equation above is presented in Tables (5.2, 5.3 and 5.4).

Since the seminal work of Mincer, wage equations have been estimated in various forms in order to reflect the desired goal of the analysis for each study. In order to investigate the structure of males'/females' wages in the Syrian labour market, the Mincerian earning model was employed for both males and females. As the aim of the research was to find out the extent of gender wage differentials between men and women, separate regressions for men and women were run to test if the labour market rewarded men and women differently. Hence, two OLS regressions were run in order to estimate labour market returns for women and men.

$$\ln (W_m) = \alpha_m + \beta_m X_m$$

$$\ln (W_f) = \alpha_f + \beta_f X_f$$

In the light of data availability, together with the purpose of analysing the Syrian labour market, a set of variables were included in order to investigate the earning premium for each specification used in the model. In this study, three groups of variables were used: human capital, job characteristics and social variables.

As mentioned previously, the sample in this study was restricted to working individuals with wages; also, all individuals in this sample were restricted to full-time workers only. Sample selection bias may arise from excluding some individuals for whom demographic characteristics have been accounted, in the analysis of gender wage differentials. In other words, if the analysis is based on the characteristics of selected women (women in full-time paid employment in this study) which are different from the characteristics of non-selected ones (women not in full-time paid employment in this study), then the estimation will be biased.

Women not in full-time paid employment are less likely to have similar human capital characteristics to women working in full-time paid employment and therefore, the selected sample will not represent all women. As Joshi and Paci (1998; p.30) stated: "limiting the analysis exclusively to them could either under- or over-estimate the wage opportunities available to all women". Researchers usually use the Heckman two-step sample-selection correction model to correct for sample selection bias (Heckman, 1979). Heckman treated the selection problem similar to the problem of an omitted variable (Puhani, 2000). However, the Heckman approach has some problems[13] And it could also be argued in the same vein that the men's sample could also suffer from sample selection bias which has been ignored.

Thus, on the one hand, this study uses the characteristics of this sample and wages for the same sample wage earners; on the other hand, the aim of this study is to examine the gender gap that exists in the real wages earned, not the potential wages that could be earned by housewives. Hence, there is no need for correction for sample bias.

5.7.3 Returns to Education

The private rates of return to education are estimated in two ways: first, estimated based on the returns to education level (which has been used in all regressions), and second, based on years of education as a whole, regardless of the time spent on each level or the level being achieved or not.

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[13] This will not be discussed in this study. For more details, see, for example: Duan *et al*. (1984, 1985), Berk (1983), Davies (1997).

Returns to education by level are the marginal returns to each educational level over the previous one. It is widely recognised that every educational level has its wage premium and employers compensate workers according to the qualification level achieved, regardless of the number of years spent in completing it. However, labour economists used to calculate the private rates of return for each education level by the number of years at this level. Hence, this indicator utilises the private rates of return for each year spent to achieve the level and it is calculated by dividing the resulting coefficients (marginal net increase of the coefficient of the education level under consideration) from wage regressions by the corresponding number of years spent to achieve this qualification. In the current study it can be expressed as:

$r_{(elementary)} = \beta_{(elementary)}$ / number of years of the elementary level (i.e. 6)

$r_{(Preparatory)} = \beta_{(Preparatory)} - \beta_{(Elementary)}$ / number of years of the preparatory level (i.e. 3)

$r_{(Secondary)} = \beta_{(Secondary)} - \beta_{(Preparatory)}$ / number of years of the secondary level (i.e. 3)

$r_{(Intermediate)} = \beta_{(Intermediate)} - \beta_{(Secondary)}$ / number of years of the intermediate level (i.e. 2)

$r_{(University)} = \beta_{(University)} - \beta_{(Secondary)}$ / number of years of the university level (i.e. 4)

The rate of return to education by years of education uses the marginal wage premiums of each year of education (regardless of the education level). This was first used by Mincer (1957) in his first wage equation and then countless studies used it thereafter. The rate of return to education using years of education is calculated as an "average return" to an additional year of schooling; it is characterised by its simplicity which explains its popularity.

A separate regression was run using years of education for men, women and the pooled sample. This was done in a way consistent with what was done earlier: i.e., in the successive inclusion of each group of variables (human capital, job characteristics, and social variables) in order to observe the changes of the average rates of return of one more year of education over the three consecutive models.

5.7.4 Wage Differentials Decomposition

By running the wage equation for both men and women, the differentials in the market return for male and female endowments could be measured. Hence, the presence of gender wage differentials was proven through the descriptive statistics, and the extent of the gender wage differentials was measured by running wage equations for both sexes. So, the interest now moves to decomposing the observed male-female wage differentials. The widely used

methodology in decomposing the gender wage gap is the Oaxaca decomposition technique[14] which inspects the similarities and differences in wage structure between any two groups of workers (usually advantaged and disadvantaged groups) with comparable characteristics. Oaxaca's decomposition technique matches the prevailing actual wage structure of the disadvantaged group with the virtual wage structure that would prevail in an ideal situation with no discrimination between the two groups.

The key point of the Oaxaca decomposition technique is to separate the wage differentials between any two groups of workers (e.g. males and females, whites and non-whites) with comparable characteristics into two components: the first is referred to as the unjustified wage differentials and represents the upper limit of discrimination. The second component reflects the justified or explained wage differentials which results from differences in attributes (education, experience...etc.) between the two groups (Blinder, 1973; Oaxaca, 1973; Cotton, 1988; Neumark, 1988; Sorenson, 1990; Even and Macpherson, 1993; Fortin and Lemieux, 1998). The Oaxaca decomposition equations take the form:

$$\ln(W_m) - \ln(W_f) = X_m \left(\widehat{\beta_m} - \widehat{\beta_f} \right) + \widehat{\beta_f} (X_m - X_f)$$

$$\ln(W_m) - \ln(W_f) = X_f \left(\widehat{\beta_m} - \widehat{\beta_f} \right) + \widehat{\beta_m} (X_m - X_f)$$

where X_m, X_f are vector of mean values of explanatory variables for men and women, respectively and $\widehat{\beta_m}$, $\widehat{\beta_f}$ are parameter estimates from wage equations for men and women respectively.

The left hand sides of both equations represent the wage differentials between the two groups, but the right hand sides are different. The difference between the two equations depends on which wage structure would exist in the virtual case of no discrimination. The first equation suggests the male structure (β_m) while the second virtualises the wage structure of females (β_f). The two equations are not equal, and employing each of them yields different estimations. As long as it is an imaginary situation in an ideal world and does not exist in reality, it is not possible to tell which equation would be valid in the virtual case of no discrimination; this problem is called the "index number" issue.

Authors have dealt with this problem in different ways. Cotton (1988) argued that neither the male's wage structure (β_m) nor the female's (β_f) would prevail in the absence of

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[14] Also called the Blinder-Oaxaca decomposition technique.

discrimination. Alternatively, Cotton introduced (β^*) which can be seen as less than the male's return and greater than the female's.

$$\text{Ln}(W_m) - \text{Ln}(W_f) = \widehat{\beta}_* (X_m - X_f) + X_m \left(\widehat{\beta_m} - \widehat{\beta}_* \right) + X_f \left(\widehat{\beta}_* - \widehat{\beta}_f \right)$$

where β_* refers to the non-discriminatory wage structure.

Cotton (1988) suggested that the non-discriminatory wage structure would be the weighted structure according to the proportions of males and females in the sample. Consequently, the unexplained part of the gender wage differentials, which was regarded as "discrimination against females" in the previous two equations, is now divided into two parts in the last equation: the first is favouritism or nepotism for men $X_m \left(\widehat{\beta}_m - \widehat{\beta}_* \right)$ and the second is discrimination against women $X_f \left(\widehat{\beta}_* - \widehat{\beta}_f \right)$. Similarly, Reimers (1983) advocated that the non-discriminatory market return β_* is the average of both β_m and β_f. Also, Neumark (1988) recommended the use of a combination of males and females (the pooled sample) in order to estimate the log wage gap.

However, Oaxaca's decomposition technique has been criticised and one of the most fundamental issues concerns the difficulty of distinguishing between the differences resulting from characteristics and those resulting from discrimination, as suggested by the method (Blau and Jusenius, 1976; Cain, 1986; Goldin, 1990; Gunderson, 1989; Treiman and Hartmann, 1981). In reality, it is not possible to differentiate between them. For example, gender discrimination can affect an individual's attributes through: 1) pre-entry to the labour market (for example, encouragement for males and discouragement for females to pursue their education); 2) post-entry to the labour market, both within the labour market (females are given less training opportunities than males, as well as gender differences in promotions and managerial positions) or 3) outside the labour market (domestic responsibilities in the household, child bearing or social norms).

Oaxaca's decomposition technique ignores the effect of feedback on the building process of characteristics through the self-fulfilling prophecy mentioned earlier. For example, women may refuse extra training or managerial positions to avoid the extra responsibilities and workloads associated with them. As Oaxaca pointed out, "it is clear that the magnitude of the estimated effects of discrimination crucially depends upon the choice of control variables for the wage regressions" (Oaxaca, 1973, p. 699).

The accuracy of the gender wage gap analysis using the Oaxaca decomposition is highly reliant on the quality of the wage model upon which the decomposition is based, which requires careful selection of the variables to be included in the wage equation. On the one hand, some characteristics variables are due to discrimination and including them in the wage equations yields an understated estimation of discrimination. However, on the other hand, excluding variables which are subject to discrimination from the model will limit the analysis to only a few variables (mainly human capital variables). This will prevent deep examination and will reduce the explanatory power of the model.

Hence, in accordance with the limitations mentioned above in terms of including or excluding variables which are likely to be affected by discrimination, and in the light of the availability of variables in the dataset, together with the purpose of analysing the Syrian labour market, three groups of variables were included successively in order to investigate the earning premium for each specification in the three groups. The criteria, by which the addition process was carried out, constitute the degree to which each group of variables is believed to be affected by gender discrimination[15].

Starting from the human capital variables, which are believed to be least affected by gender discrimination, the variables were: Age, Age squared, Job tenure, and Educational qualifications. Moving to the group of variables of job characteristics, which is supposed to be subject to some discrimination between males and females, the variables were: Sector, Industry, Occupation, and Job hours per week. The final group of variables, which is supposed to be heavily affected by gender discrimination, was the social characteristics group whose variables were: Region, Location, Family number, Head of the household, Presence of a child under 5, and Civil status.

In order to estimate the unexplained component of the gender wage gap in the Syrian labour market (which reflects discrimination), the Oaxaca decomposition approach was employed with proportional weighted market returns (supported by Cotton, 1988) for both males and females according to their weights in this study.

5.7.5 General Linear Modelling Univariate ANOVA

The previous method (Oaxaca decomposition) – which provides a way to decompose the differences in the wage functions between men and women, based on linear regression, into endowment and residual differences – implicitly treats estimated coefficients as deterministic

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[15] A similar approach was adopted by Sugihashi (2003).

(Jackson and Lindley, 1989). However, Oaxaca decomposition cannot be performed if interactions are included in the wage equation as one of the Oaxaca decomposition underlying assumptions is "additive linearity" i.e. the explanatory variables enter the wage function additively (Wenzlow et al., 2004; Dutta, 2005; Nopo, 2008; Fortin et al., 2011; Ehrl, 2014; Aguilar et al., 2015).

Some authors argued that the detailed decomposition to identify the contribution of each covariate to the explained component is only possible as a result of the additive linearity assumption of the Oaxaca decomposition method (Edoka, 2012; Essama-Nssah, 2012; Moroni, 2016). In this case, Oaxaca decomposition is not possible when we have interactions in the wage equations. As: "the coefficients in interaction models no longer indicate the average effect of a variable as they do in an additive model. As a result, they are almost certain to change with the inclusion of an interaction term" (Brambor et al., 2006; 70). When multiplicative interaction is used, the coefficients would not be consistently identified, i.e. the coefficients cannot be interpreted in the same way as they would in a linear-additive model, they cannot be interpreted as unconditional marginal effects (Brambor et al., 2006).

One solution to this would be the use of variance decomposition, as the variance could be decomposed into a within-and between- group component[16] (Fortin et al., 2011). Between-and within- group effects can help in understanding economic mechanisms or the source of inequality growth (Juhn et al., 1993; Fortin et al., 2011).

In the following, the theoretical reasons for using GLM are explained first; then the practical reasons for applying this to ANOVA rather than regression are discussed. Some authors (Heckman et al., 1996; Lemieux, 2003; Heckman, et al., 2006; Belzil, 2006) argued that the Mincerian wage equation suffers from non-linearity in schooling. The log wage equation is a convex curve rather than the conventional log-linear specification (Blanchflower and Oswald, 1994; Mincer, 1997; Deschenes, 2001). This makes the Mincerian function an approximately linear function (Card and Krueger, 1992). This is one of the Mincerian limitations as it uses a linear approximation of a non-linear function.

The general linear model (GLM) usually refers to models that extend the linear parametric methods (such as OLS regression and ANOVA) to "data types where the response variable is discrete, skewed and /or non-linearly related to the explanatory variables" (Hutcheson and Sofroniou, 1999; 1). In GLM, the dependent(s) is/ are continuous with continuous and/or categorical independents; those models are fitted by least squares and

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[16] Within-and between- group decompositions are different from the Oaxaca decomposition (Fortin et al., 2011).

weighted least squares. "It is 'general' in the sense that one may implement both regression and ANOVA models... because GLM uses a generalized inverse of the matrix of independent variables' correlations with each other, it can handle redundant independents which would prevent solution in ordinary regression models" (Garson, 2012, p1). Also, "GLM does NOT assume a linear relationship between the dependent variable and the independent variables, but it does assume linear relationship between the transformed response in terms of the link function and the explanatory variables" (Online courses, 2017).

The main practical reason for applying the GLM to ANOVA – rather than regression – was the availability (at the time of writing) of the SPSS software and the flexibility it offers: first, the dummy variables are coded automatically, a huge advantage when the research includes several categorical variables many of which are multi-category. Second, it is easy to add interaction terms, as in regression each interaction needs to be added as a separate variable, ANOVA uncovers interaction effects on a built-in basis. Third, the "analysis uses the anova command (instead of the regress command) because the anova command directly shows the significance tests for each of the main effects as well as the interaction" (Mitchell, 2012; 213).

Therefore, to test the proposed hypotheses, General Linear Modelling Univariate ANOVA (GLM ANOVA) was employed using IBM SPSS version 24. GLM ANOVA reveals the main and interaction effects of categorical-independent variables (called ''factors'') on an interval-dependent variable (Garson, 2002, p. 150). GLM ANOVA uses one normally distributed interval-dependent variable and two or more categorical independent-variables (with or without the interactions). Garson (2002, p.151) defined the main effect as "the direct effect of an independent variable on the dependent variable", while the interaction effect is "the joint effect of two or more independent variables on the dependent variable". In IBM SPSS, there is no need to include the interaction term(s) in the data set. Rather, by placing an asterisk between the variables, SPSS will make up the interaction term(s)[17].

A custom factorial UNIANOVA model was used to determine the main effects of gender, and social, human and job characteristics on wages. In addition, the interaction effects of gender and social, human and job characteristics on wages were tested. The GLM Univariate ANOVA was also conducted to test the interaction effects of social characteristics and human and job characteristics on wages. In order to achieve the objectives, seven custom factorial UNIANOVA models were tested: Main Effects Model, Main Effects without Gender Model, Male only Model, Female only Model, Main Effects and Interaction Effects Model, Female

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[17] Writing the SPSS syntax was done with the help of an expert.

only Main effects and Interaction Effects Model and Male only Main Effects and Interaction effects Model.

In order to test if the model met the assumptions of the factorial ANOVA, Levene's test of homogeneity of variance was used. Type I errors in the F-test (wrongly rejecting the null hypothesis) increase if there are violations in the homogeneity of the variance assumptions. Thus, for small and even moderate departures from homogeneity of variance, ANOVA is robust (Garson, 2009).

In order to determine the difference between the custom models used in this research and the full factorial models, a lack of fit F-test was used. The lack of a fit F-test assumes that the model is a non-full factorial model. A non-full factorial model means that the model includes all the main effects and all the interactions among the factors but does not include interactions between the factors and the covariates (Garson, 2009). If the results indicate "non-significance", this means that the lack-of-fit error in the researcher's model is not significantly different from 0, which is what it is in a full factorial model. Since the researcher's model is then found not to be significantly different from the full factorial model, the inference is that there is no need to add terms which are missing from the researcher's model but present in the full factorial model. In other words, non-significance means there is no evidence of a lack of fit and the researcher's less-than-full factorial model is accepted. Moreover, to determine the main and interaction effects (measured by partial ETA) and significance (measured by the F-test at p 0.05) of gender and social, human and job characteristics on wages, the custom factorial Univariate model was used.

To test the overall significance of the model and the effect size measures, the F-test of difference of group means, the key statistic in ANOVA, was used to "test if means of the groups formed by values of the independent variable (or combinations of values for multiple independent variables) are different enough not to have occurred by chance" (Garson, 2002, p.151). If there is no significant difference between the group means, this indicates that the independent variable(s) did not have an effect on the dependent variable. On the other hand, "if the F-test indicated that overall, the independent variable(s) is related to the dependent variable, then multiple comparison tests of significance are used to explore just which value groups of the independent variable(s) have the most to do with the relationship" (Garson, 2002, p.151). "The F-test is an overall test of the null hypothesis that group means on the dependent variable do not differ. It is used to test the significance of each main and interaction effect (the residual effect is not tested directly)" (Garson 2002, p. 152).

Pairwise comparisons were used to test significant mean differences between males and females. In this research, estimated marginal means were used to compare the means of the main effects as well as the interaction effects of factors. Estimated marginal means show if groups formed by the independent factor (gender or social characteristics) vary with respect to a dependent variable (wages), when any covariates in the model are controlled. When the means of the dependent variables vary by a factor level or more, it means that the relationship between the factor and the dependent is stronger. In this study, the pairwise comparisons were preferred to multiple comparisons and post hoc tests as the pairwise comparisons adjusted means for the effects of any covariates in the model, unlike the other two. The Bonferroni-adjusted t-test (also called the Dunn test) was used to test the pairwise comparisons of means between gender and the other variables, as well as social characteristics.

In order to test whether the observed proportions for a categorical variable differ from hypothesised ones, the chi-square goodness of fit test can be used. Therefore, in this research, the chi-square test of independence was performed to examine the relationships between the genders, and social, human and job characteristics. As both the dependent and independent variables were nominal data in this study, Pearson's chi-squared (χ^2) test was applied to evaluate the likelihood that any observed difference between the groups happened by chance. On the other hand, the Kruskal-Wallis H test, a rank-based non-parametric test, is usually used to determine the existence of statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable. Therefore, in this study, the Kruskal-Wallis H test was used where the independent variable was nominal and the dependent variable was an ordered ordinal.

5.8 Conclusion

This chapter has outlined the research philosophy, approach and methods for the data collection and analysis. In the first section, a brief description of the data source and its suitability for the analysis was given. The variables used in this study were explained and justified. After that, the data analysis methods used were outlined including, firstly, the descriptive statistics; secondly, the wage equations; thirdly, the returns to education; fourthly, Oaxaca's decomposition; and finally, the GLM. The next chapter offers the findings of the wage equations, the returns to education and Oaxaca's decomposition.

Chapter 6: Characteristics of the Syrian Labour Market

6.1 Introduction

This chapter outlines the characteristics and gives a detailed description of the Syrian labour market. Assessing the characteristics of the population and the labour force gives a better picture of the situation of the labour market in Syria and helps in evaluating the results in the light of these characteristics.

This section is based on published data from Syrian Statistical Abstracts, the unemployment survey of 2003, and the LFS of 2010[18]. It examines the characteristics of the Syrian labour market in terms of: population characteristics; participation and unemployment rates; employment by sector; the main industries and occupations; status, region, location and level of education, and average wage.

6.2 Population Characteristics

This section aims to evaluate the characteristics of the Syrian demographic population. Table 6.1 shows that the population of Syria topped 20 million in 2010. Males represent just over 51% of the population while females represent around 49%.

The working age population (defined as anyone over 15 and under 64 years old, willing and able to work, looking for job) represent 58.5% of the total population. The working age population is therefore almost equally distributed between males and females.

2010	Male	Female	Total
Population total	10539	10080	20619
%	51.11%	48.89%	100.00%
Working age population (15-64) years	6009	6069	12078
%	49.75%	50.25%	100.00%
Working age % of population	57.02%	60.21%	58.58%

Table 6.1: Population in 2010 in thousands.

Table 6.2 shows that the Syrian population is a young one as more than 41% of the total population in Syria is younger than 15 years old while almost 53% of the total population are adults (between the ages of 15 and 59). The "old" population (i.e., those over 60) represent only 5.87% of the total population. According to Islam and Abdel-Fadil (2005), this age

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[18] All tables and figures are adapted from these sources.

distribution of the Syrian population has resulted in a high dependency ratio[19]. In addition, the existence of a high unemployment rate among the young workforce (those 20-30 years) has resulted in raising the financial dependency rate.

Age groups	Population total 2010	%
>15	8541	41.42%
15 - 19	2045	9.92%
20-39	5928	28.75%
40-59	2895	14.04%
60+	1210	5.87%
Total	20619	100.00%

Table 6.2: Population by age groups in 2010 in thousands

The growth rate of the Syrian population was around 2.45% between 2001 and 2011 (Table 6.3). This rate is lower than it was for the period from the 1960s to the mid-1990s, which wasover 3% yearly. Thus, Syria is still ranked first among the Arab Mediterranean countries in terms of population growth (Aita, 2009a). Table 6.3 also shows that the distribution of the population into males and females remained the same during those 11 years with males representing around 51% of the population and females around 48%. This makes the sex population ratio (the number of males for 100 females) equal to 104%.

Population total	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Males	8552	8763	8979	9199	9340	9563	9798	10042	10287	10539	10794
Females	8168	8367	8571	8781	8929	9154	9374	9602	9838	10080	10330
Total	16720	17130	17550	17980	18269	18717	19172	19644	20125	20619	21124
Change	-	410	420	430	289	448	455	472	481	494	505
Change %	-	2.45%	2.45%	2.45%	1.61%	2.45%	2.43%	2.46%	2.45%	2.45%	2.45%
Male%	51.15%	51.16%	51.16%	51.16%	51.12%	51.09%	51.11%	51.12%	51.12%	51.11%	51.10%
Female%	48.85%	48.84%	48.84%	48.84%	48.88%	48.91%	48.89%	48.88%	48.88%	48.89%	48.90%
Total%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 6.3: Population growth from 2001-2011 in thousands.

The same conclusion could be drawn concerning the working age population which showed steady growth (of around 2.5 during the period from 2001 to 2011. The distribution of the working age population into males and females remained the same during those 11 years (see Table 6.4).

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[19] The number of dependents (under 15 years and over 65) to the total working age population (aged 15 to 64).

Population (15 - 64) years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Males	4767	4894	5010	5135	5314	5433	5566	5775	5911	6009	6326
Females	4674	4737	4953	5075	5143	5275	5399	5718	5853	6069	6225
Total	9441	9631	9963	10210	10457	10708	10965	11493	11764	12078	12551
Change	-	190	332	247	247	251	257	528	271	314	473
Change %	-	2.01%	3.45%	2.48%	2.42%	2.40%	2.40%	4.82%	2.36%	2.67%	3.92%
Male%	50.49%	50.82%	50.29%	50.29%	50.82%	50.74%	50.76%	50.25%	50.25%	49.75%	50.40%
Female%	49.51%	49.18%	49.71%	49.71%	49.18%	49.26%	49.24%	49.75%	49.75%	50.25%	49.60%
Total%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 6.4: Population (15 - 64 years) from 2001 to 2011 in thousands.

6.3 Participation Rate

Table 6.5 shows that the participation rate in the labour market[20]was between 46-57% for the total (males and females) but only between 14-25% for females during the period 2001-2011. However, comparing the labour force to the total Syrian population shows that this only constitutes around 28% of the total population (e.g. 31.56% in 2001; 27.52% in 2004 and 26.82% in 2010). Compared to developed countries, this ratio is relatively low. This could be as a result of the young Syrian population (in 2010, 41.42% of the total population were younger than 15 years) and the unwillingness of a large number of adult women to participate in the labour force. The low female participation rate can be explained by the social norms (in Syria and Middle Eastern countries) that imply the duty of married women is to take care of the domestic needs of the family while men are seen as the breadwinners. However, recently those norms are being challenged, especially by highly educated women.

Figure 6.1 below shows that the participation rate for both males and females has followed the same pattern over the 11 years from 2001 to 2011 with males' rate being much higher than females'. Furthermore, it appears that the participation rate for females is decreasing as the share of the participation rate for women in the total labour force decreased from 24.70% in 2002 to 13.74% in 2010. Similarly, the participation rate for males disproportionately decreased from 89% in 2001 to 76% in 2011. However, on average, 90% of the total labour force[21] is actually working, with an average of 93% for males and 76% for females.

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[20] Defined as the percentage of the actual labour force compared to the working age population, ages 15-64.

[21] People actively seeking and available for work.

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Population (15 - 64) years	Males	4767	4894	5010	5135	5314	5433	5566	5775	5911	6009	6326
	Females	4674	4737	4953	5075	5143	5275	5399	5718	5853	6069	6225
	Total	9441	9631	9963	10210	10457	10708	10965	11493	11764	12078	12551
Labour force	Males	4238	4289	4108	4142	4318	4466	4553	4555	4638	4696	4838
	Females	1038	1170	985	806	788	827	847	888	804	834	977
	Total	5276	5459	5093	4948	5106	5293	5400	5443	5442	5530	5815
	Change		183	-366	-145	158	187	107	43	-1	88	285
	Change%		3.47%	-6.70%	-2.85%	3.19%	3.66%	2.02%	0.80%	-0.02%	1.62%	5.15%
Workers	Males	3926	3933	3713	3710	4063	4230	4316	4175	4374	4403	4334
	Females	804	888	763	630	630	630	630	673	625	651	615
	Total	4730	4821	4476	4340	4693	4860	4946	4848	4999	5054	4949
	Change		91	-345	-136	353	167	86	-98	151	55	-105
	Change%		1.92%	-7.16%	-3.04%	8.13%	3.56%	1.77%	-1.98%	3.11%	1.10%	-2.08%
Labour force % working age population	Males	88.90%	87.64%	82.00%	80.66%	81.26%	82.20%	81.80%	78.87%	78.46%	78.15%	76.48%
	Females	22.21%	24.70%	19.89%	15.88%	15.32%	15.68%	15.69%	15.53%	13.74%	13.74%	15.69%
	Total	55.88%	56.68%	51.12%	48.46%	48.83%	49.43%	49.25%	47.36%	46.26%	45.79%	46.33%
Working % labour force	Males	92.64%	91.70%	90.38%	89.57%	94.09%	94.72%	94.79%	91.66%	94.31%	93.76%	89.58%
	Females	77.46%	75.90%	77.46%	78.16%	79.95%	76.18%	74.38%	75.79%	77.74%	78.06%	62.95%
	Total	89.65%	88.31%	87.89%	87.71%	91.91%	91.82%	91.59%	89.07%	91.86%	91.39%	85.11%

Table 6.5: Labour force (in thousands) and labour force ratio from 2001 to 2011.

Table 6.5 further reveals that 5,054,000 persons were working in Syria in 2010, of which only 651,000 were women (12.8%). In comparison, in 2002, the statistics reported 4,821,000 workers of which 888,000 were women (18.4%).

Comparing Tables 6.4 and 6.5 reveals the labour force population (15-64 years) increased yearly by an average of around 2.5% or 250,000 for the period 2001-2011, while the working labour force did not follow this increase. For example, in 2003, the working labour force decreased by 7.16% or 345,000 even though the working age population increased by 3.45% or 332,000 in that year. The major drops in the working labour force occurred in 2003 and 2004 (7.16% and 3.04% respectively). This could be attributed to the arrival of 1.5 million Iraqi refugees to Syria after the United States' invasion of Iraq in 2003. Those Iraqis are active in the Syrian labour market but are not included in the official statistics (Aita, 2009a).

However, the author, Aita (2009a) found the decreases in the labour force for the years 2003 and 2004 to be illogical. Aita (2009a) also pointed out that, in 2003, both men and women faced job losses. Furthermore, in 2005, Syria withdrew its troops from Lebanon which resulted in the return of hundreds of thousands of Syrian workers. Thus, the Syrian economy created only around 37,000 jobs between 2001 and 2007 (Aita, 2009a). Table 6.5 above reveals that

men gained 690,000 jobs between 2003-2010 while women lost 112,000 jobs in the same period.
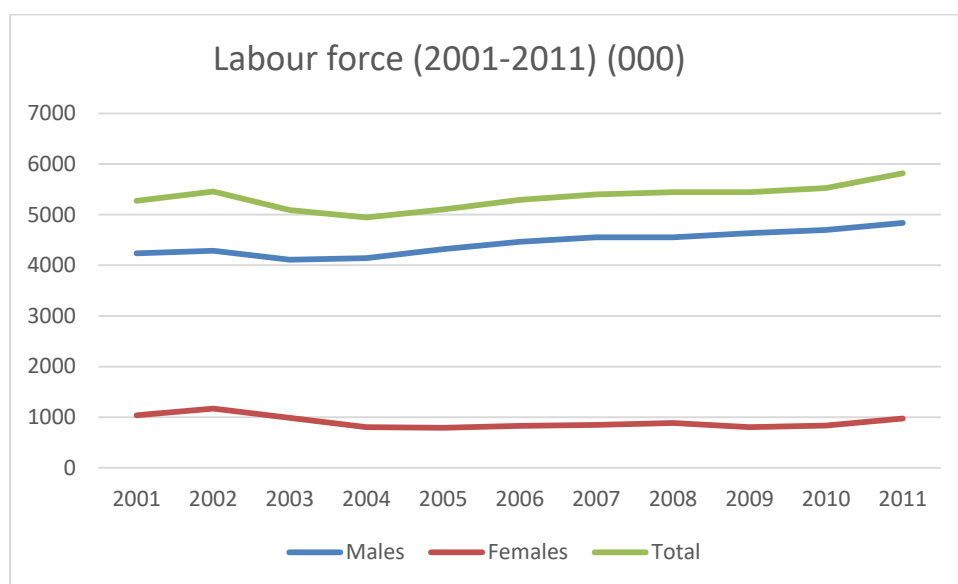
Figure 6.1: Labour force during the period 2001-2011 in thousands.

Regarding the distribution of the Syrian labour force among age groups (see Table 6.6 and Figure 6.2), it is obvious that the majority of the labour force is young as the labour force is concentrated in the young age group of 20-39 years. For example, in 2010, 53.42% of the total labour force (52.97% of males and 56.44% of females) fell into this age group. In all age groups, males represent the majority of the labour force compared to females. For example, Table 6.6 and Figure 6.2 show that, in 2010, the male workers in the age group 15-19 represented 92% of the total labour force while they represented 86% in the age groups 20-30 and 40-59.

	% Labour by age group and gender			% Male-female by age group		
	Total	**Male**	**Female**	**Male**	**Female**	
15 - 19	7.50%	7.92%	4.66%	92.00%	8.00%	100.00%
20-39	53.42%	52.97%	56.44%	86.39%	13.61%	100.00%
40-59	34.56%	34.14%	37.47%	86.04%	13.96%	100.00%
60+	4.51%	4.97%	1.43%	95.92%	4.08%	100.00%
	100.00%	100.00%	100.00%			

Table 6.6: Distribution of the Syrian labour force [%] by age and gender (adapted from the labour force survey in Syria, 2010).

Figure 6.2: Employed workforce by age group and gender (2010) & Male-female % by age group (2010).

6.4 Unemployment Rates

The Syrian unemployment[22] rate peaked in 2002-2004, possibly due to the arrival of 1.5 million Iraqi refugees to the country. The rate reached its highest in 2011 which may be due to the political situation that started in 2001. Comparing male and female unemployment rates in Table 6.7 and Figure 6.3 reveals that women were not affected by the arrival of the Iraqi refugees in 2003 as the female unemployment rate stayed almost the same at around 22%, while men were negatively affected as their unemployment rate peaked in 2004 to its highest level of 10.4% compared to an average of 7% between 2001-2010. The unrest that started in 2011 had a negative effect on employment as males' unemployment rate reached 10.4% and females' unemployment rate reached a record of 37.1%.

Unemployment rate	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Males	7.4%	8.3%	8.2%	10.4%	5.9%	5.3%	5.2%	8.3%	5.7%	6.2%	10.4%
Females	22.5%	24.1%	21.9%	21.8%	20.1%	23.8%	25.6%	24.2%	22.3%	21.9%	37.1%
Total	10.3%	11.7%	10.8%	12.3%	8.1%	8.2%	8.4%	10.9%	8.1%	8.6%	14.9%

Table 6.7: Unemployment rate during the period 2001 to 2011.

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[22] Comprises of persons who did not work even one hour in the week prior to the survey, but who were actively seeking and available for work.
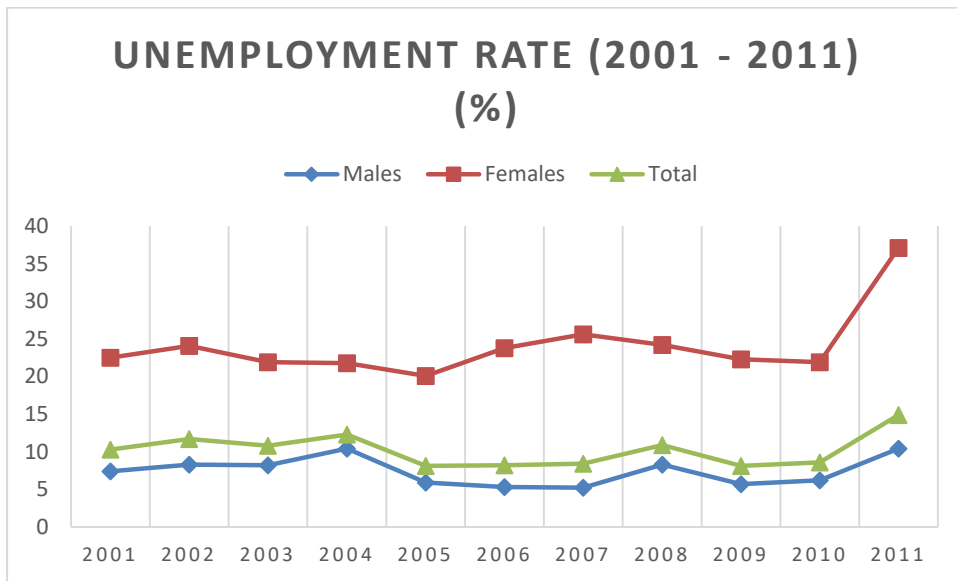
Figure 6.3: Unemployment rate (2001 - 2011) (%).

Looking at the unemployment rate in relation to education levels see Table 6.8 and Figure 6.4) and comparing the years 2010 (as a standard year) and 2011 (as a 'special' year), it reveals the unemployment rate was at its highest rates (41.55%, 48.38% in 2010 and 2011 respectively) among people with lower educational levels (i.e., those who were illiterate, could read and write at a basic level, and those who had received an elementary education). For those at a middle educational level (preparatory and secondary education) this figure was around 30%, with the lowest level (at less than 25% in both years) for people with the highest education level (intermediate institute and university). The unemployment rate among university graduates was less than 10% of the total unemployed.

Educational status	2010		2011	
	no.	%	no.	%
Illiterate	18,890	3.97%	57,877	6.68%
Read & write	82,544	17.33%	201,301	23.24%
Elementary	96,455	20.25%	159,906	18.46%
Preparatory	66,956	14.06%	125,398	14.48%
Secondary	96,940	20.35%	146,736	16.94%
Intermediate Institutes	68,014	14.28%	93,742	10.82%
University and above	46,543	9.77%	81,326	9.39%
Total	476,342	100%	866,286	100%

Table 6.8: Unemployment rates by educational status (2010-2011).
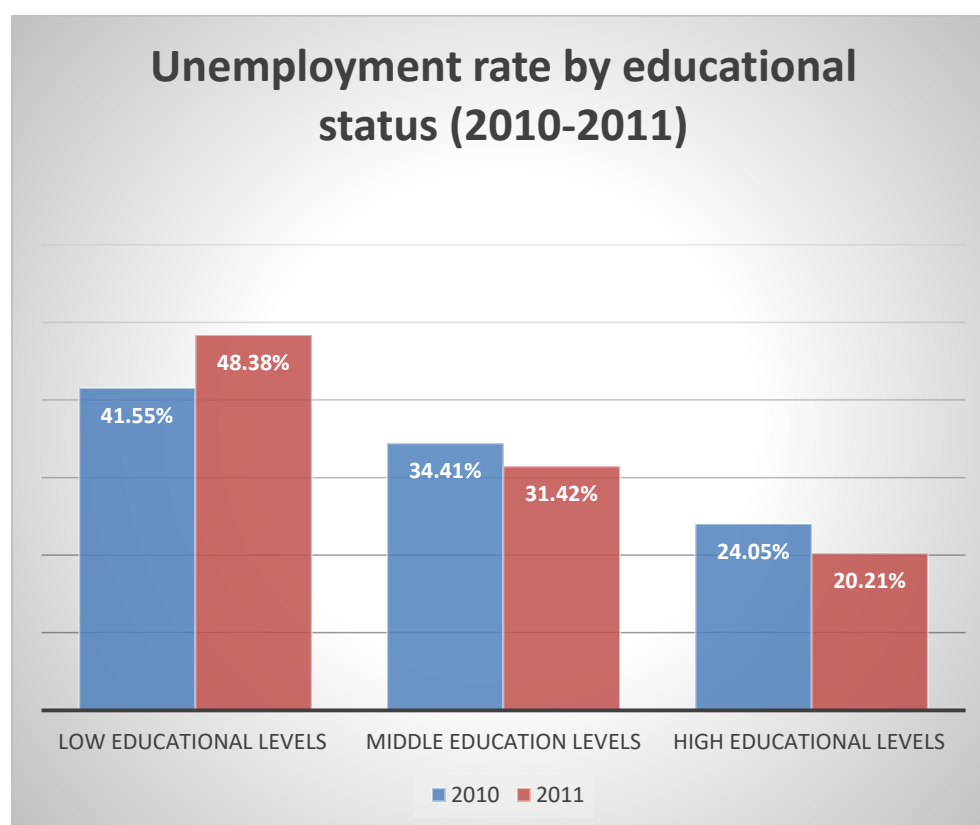
Figure 6.4: Unemployment rates by educational status (2010-2011).

Table 6.9 and Figure 6.5 clearly reveal that the unemployment problem in Syria is concentrated among the young as the majority of unemployed were below 40 years old (92.6%

and 83.7% in 2010 and 2011 respectively). Youth unemployment (15-24) represented around 52% of the total unemployment rate in both 2010 and 2011.

Age group	2010		2011	
	No.	%	No.	%
15 - 24	247,662	51.99%	453,907	52.40%
25 - 29	111,211	23.35%	182,997	21.12%
30 - 34	53,302	11.19%	88,645	10.23%
35 - 39	28,966	6.08%	51,691	5.97%
40 - 44	16,001	3.36%	30,748	3.55%
45 - 49	7,509	1.58%	23,939	2.76%
50 - 54	6,952	1.46%	14,766	1.70%
55 - 59	2,362	0.50%	8,874	1.02%
60 - 64	1,659	0.35%	4,233	0.49%
65 +	720	0.15%	6,484	0.75%
Total	476,344	100.00%	866,284	100.00%

Table 6.9: Unemployment rates by age group (2010- 2011).
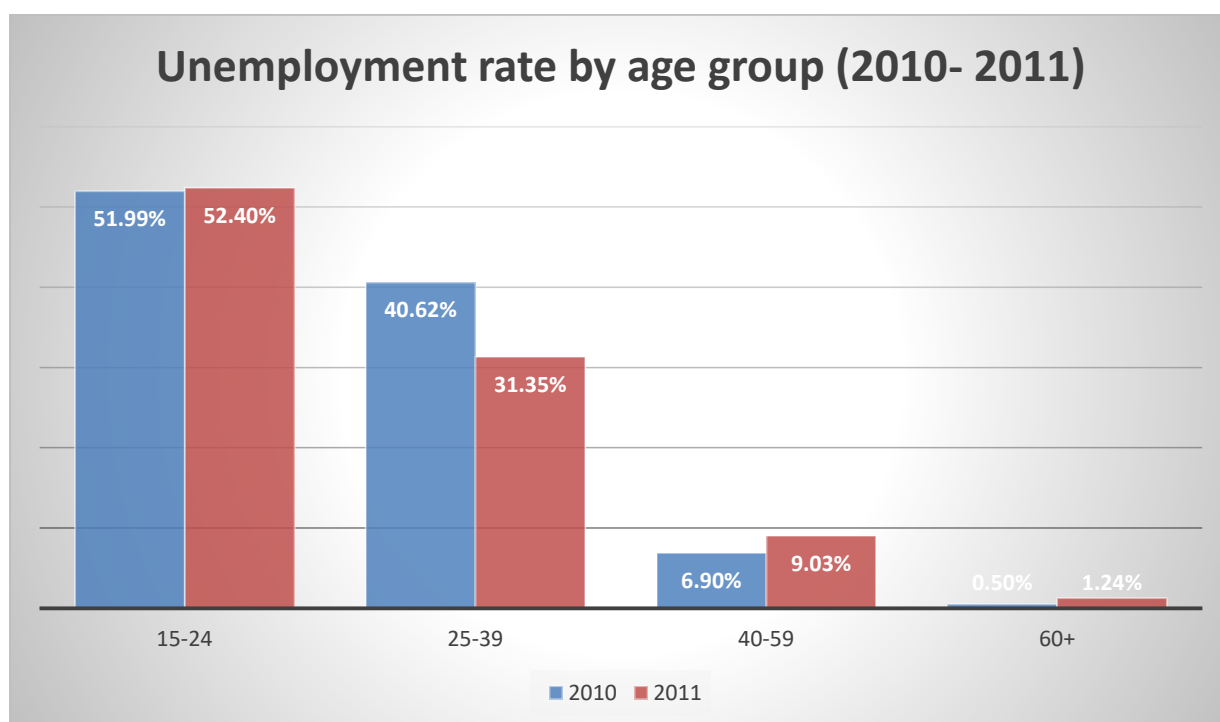
Figure 6.5: Unemployment rates by age group (2010- 2011).

According to Ovensen and Sletten (2007), the unemployment rates among males drops considerably as men become middle-aged as a result of the strong social norm in Syria (and in the Middle East in general) that men are the breadwinners and are required to provide for their

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families. As a result of this, at a certain age, men have to work and will accept any job (even if it does not match their qualification) to be able to provide for their families (Ovensen and Sletten, 2007). The participation rate of males, between the ages of 25 to 45 year old, in the labour market increases to almost 100% (Ovensen and Sletten, 2007). By contrast, women are not expected to provide for the family and many choose not to work but become housewives instead.

6.5 Employments by Sector

Syrian workers can belong to one of three employment sectors: public (directly controlled by the government), private, and other sector types (i.e. common, cooperative, family and domestic). The largest category is the private sector (both organised and unorganised) employing 72.86% of the total workforce in 2010. This is followed by the public sector with 26.91% while other sector types represent only 0.24% of the total (see Table 6.10 and Figure 6.6).

Sector	2010	2011
Public sector	26.91%	30.09%
Private sector	72.86%	69.69%
Common/ Cooperative/ Family/ Domestic	0.24%	0.22%
Total	100.00%	100.00%

Table 6.10: Workers' distribution (15 years and over) by sector.
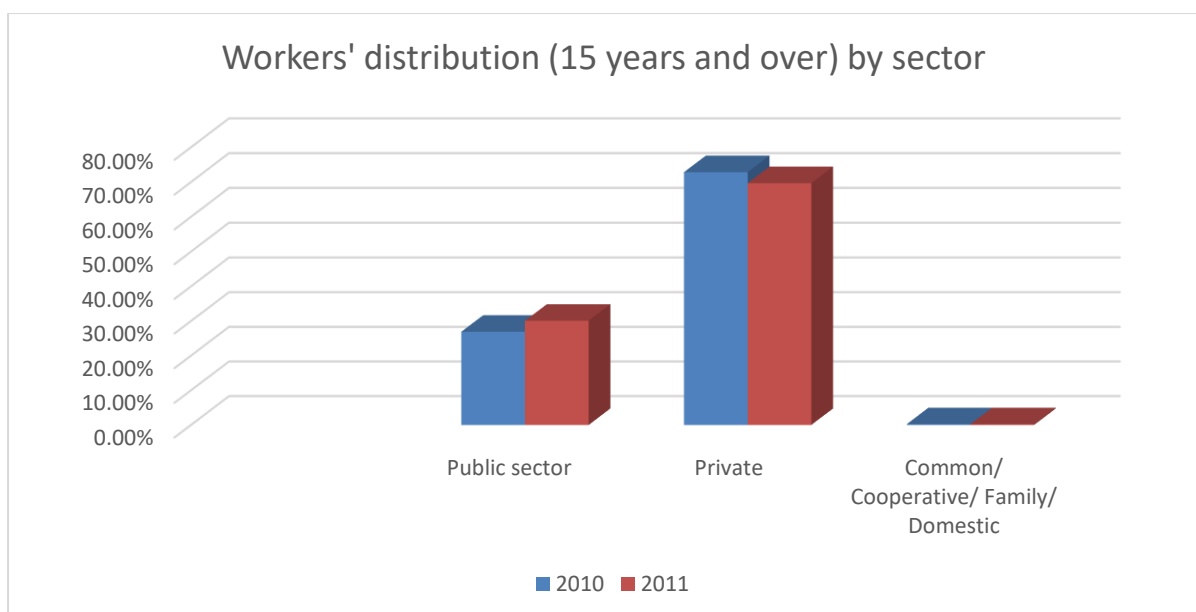
Figure 6.6: Workers' distribution (15 years and over) by sector.

Table 6.11 and Figure 6.7 show that females work mainly in the public sector as, in 2010, more than 56% of the total female workers worked in the public sector compared to 23% for males who worked in the same sector. In other sectors, the distribution of females was 22.11% in the organised private sector and 21.42% in the unorganised private sector compared to 46.27% and 30.92% for males respectively.

	% Labour by sectors and gender		
	Total	**Male**	**Female**
Public sector	26.91%	22.58%	56.21%
Organised private	43.16%	46.27%	22.11%
Unorganised private	29.70%	30.92%	21.42%
Collective/Cooperative/ Domestic/ Family	0.24%	0.23%	0.26%
	100.00%	100.00%	100.00%

Table 6.11: Distribution of the Syrian labour force (%) by sector and gender (adapted from the labour force survey, Syria, 2010).
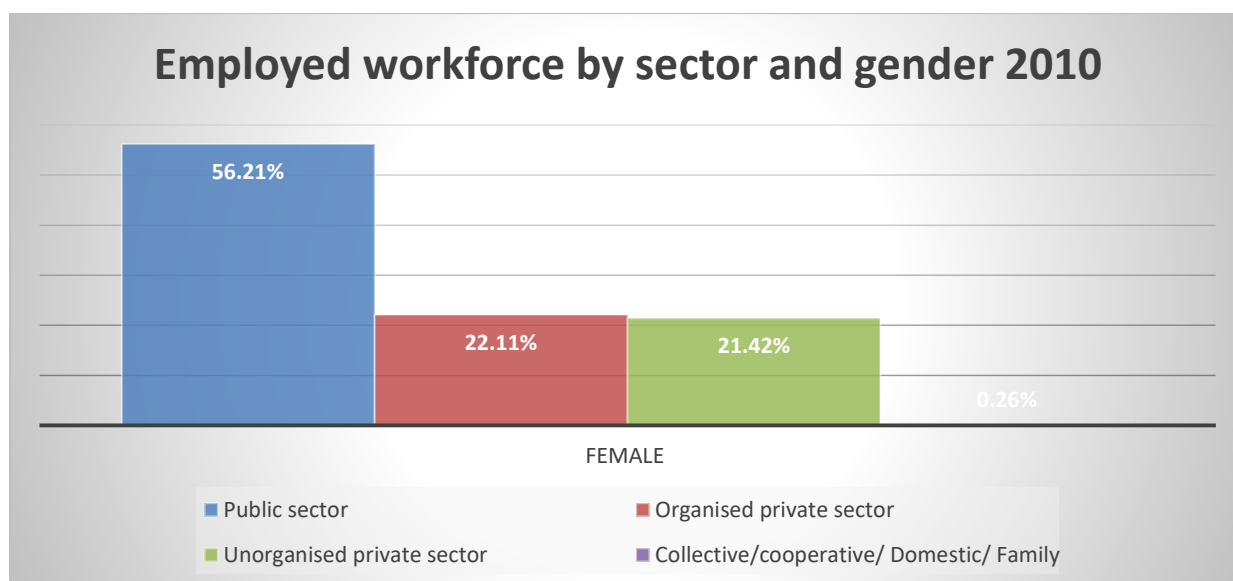
Figure 6.7: Employed workforce by sector and gender (2010).

The same conclusion could be drawn from looking at the male-female ratio in the sectors (Table 6.12) as 27% of the public sector workers were females, while females comprised 14% and 7% from the total number of workers in the collective and private sectors respectively in 2010. Also, the proportion of female public workers increased from 24% in 2004 to 28% in 2011. The share of females in the private sector is the least among the sectors as they comprised 8% of the total workers in the private sector in 2004, dropping to 6% in 2011.

Sector	2004		2009		2010		2011	
	Males	Females	Males	Females	Males	Females	Males	Females
Public	75.80%	24.20%	73.80%	26.20%	73.10%	26.90%	72.20%	27.80%
Private	91.90%	8.10%	93.10%	6.90%	93.10%	6.90%	94.10%	5.90%
Collective/ Cooperative	83.50%	16.50%	80.00%	20.00%	85.90%	14.10%	76.90%	23.10%

Table 6.12: Relative distribution of paid workers by sector for 2004, 2009, 2010 & 2011.

6.6 Employment by Main Industry

According to the labour force survey (2010), the total number of employed workers in Syria was then just over 5 million, from which more than 4 million were males and less than 1 million were females. Of these, one quarter (25%) worked in service, just over (14%) in agriculture, almost (8%) in transportation & communication and (2.63%) in money, insurance & real estate (Table 6.13). The remaining half was divided between building & construction,

industrial occupations, and the hotels & restaurants trade. Figure 6.8 below shows the distribution of the employed workforce in different economic activities by gender. It is clear from Figure 6.8 that the female labour force is concentrated in selected economic activities, especially in service and agriculture with 58% and 22% of the total female labour force respectively.

	% Labour by economic activity and gender			% Male-female by economic activity		
	Total	**Male**	**Female**	**Male**	**Female**	
Agriculture	14.32%	13.17%	22.16%	80.08%	19.92%	100%
Industrial	16.43%	17.57%	8.71%	93.17%	6.83%	100%
Building & construction	16.23%	18.55%	0.53%	99.58%	0.42%	100%
Hotels & restaurants trade	17.85%	19.55%	6.39%	95.39%	4.61%	100%
Transportation & communication	7.78%	8.69%	1.65%	97.27%	2.73%	100%
Money, insurance & real	2.63%	2.59%	2.90%	85.80%	14.20%	100%
Service	24.75%	19.89%	57.65%	70.00%	30.00%	100%
	100.00%	100.00%	100.00%			

Table 6.13: Distribution of the Syrian Labour Force (%) by economic activity and gender (adapted from the labour force survey, Syria, 2010).
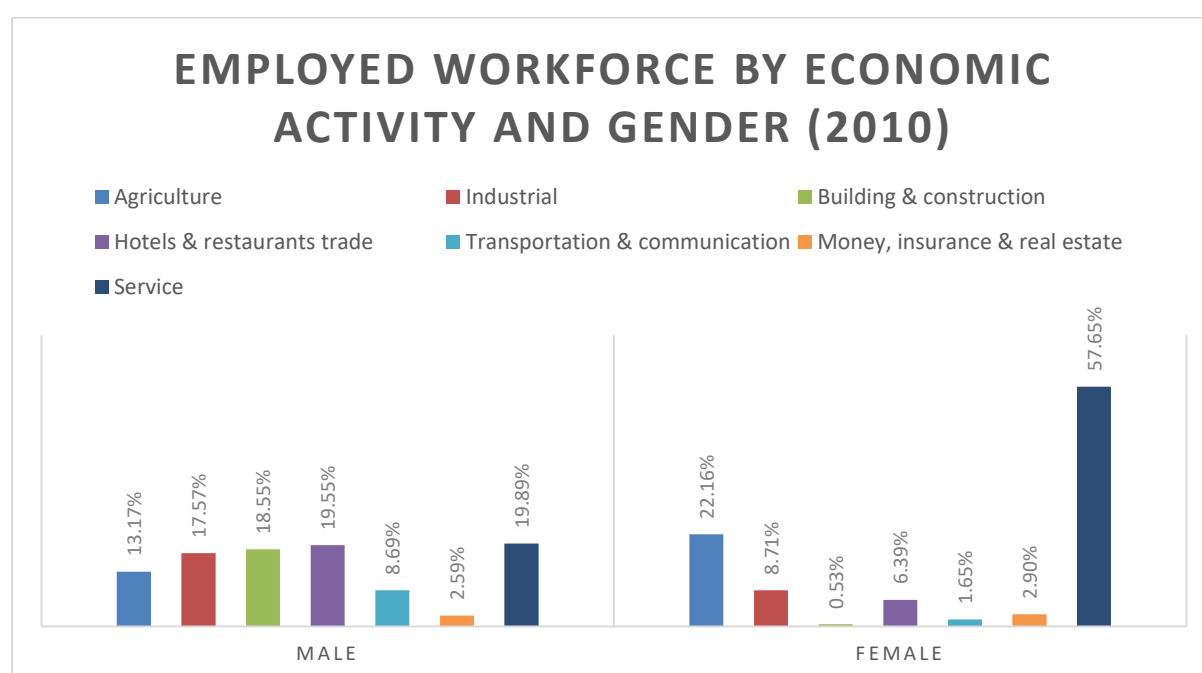
Figure 6.8: Employed workforce by economic activity and gender (2010).

Displaying statistics from 2010, Figure 6.9 shows that some industry types, often those that are physically demanding or controlled by social norms, are dominated by males, such as building and construction (99.58% males), and transportation and communication (97.27%

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males). On the other hand, some industry types welcome females, such as service (30% females) and agriculture (20% females). According to Islam and Abdel-Fadil (2005), the high representation of females in low-productivity activities, such as agriculture and services (over 80% of the total female workers in 2010), gives an indication of the gender discrimination in the Syrian labour market.

Male-female % by economic activity (2010)

	AGRICULTURE	INDUSTRIAL	BUILDING & CONSTRUCTION	HOTELS & RESTAURANTS TRADE	TRANSPORTATION &…	MONEY, INSURANCE & REAL ESTATE	SERVICE
Female	19.92%	6.83%	0.42%	4.61%	2.73%	14.20%	30.00%
Male	80.08%	93.17%	99.58%	95.39%	97.27%	85.80%	70.00%
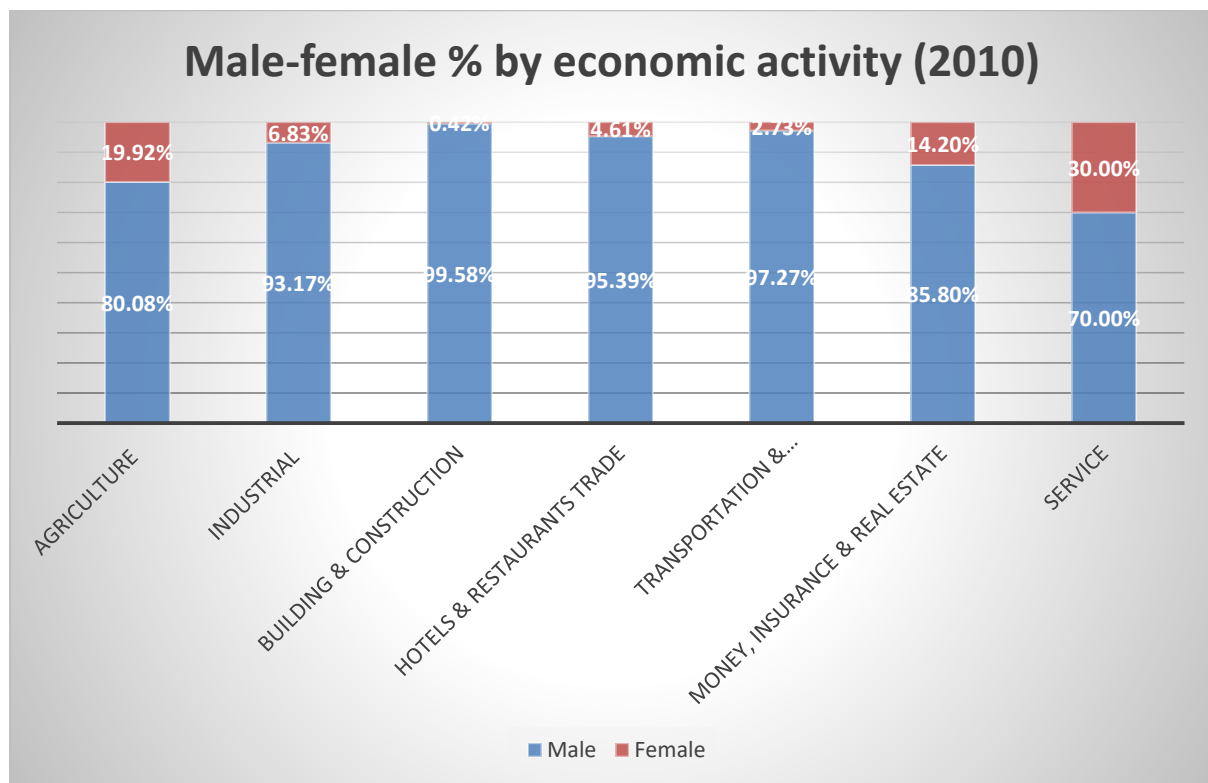
■ Male ■ Female

Figure 6.9: Male-female (%) by economic activity (2010).

Looking at the pattern of the workers' distribution within industry in 2001, 2004 and 2011 (Table 6.14), it is clear that the percentage of workers in agriculture dropped from 30% in 2001 to 18% in 2004 and then to 13% in 2011. This could be the result of huge migration from rural to urban areas. This reduction in agricultural jobs affected women mainly as females working in agriculture dropped from 55% of the total female workers in 2001 to 12% in 2011.

	2001			2004			2011		
	Males	**Females**	**Total**	**Males**	**Females**	**Total**	**Males**	**Females**	**Total**
Agriculture	25.20%	55.40%	30.40%	17.00%	27.90%	18.60%	13.35%	12.30%	13.20%
Industry	15.20%	6.40%	13.70%	14.40%	7.70%	13.40%	17.10%	8.75%	16.05%
Building and construction	14%	1%	11.80%	22.05%	4.40%	19.50%	17.45%	0.70%	15.40%
Hotels and restaurants	17.10%	2.50%	14.50%	13.70%	3.20%	12.20%	19.75%	4.85%	17.90%
Transportation	6.10%	1.20%	5.30%	6.90%	1.00%	6.10%	7.20%	2.20%	6.50%
Money and real estate	1.80%	1.10%	1.70%	1.90%	2.00%	1.90%	2.90%	3.10%	2.90%
Services	20.60%	32.40%	22.60%	24.05%	53.80%	28.30%	22.25%	68.10%	28.05%
Total	100.00%	100%	100%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table 6.14: Workers' distribution by economic activity for years 2001, 2004 & 2011.

It is obvious from Figure 6.10 that female jobs were concentrated in agriculture in 2001 but that this shifted to services in 2011. For males, the percentages almost remained the same across the years with some falls in agricultural jobs and increases in building and construction work.
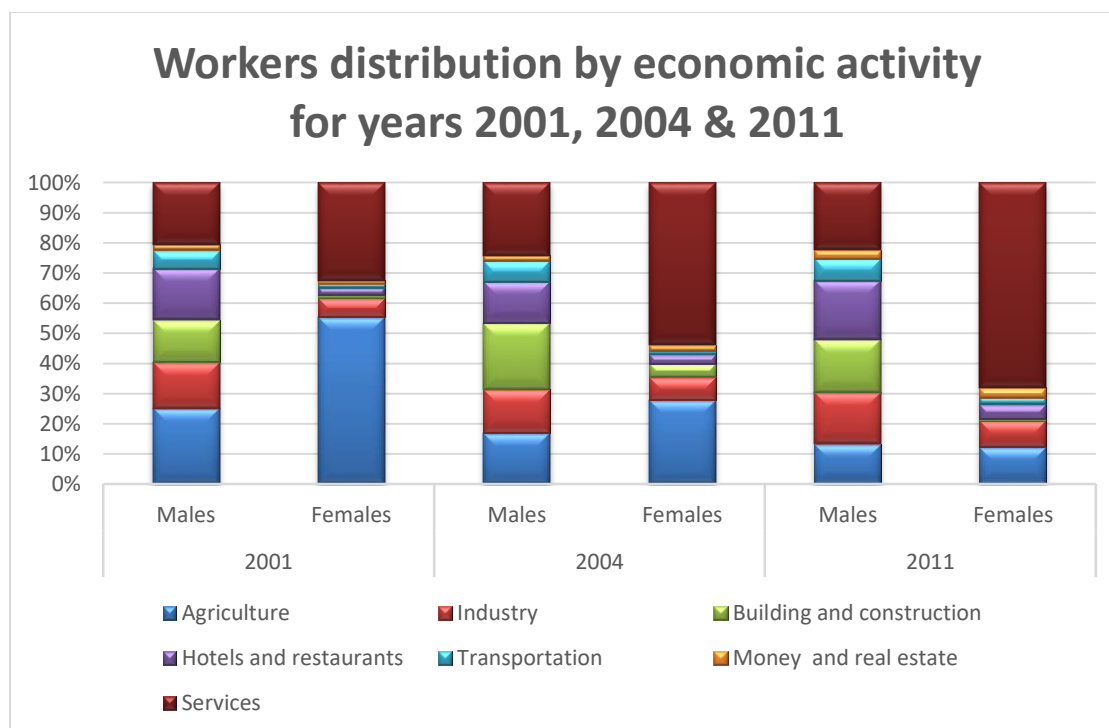
Figure 6.10: Workers' distribution by economic activity for years 2001, 2004 & 2011.

6.7 Employment by Main Occupation

In the previous section, employment was classified according to the industries (agriculture, building and construction, industrial, etc.). This section classifies employment according to occupation (e.g. administrators and clerks, agricultural workers …). The review of the labour force characteristics according to occupation gives some primary insights into occupational segregation in the Syrian labour market. Table 6.15 below shows that agriculture workers and production workers together make up more than 50% of the total employment across all the studied years.

Occupations	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Administrators and clerks	10.00%	8.00%	10.60%	11.10%	10.90%	11.40%	10.20%	9.00%	8.80%	7.90%	9.30%
Professionals and technicians	11.80%	11.20%	11.70%	12.30%	13.70%	14.60%	14.10%	15.10%	16.80%	16.50%	20.10%
Sales and services	14.70%	15.60%	16.00%	17.20%	17.60%	18.40%	17.80%	20.10%	19.90%	20.60%	19.80%
Agriculture workers	29.45%	29.80%	26.20%	18.40%	19.45%	19.30%	19.00%	16.85%	15.30%	14.30%	13.35%
Production workers	34.05%	35.40%	35.50%	41.00%	38.35%	36.30%	38.90%	38.95%	39.20%	40.70%	37.45%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 6.15: Workers' distribution by occupation for years 2001 - 2011 (%).

Figure 6.11 shows that production workers were the dominant occupation across all years from 2001 to 2011 and agriculture workers were ranked second after the production workers until 2003. However, the position of agriculture dropped considerably from 2004 onward.
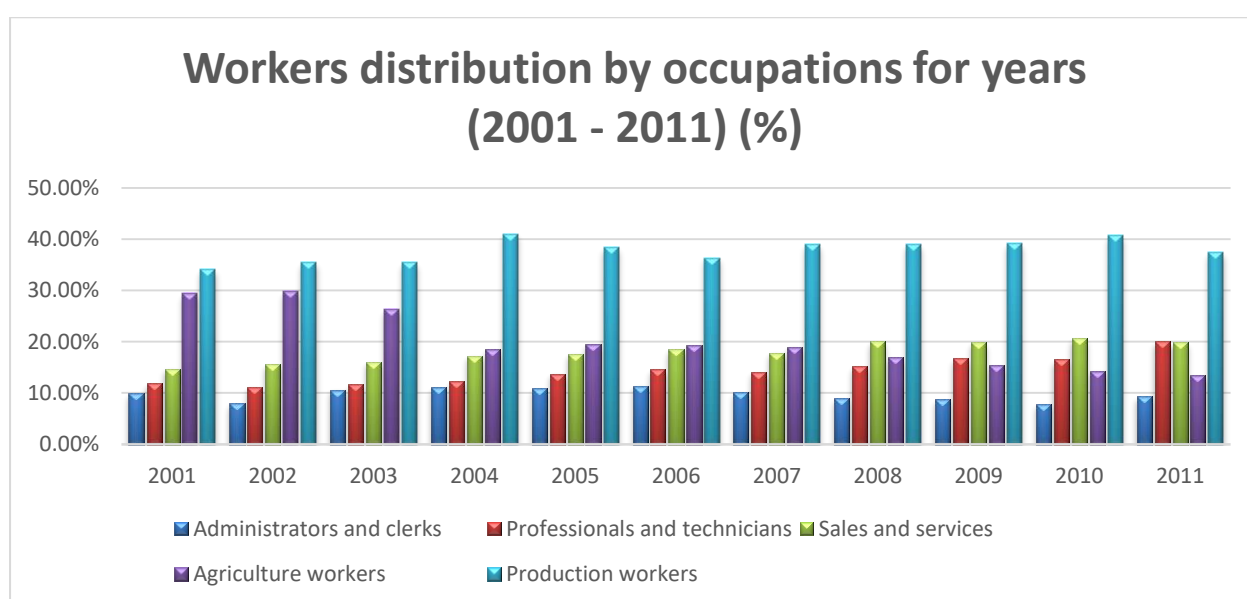
Figure 6.11: Workers' distribution by occupations for years (2001 - 2011) (%).

6.8 Employment Status

Employment in Syria could be divided into four types: employer (businessman), self-employed, paid worker, unpaid worker. The majority of workers in Syria are paid workers followed by the self-employed. When comparing males and females across the years, it is clear that paid work remains the dominant type for both sexes across the years. Thus, it is worth noting that the concentration of this type of job (paid work) has increased since 2001when it was 49.20% total (49.70% males. 46.70% females). This increased to 61.80% total (59.50% males. 78.30% females) in 2009 and then to 62.60% total (59.80% males. 83.00% females) in 2011. (See Table 6.16 and Figure 6.12.)

Years		Businessman	Self-employed	Paid worker	Unpaid worker	Total
2001	Males	9.80%	29.70%	49.70%	10.80%	100.00%
	Females	1.40%	7.80%	46.70%	44.10%	100.00%
	Total	8.30%	25.90%	49.20%	16.60%	100.00%
2004	Males	7.50%	21.90%	58.60%	12.00%	100.00%
	Females	2.40%	8.30%	68.90%	20.40%	100.00%
	Total	6.80%	19.90%	60.10%	13.20%	100.00%
2009	Males	4.40%	32.90%	59.50%	3.20%	100.00%
	Females	0.80%	9.50%	78.30%	11.40%	100.00%
	Total	4.00%	30.00%	61.80%	4.20%	100.00%
2010	Males	4.60%	30.86%	61.87%	2.67%	100.00%
	Females	0.98%	11.68%	76.70%	10.64%	100.00%
	Total	4.12%	28.34%	63.82%	3.72%	100.00%
2011	Males	4.90%	32.90%	59.80%	2.40%	100.00%
	Females	1.00%	7.80%	83.00%	8.20%	100.00%
	Total	4.50%	29.70%	62.60%	3.20%	100.00%

Table 6.16: Relative distribution of workers by employment status during 2001, 2004, 2009, 2010 & 2011 (%).
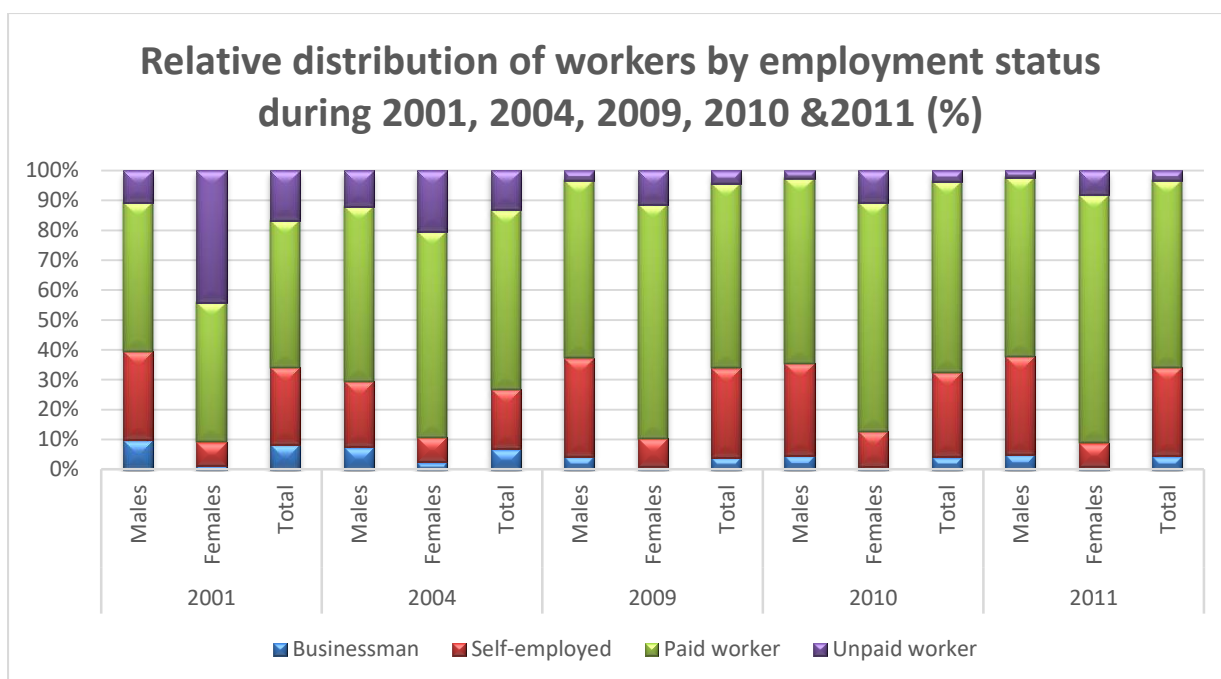
Figure 6.12: Relative distribution of workers by employment status during 2001, 2004, 2009, 2010 & 2011 (%).

Reviewing the distribution by sex within each type of job (Table 6.17 and Figure 6.13) in 2010 as an example, it can be seen that females were extensively represented in unpaid work (37.65% compared to 15.81%, 5.42% and 3.12% in paid work, self-employed and employer types respectively); this again gives an indication of gender discrimination in the Syrian labour market.

	% Male-female by employment status		
	Male	**Female**	**Total**
Employer (Business man)	96.88%	3.12%	100.00%
Self-employed	94.58%	5.42%	100.00%
Paid worker	84.19%	15.81%	100.00%
Unpaid family worker/other	62.35%	37.65%	100.00%

Table 6.17: Distribution of the Syrian labour force (%) by employment status and gender (adapted from the labour force survey, Syria, 2010).
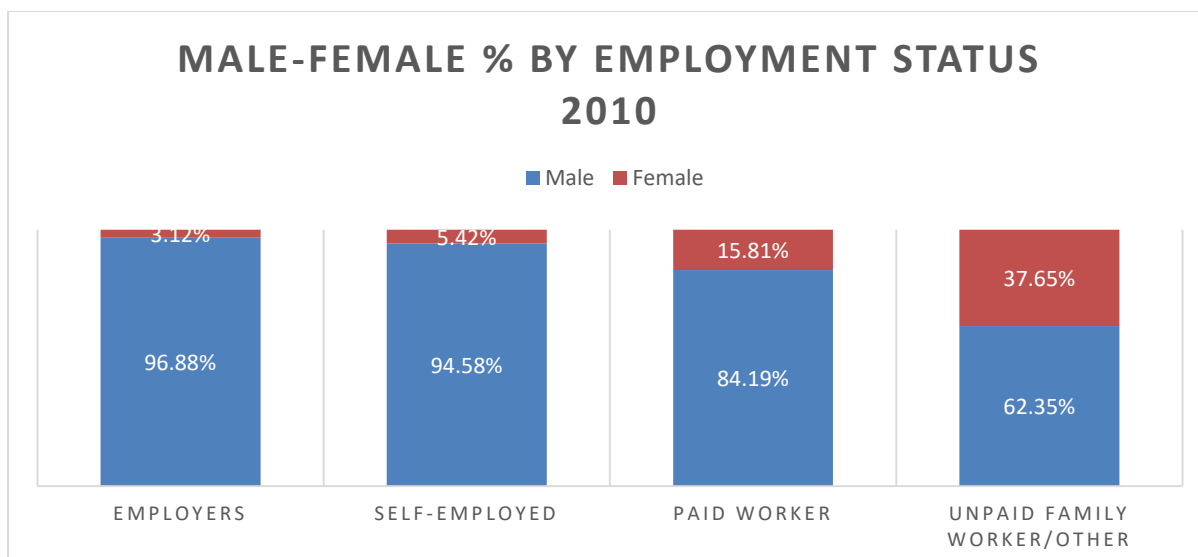
Figure 6.13: Distribution of the Syrian labour force (%) by employment status and gender (adapted from the labour force survey Syria, 2010).

6.9 Employments by Region

Syria has 14 governorates (called *Muhafazat*) that can be geographically grouped into six regions: "*the Damascus region* (Damascus city); *the southern region* (Rural Damascus, Sweda, Dara and Quneitra); *the middle region* (Homs and Hama); *the coastal region* (Tartos and Latakia); *the northern region* (Edleb and Aleppo); and *the eastern region* (Rakka, Der Elzor and Hasakeh)" (Ovensen and Sletten, 2007, p.9).

Table 6.18 shows that the highest unemployment rate in 2010 was in the Quneitra governorate with 19.2%, followed by Lattakia with 15.6% while the lowest unemployment rates were in Aleppo with 4.9% then Hama at 5.5%. This situation changed with the beginning of the crisis in 2011 when the highest unemployment rate was in Deir -ez-Zor with 23.5% followed by AL –Sweida with 22.4% while Aleppo continued to have the lowest unemployment rate of 7.6% followed by Damascus Rural with 8.7%.

Comparing the six Syrian regions together (see Table 6.18 and Figure 6.14), it reveals that, in 2010, the highest unemployment rate was in the coastal region (17.64%) followed by the eastern region (14.11%) while the lowest was in the northern region and the middle region with 5.83% and 6.61% respectively (compared to the national rate of 8.6%). The situation in 2011 severely affected employment in the Eastern region, turning the unemployment rate from 14.11% in 2010 to 30.44% in 2011. Employment in the coastal region and in Damascus was almost unaffected by the situation.

Regions	Governorate	2010		2011	
		No.	%*	No.	%*
The Damascus region	**Damascus**	54,026	10.2%	58,842	11.2%
		54,026	**10.2%**	**58,842**	**11.2%**
The Northern region	**Aleppo**	53,538	4.9%	92,876	7.6%
	Idleb	23,801	7.5%	57,900	16.8%
		77,339	**5.83%**	**150,776**	**9.63%**
The Middle region	**Homs**	34,408	6.9%	84,392	16.5%
	Hama	27,086	5.5%	47,537	9.9%
		61,494	**6.61%**	**131,929**	**13.3%**
The Coastal region	**Lattakia**	54,560	15.6%	69,699	19.1%
	Tartous	40,722	14.3%	49,621	15.6%
		95,282	**17.64%**	**119,320**	**17.48%**
The Southern region	**Damascus Rural**	48,246	6.1%	67,239	8.7%
	Dar'a	19,864	9%	29,813	13.3%
	AL -Sweida	13,871	12.9%	25,904	22.4%
	Quneitra	4,096	19.2%	3,620	17.8%
		86,077	**8.21%**	**126,576**	**11.16%**
The Eastern region	**AL- Hasakeh**	53,633	15.1%	170,135	38.8%
	Deir -ez-Zor	33,947	13.2%	63,095	23.5%
	AL- Rakka	14,546	6.8%	45,611	21.9%
		102,126	**14.11%**	**278,841**	**30.44%**
Total		476,343	8.6%	866,285	14.9%
* Is calculated as the percentage of the unemployment figure divided by the total labour force figure					

Table 6.18: Unemployment rate by governorates and regions (2010- 2011).
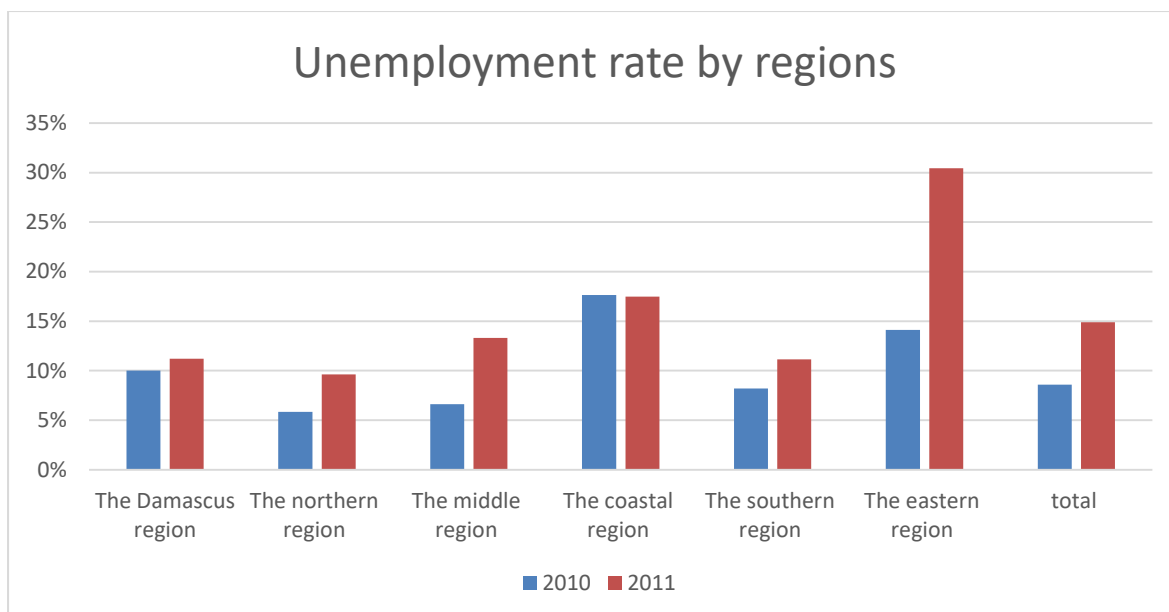
Figure 6.14: Unemployment rate by regions 2010-2011.

Table 6.19 and Figure 6.15 report on the workers' distribution among governorates and regions by sex for the years 2010 and 2011. In 2010, it is obvious from the table that the level of participation of females in the labour force in the Coastal region (22.31%) was significantly higher than the rest of the regions in Syria; this was followed by the Middle region (17.92%). The labour force participation rate of females varied significantly between Governorates from 23.44%, 21.38%, 21.42% and 20.95% in Tartous, Lattakia, Hama and Deir -ez-Zor respectively to as low as around 6% in AL- Hasakeh and Aleppo. The situation did not change significantly in 2011 as, in all regions, the female labour participation rate increased slightly, apart from in the Eastern region where the rate of female participation dropped from 11.72% in 2010 to 8.72% in 2011. AL- Rakka was the most affected Governorate in the Eastern region as female participation dropped from 8.73% in 2010 to 2.14% in 2011. These differences in the participation of females in the labour force between regions and Governorates could be due to the social and cultural differences between them.

Regions	Governorate	2010		2011	
		Male	Female	Male	Female
The Damascus region	Damascus	87.39%	12.61%	84.70%	15.30%
		87.39%	**12.61%**	**84.70%**	**15.30%**
The Northern region	Aleppo	93.71%	6.29%	95.23%	4.77%
	Idleb	90.02%	9.98%	87.45%	12.55%
		92.89%	**7.11%**	**93.65%**	**6.35%**
The Middle region	Homs	85.58%	14.42%	84.93%	15.07%
	Hama	78.58%	21.42%	83.51%	16.49%
		82.08%	**17.92%**	**84.21%**	**15.79%**
The Coastal region	Lattakia	78.62%	21.38%	75.32%	24.68%
	Tartous	76.56%	23.44%	77.35%	22.65%
		77.69%	**22.31%**	**76.29%**	**23.71%**
The Southern region	Damascus Rural	89.24%	10.76%	88.76%	11.24%
	Dar'a	88.23%	11.77%	84.83%	15.17%
	AL -Sweida	80.59%	19.41%	77.72%	22.28%
	Quneitra	87.12%	12.88%	97.28%	2.72%
		88.24%	**11.76%**	**87.15%**	**12.85%**
The Eastern region	AL- Hasakeh	93.06%	6.94%	95.73%	4.27%
	Deir -ez-Zor	79.05%	20.95%	80.27%	19.73%
	AL- Rakka	91.27%	8.73%	97.86%	2.14%
		88.26%	**11.74%**	**91.28%**	**8.72%**
Total		87.12%	12.88%	87.56%	12.44%

Table 6.19: Workers' distribution by governorates, regions and sex (2010 - 2011).
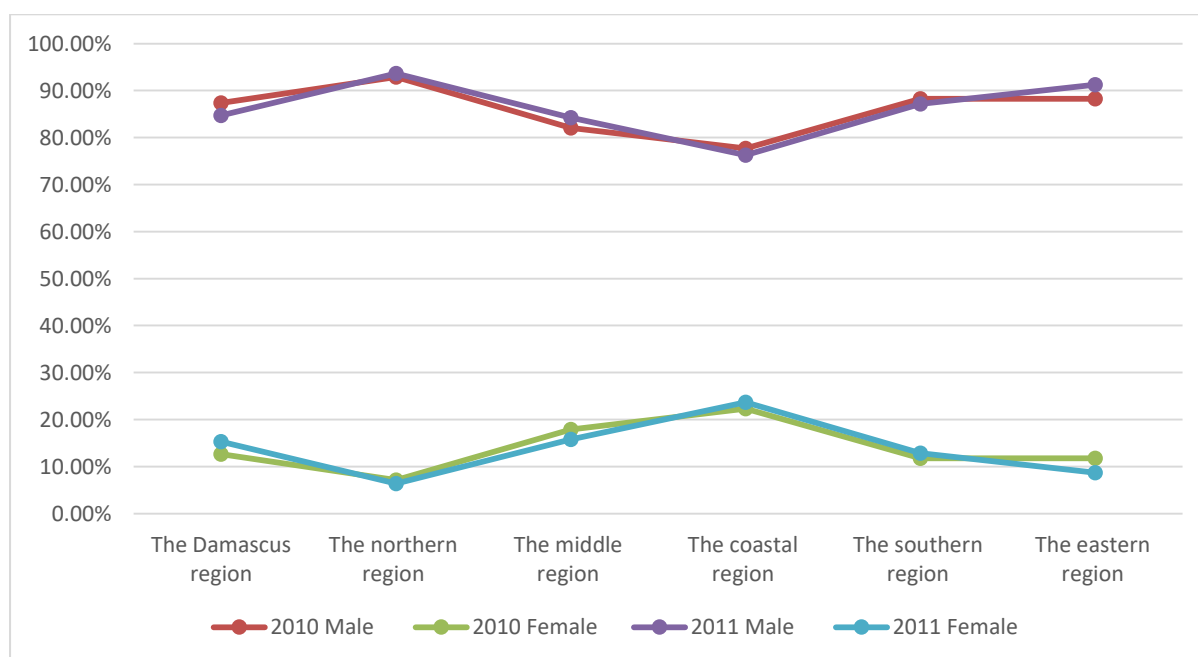
Figure 6.15: Workers' distribution by regions and sex (2010 - 2011).

6.10 Employments by Place of Living

Individuals may live in either rural or urban areas in Syria where all governorates "mohafazat" have both urban and rural areas except Damascus city, where there is no rural area, and Quneitra, where there is no urban development. Table 6.20 shows that around 56% of the population (those over 15 years of age) lived in urban areas compared to 44% who lived in rural areas in Syria in 2010. The distribution of males and females between the areas is similar to the total distribution, with a slight difference of 1% of male over represented in urban areas and 1% more females in rural areas.

	Male	Female	Total
Urban	3,656,703 (56.20%)	3,570,223 (55.38%)	7,226,926 (55.79%)
Rural	2,849,753 (43.80%)	2,876,041 (44.62%)	5,725,794 (44.21%)
Total	6,506,456 (100%)	6,446,264 (100%)	12,952,720 (100%)

Table 6.20: Population >15 by residence (numbers and %) in 2010.

Studying the distribution of the Syrian labour force according to economic activity and place of living (see Table 6.21), it can be seen that agriculture is the main activity in rural areas as 88.27% of the agricultural activities take place in rural areas compared to 11.73% in urban situations. Building & construction and, to a lesser extent, service industries are almost equally distributed between urban and rural areas.

Economic Activity	Urban	Rural
Agriculture	11.73%	88.27%
Industrial	72.16%	27.84%
Building & construction	46.21%	53.79%
Hotels & restaurants trade	76.10%	23.90%
Transportation & communication	61.84%	38.16%
Money, insurance & real estate	83.26%	16.74%
Service	59.79%	40.21%
Total	56.43%	43.57%

Table 6.21: Distribution of the Syrian labour force (%) by economic activity and place of living (2010) (adapted from the labour force survey, Syria, 2010).

The Syrian labour force is predominantly male, especially in some activities such as building and construction, in both rural and urban areas. A comparison of male-female

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distribution across activities in urban and rural areas reveals that rural females are concentrated in agricultural activities followed by services (low productive activities), while in urban areas females are mainly concentrated in services. Thus, in general, in urban areas, the female labour force is smaller than in rural areas.

	Urban			Rural		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**
Agriculture	77,243	7,706	84,950	502,518	136,545	639,060
Industrial	563,054	36,198	599,252	210,751	20,495	231,245
Building & construction	377,175	1,866	379,041	439,541	1,611	441,154
Hotels & restaurants trade	660,142	26,638	686,780	200,685	14,954	215,635
Transportation & communication	236,680	6,652	243,332	146,033	4,090	150,124
Money, insurance & real estate	95,085	15,546	110,634	18,914	3,329	22,243
Service	487,746	260,288	748,036	388,009	114,959	502,965
Total	2,497,132	354,895	2,852,028	1,906,448	295,980	2,202,430

Table 6.22: Distribution of the Syrian labour force by economic activity, gender and place of living (2010) (adapted from the labour force survey, Syria, 2010).

6.11 Employments by Level of Educational Attainment

The percentages of employed females with intermediate institute and/or University educations more than doubled from 16.15% and 7.75 % in 2001 to 35.70% and 25.70% in 2011 respectively. From Table 6.23 and Figure 6.16 it is clear that recently females have started to take their education seriously as it is their passport into the labour market. The share of females with no education has dropped from 37.80% in 2002 to 11.60% in 2011. As a result, by 2011, more than 60% of all working females had received a higher education (intermediate institute and University); this was up from 24% in 2001.

Similarly, although less dramatic, the share of working males with higher education attainment (intermediate institute and University) increased from around 11% in 2002 to 16% in 2011. The share of working males dropped only at the level of elementary educational attainment from 44.40% in 2002 to 33.90% in 2011.

Educational attainment		No-study	Elementary	Preparatory	Secondary	Intermediate Institutes	University and above	Total
2001	**Males**	22.90%	44.40%	13.80%	8.10%	5.00%	5.80%	100.00%
	Females	37.80%	23.00%	7.50%	7.80%	16.15%	7.75%	100.00%
	Total	**25.50%**	**40.70%**	**12.60%**	**8.10%**	**6.90%**	**6.20%**	**100.00%**
2004	**Males**	22.65%	45.50%	11.95%	8.35%	5.35%	6.20%	100.00%
	Females	31.55%	11.30%	8.10%	11.25%	24.95%	12.85%	100.00%
	Total	**43.30%**	**20.90%**	**11.40%**	**8.70%**	**8.20%**	**7.50%**	**100.00%**
2009	**Males**	19.10%	42.90%	15.50%	9.40%	6.30%	6.80%	100.00%
	Females	13.70%	14.00%	9.20%	13.80%	28.70%	20.60%	100.00%
	Total	**18.40%**	**39.30%**	**14.70%**	**10.00%**	**9.10%**	**8.50%**	**100.00%**
2010	**Males**	23.90%	39.60%	14.50%	9.30%	6.00%	6.70%	100.00%
	Females	19.60%	12.60%	9.00%	11.70%	26.80%	20.30%	100.00%
	Total	**23.30%**	**36.10%**	**13.80%**	**9.70%**	**8.70%**	**8.40%**	**100.00%**
2011	**Males**	22.10%	33.90%	17.00%	11.00%	7.80%	8.20%	100.00%
	Females	11.60%	7.20%	9.60%	10.20%	35.70%	25.70%	100.00%
	Total	**20.80%**	**30.60%**	**16.10%**	**10.90%**	**11.30%**	**10.30%**	**100.00%**

Table 6.23: Relative distribution of workers by educational status and gender during 2001, 2004, 2009, 2010 and 2011.
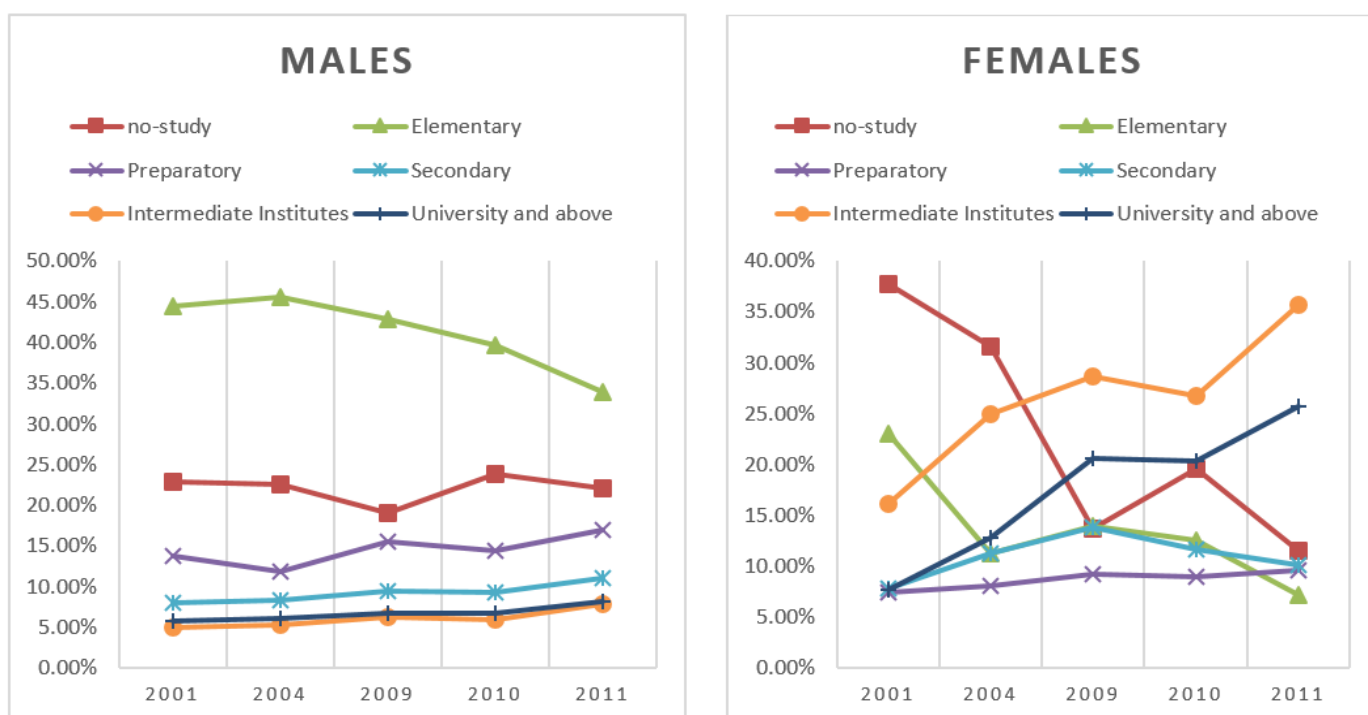
Figure 6.16: Relative distribution of female and male workers by educational status during 2001, 2004, 2009, 2010 and 2011.

Table 6.24 and Figure 6.17 show the distribution of workers (male vs female) according to different educational qualifications and age groups. This was adapted from Syria's Labour Force Survey, 2010. As can be seen from the table, in all age groups and for all qualifications, the percentage of males holding a qualification is higher than that for females in the same age group. However, the higher the qualification (at a university or intermediate institute level, for example), these differences become reduced. This means that females have a greater chance of participating in the work force when they are more educated.

	University		Intermediate institutes		Secondary		Preparatory		Elementary		No study	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
15 - 19	--	--	63.76%	36.24%	77.16%	22.84%	92.47%	7.53%	95.94%	4.06%	91.56%	8.44%
20-39	59.02%	40.98%	56.85%	43.15%	82.16%	17.84%	91.62%	8.38%	95.33%	4.67%	88.26%	11.74%
40-59	76.11%	23.89%	63.26%	36.74%	87.01%	12.99%	91.00%	9.00%	95.44%	4.56%	86.85%	13.15%
60+	95.85%	4.15%	92.34%	7.66%	100.00%	0.00%	97.85%	2.15%	99.44%	0.56%	60.83%	39.17%

Table 6.24: Distribution of the Syrian labour force (%) by education and age group: male vs female (adapted from the labour force survey, Syria, 2010).
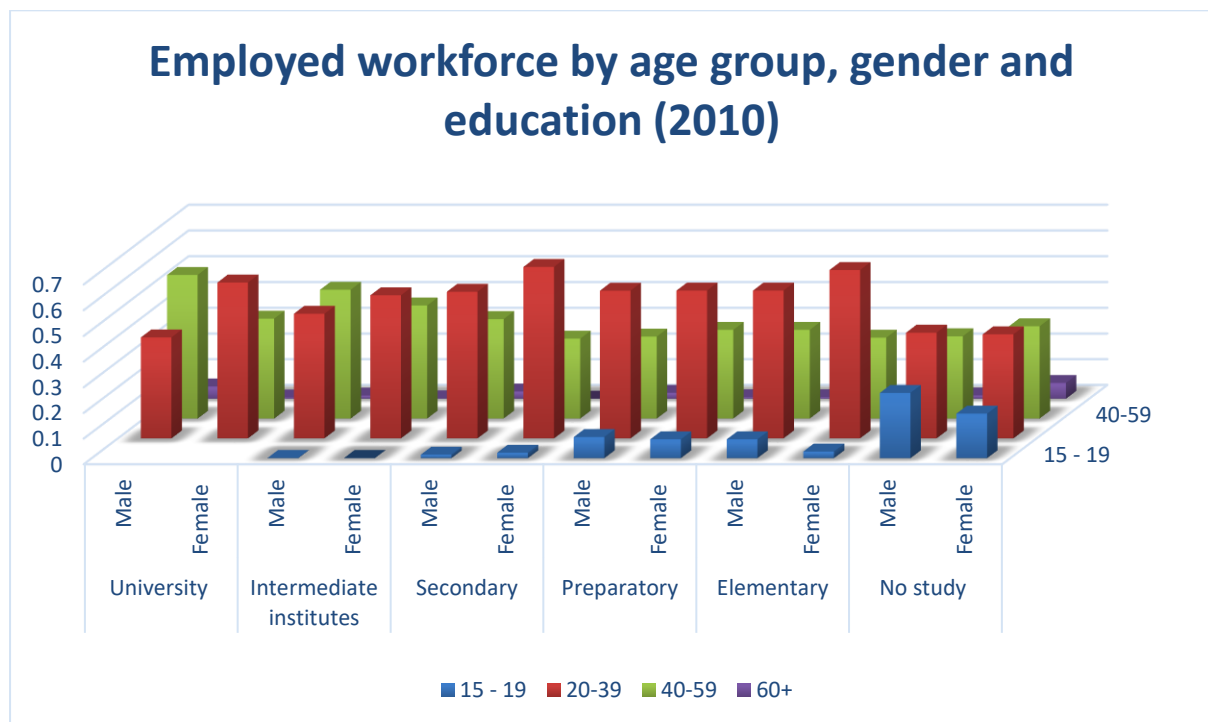
Figure 6.17: Distribution of the Syrian labour force (%) by education and age group: male vs female (adapted from the labour force survey, Syria, 2010).

From Table 6.25 it is noticeable that the age groups 20-29 and 30-49 years are the more educated in both genders; they show higher percentages across all educational levels. For females, this is particularly obvious in the 20-29 years age group where, for example, 60.65% of female holders of university qualifications are from this age group compared to only 39.36% of males. This suggests that recently more attention has been paid to education, especially for females, as higher education for them means a better chance of guaranteeing a better job.

	University		Intermediate institutes		Secondary		Preparatory		Elementary		No study	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
15 - 19	--	--	0.11%	0.09%	1.34%	2.13%	8.26%	7.35%	7.35%	2.60%	25.45%	17.36%
20-39	39.36%	60.65%	48.53%	55.72%	57.08%	66.72%	57.50%	57.54%	57.54%	65.50%	41.19%	40.56%
40-59	55.86%	38.89%	50.12%	44.03%	38.74%	31.14%	31.93%	34.55%	34.55%	31.53%	32.07%	35.95%
60+	4.79%	0.46%	1.25%	0.16%	2.84%	0.00%	2.31%	0.55%	0.55%	0.37%	1.29%	6.13%
total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table 6.25: Distribution of the Syrian labour force (%) by age group, gender and education (adapted from the labour force survey, Syria, 2010).

	University and above			Intermediate institutes			Secondary			Preparatory			Elementary			No study		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Public sector	60.21%	78.41%	65.86%	68.06%	94.86%	78.73%	41.31%	64.82%	44.99%	24.48%	47.54%	26.41%	13.63%	15.52%	13.71%	7.03%	5.24%	6.83%
Organised P S	36.68%	19.23%	31.26%	25.28%	4.52%	17.02%	41.51%	30.20%	39.74%	48.78%	34.04%	47.54%	48.77%	39.32%	48.35%	50.39%	27.78%	47.94%
Unorganised P S	2.45%	2.00%	2.31%	6.19%	0.36%	3.87%	16.51%	4.98%	14.71%	26.50%	17.89%	25.78%	37.46%	44.95%	37.80%	42.55%	66.75%	45.16%
Other	0.67%	0.35%	0.57%	0.47%	0.26%	0.39%	0.66%	--	0.56%	0.24%	0.53%	0.26%	0.14%	0.21%	0.14%	0.04%	0.23%	0.06%
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

P S Private sector
Other: Collective/ Cooperative/Domestic/ Family

Table 6.26: Distribution of the Syrian labour force (%) by education and sector: male vs female (adapted from the labour force survey, Syria, 2010).
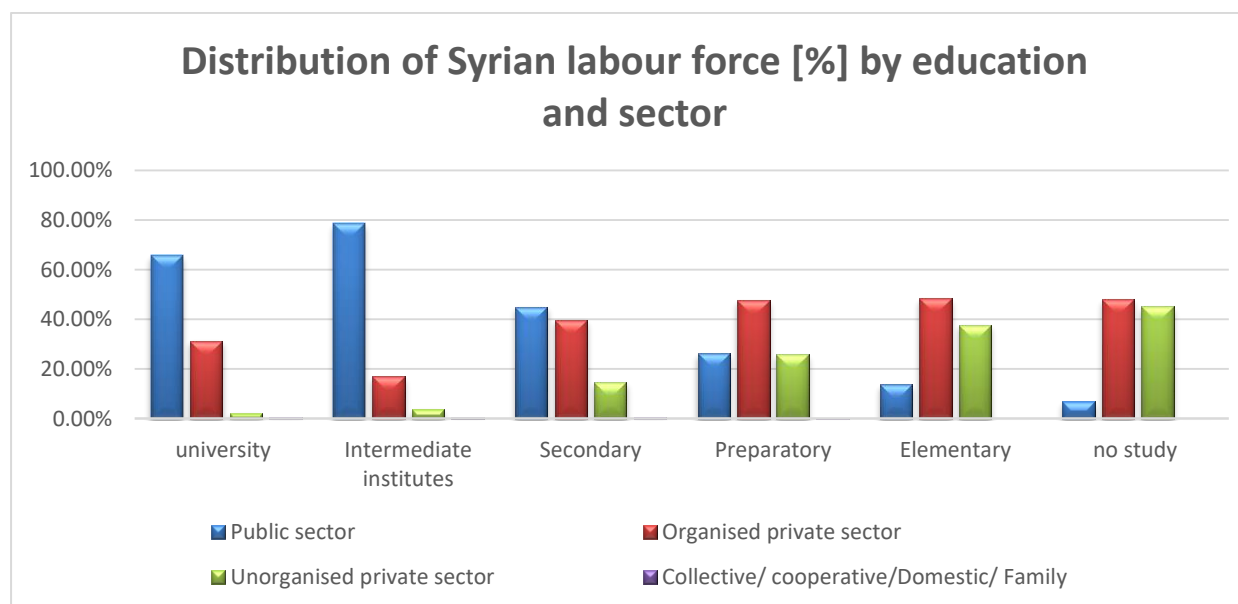
Figure 6.18: Distribution of the Syrian labour force (%) by education and sector (adapted from the labour force survey, Syria, 2010).

Tables 6.26 displays the distribution of Syrian workers across economic sectors according to their educational attainment and gender. Unsurprisingly, it can be seen from Table 6.26 and Figure 6.18 that the majority of workers with high educational qualifications (university and intermediate institutes) work in public sectors; around 66% of all university degree holders and 78% of all intermediate institutes degree holders work in this sector. On the other hand, the private sector (both organised and unorganised) has a majority of workers with lower than a secondary school level of education (around 50% of the total workers in each group), compared to 33% of university holders and 20% of intermediate institute holders who work for the private sector in its two divisions.

The distribution stays the same across the genders (Figure 6.19) as over 60% of all male employees holding a university degree and over 68% of all male employees holding intermediate institute degrees work in the public sector. The results are more dramatic for females as 78.41% of females holding university degrees and 94.86% of females holding intermediate institute degrees work in the public sector. However, the majority of less educated females tend to work in the unorganised private sector as 67% of the non-educated females and 45% of females with elementary education work in the unorganised private sector.

There seems to be a high correlation between the level of educational attainment and employment in the public sector in Syria (Kabbani and Kamel, 2007; Kabbani, 2009). In Syria, public sector employment is more attractive than work in the private sector. Therefore, the correlation between educational attainment and public sector employment in Syria may be because university graduates mainly pursue public employment for the job benefits and security it provides or because private businesses are reluctant to hire young people as a result of rigid labour laws and regulations. In addition, university education does not provide graduates with the required skills (Ovensen and Sletten, 2007; Kabbani and Kamel, 2007; Kabbani, 2009). Hence, young Syrians continue to seek higher education to a certain degree to increase their chances of securing a job in the public sector (Kabbani and Kamel, 2007; Kabbani, 2009).
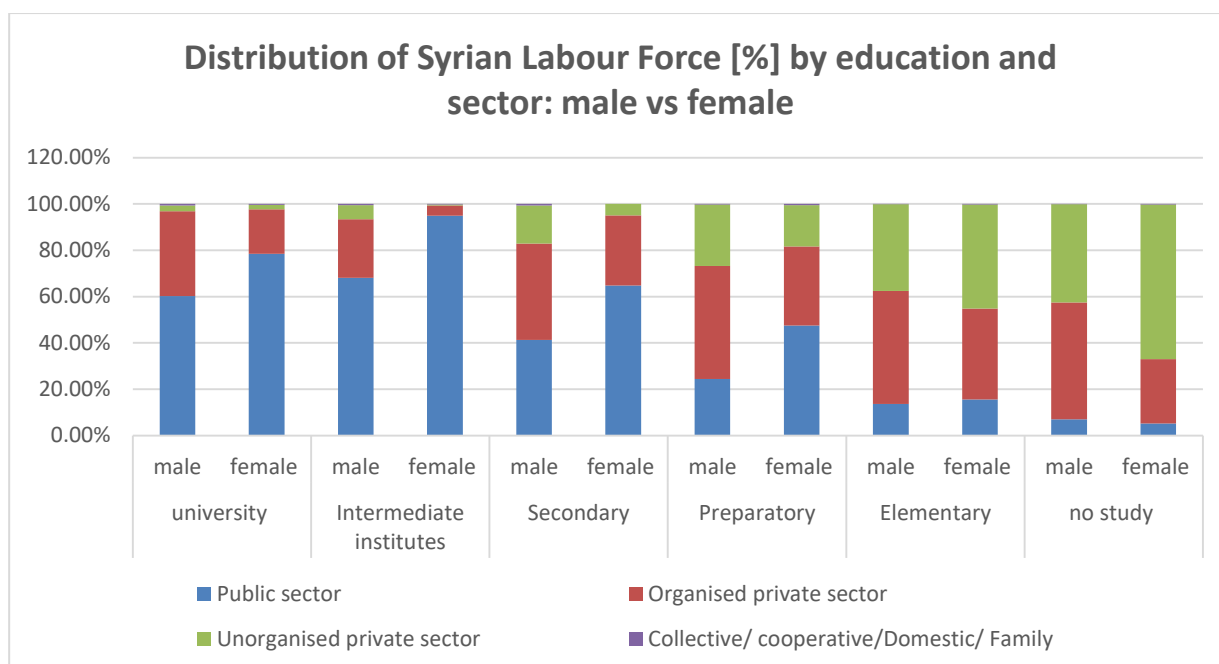
Figure 6.19: Distribution of the Syrian labour force (%) by education and sector: male vs female (adapted from the labour force survey, Syria, 2010).

In terms of the distribution of the educational attainment of the Syrian population (males vs females) according to their place of residence, Table 6.27 reveals that, for both sexes, educational attainment is higher in urban than in rural areas. The results are most noticeable for higher educational attainment. For example, in the "University and above" category, the results for males were at 74% in urban areas and 26% in rural situations; similarly, for females, these statistics were 78% urban and 21% rural.

	Male		Female	
	Urban	Rural	Urban	Rural
No study	47.86%	52.14%	43.52%	56.48%
Elementary	56.74%	43.26%	58.13%	41.87%
Preparatory	57.53%	42.47%	61.41%	38.59%
Secondary	60.44%	39.56%	67.77%	32.23%
Intermediate Institutes	60.18%	39.82%	69.46%	30.54%
University and above	73.91%	26.09%	78.41%	21.59%
Total	**56.20%**	**43.80%**	**55.38%**	**44.62%**

Figure 6.27: Distribution of the Syrian population (%) by education and location: male vs female (adapted from the labour force survey, Syria, 2010).

6.12 Employments by Wages Level

The average monthly salary in Syria has been steadily rising for both males and females. Table 6.28 shows that the average salary for males was higher than for females until 2006 when females' average salaries exceeded those of men.

Average of monthly salary (S.P)	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Males	6100	6502	6502	7768	8669	8961	10640	10967	11227	13697
Females	5730	5782	5782	7503	8834	9306	11253	11779	11981	15951
Total	6029	6380	6380	7727	8696	9017	10740	11096	11344	14069

Table 6.28: Average monthly salaries: 2002 – 2011.

Table 6.29 reveals that, in 2010, more than 36% of the salaries in Syria were between 7000 and 11000 S.P ($140-220) monthly while a good portion of employees (17.94%) received on average more than 15000 S.P monthly ($300). Comparing the average salary of males to that of females, Figure 6.20 shows that the majority of males (38%) received, on average, between 7000 and 11000 S.P compared to the majority of females (37%) who earned over 13000 S.P. A similar proportion of males and females were placed in the middle salary range (9000-13000 S.P).

Salary	Male	Female	Total
<5000	8.67%	10.97%	9.03%
5001-7000	12.18%	8.46%	11.60%
7001-9000	20.39%	12.96%	19.24%
9001-11000	17.20%	16.92%	17.15%
11001-13000	14.20%	13.85%	14.15%
13001-15000	10.61%	12.41%	10.89%
15000+	16.76%	24.43%	17.94%
	100%	100%	100%

Table 6.29: Distribution of the Syrian labour force (%) by salary range and gender (adapted from the labour force survey, Syria, 2010).
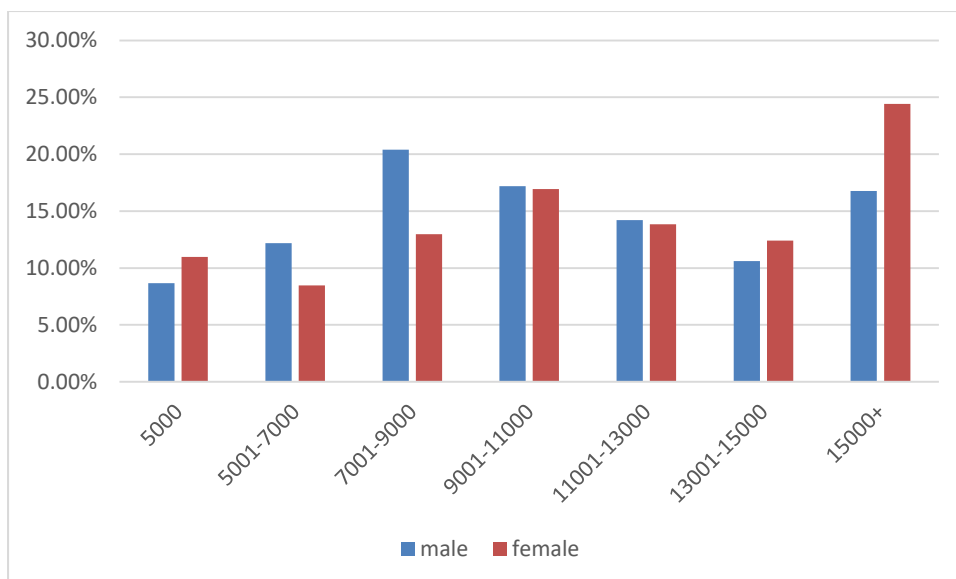
Figure 6.20: Distribution of the Syrian labour force (%) by salary range and gender (adapted from the labour force survey, Syria, 2010).

Table 6.30 shows the distribution for average monthly salaries by age group, educational attainment and economic activity in 2010. Part A of the table and Figure 6.21 show that the average salaries for males were higher than those for females until they reached a certain age (around the mid-30s).After this age, females' salaries tended to catch up with males' or even exceeded them at some points, such as for women in their 40, for example.

A-Age groups		
	Male	**Female**
15 - 19	6568	4979
20 - 24	8413	8054
25 - 29	10148	9680
30 - 34	10730	10665
39 - 35	11592	11661
40 – 44	13453	14103
45 - 49	14512	16277
50 - 54	15678	15816
55 - 59	16592	16423
+ 60	12910	14057
Total	**11227**	**11981**
B- Educational Attainment		
	Male	**Female**
No study	8764	5613
Elementary	10357	7132

Preparatory	10812	9916
Secondary	12478	10549
Intermediate Institutes	15071	14429
University and above	18098	14437
Total	**11227**	**11981**
C- Economic Activity		
	Male	**Female**
Agriculture	8350	4945
Industry	11318	9255
Building and construction	9361	11539
Hotels and restaurants	10442	9084
Transportation	12242	12807
Money and real estate	13969	12324
Services	12907	13355
Total	**11227**	**11981**

Table 6.30: The average of monthly salary by age group, educational attainment and economic activity (adapted from the labour force survey, Syria, 2010).
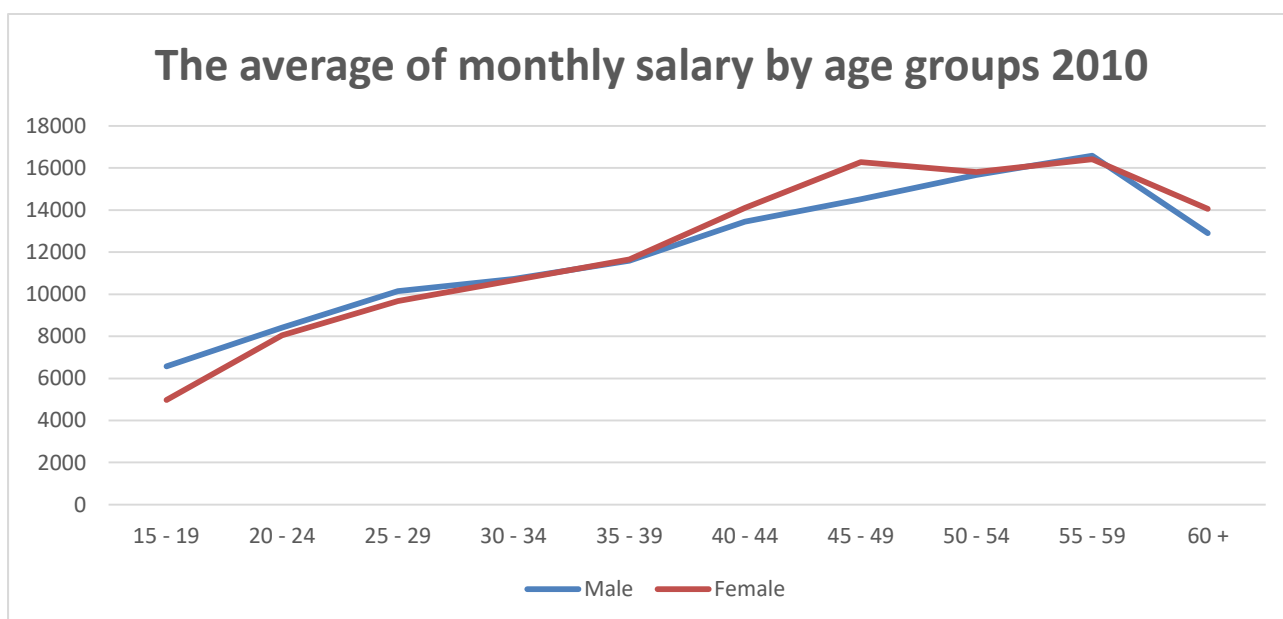
Figure 6.21: The average of monthly salary by age group (adapted from the labour force survey, Syria, 2010).

In terms of the average salary by educational attainment for males and females, part B in the table and Figure 6.22 reveal that, for all levels of educational attainment, males tend to receive, on average, higher salaries than their female counterparts. However, the differences tend to fade away with certain qualifications such as those from intermediate institutes.
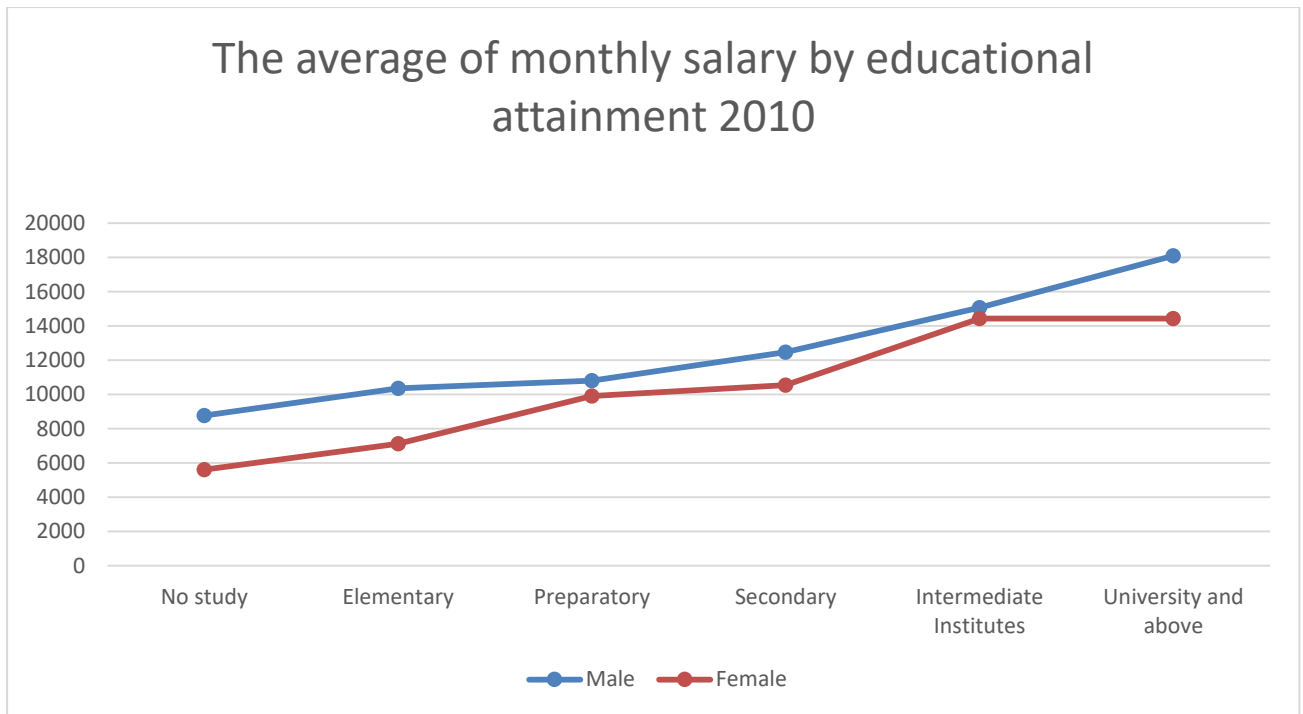
Figure 6.22: The average monthly salary by educational attainment (adapted from the labour force survey, Syria, 2010).

The third part in the table (part C) and Figure 6.23 compare the average monthly salary by economic activity. It is clear that the lowest wages for females are in the agriculture sector as most of this activity takes place in the poorer rural areas sometimes with no wages being paid since women are providing family help. Thus, females receive higher than average wages if they work in building and construction, and transport activities. Usually, in Syria, these two occupations are dominated by males and it is not usual for females to be engaged in them so this may explain the premium they are receiving as compensation. The results for occupations in services is expected as this is in general a female area of work and employers prefer females for this type of job.
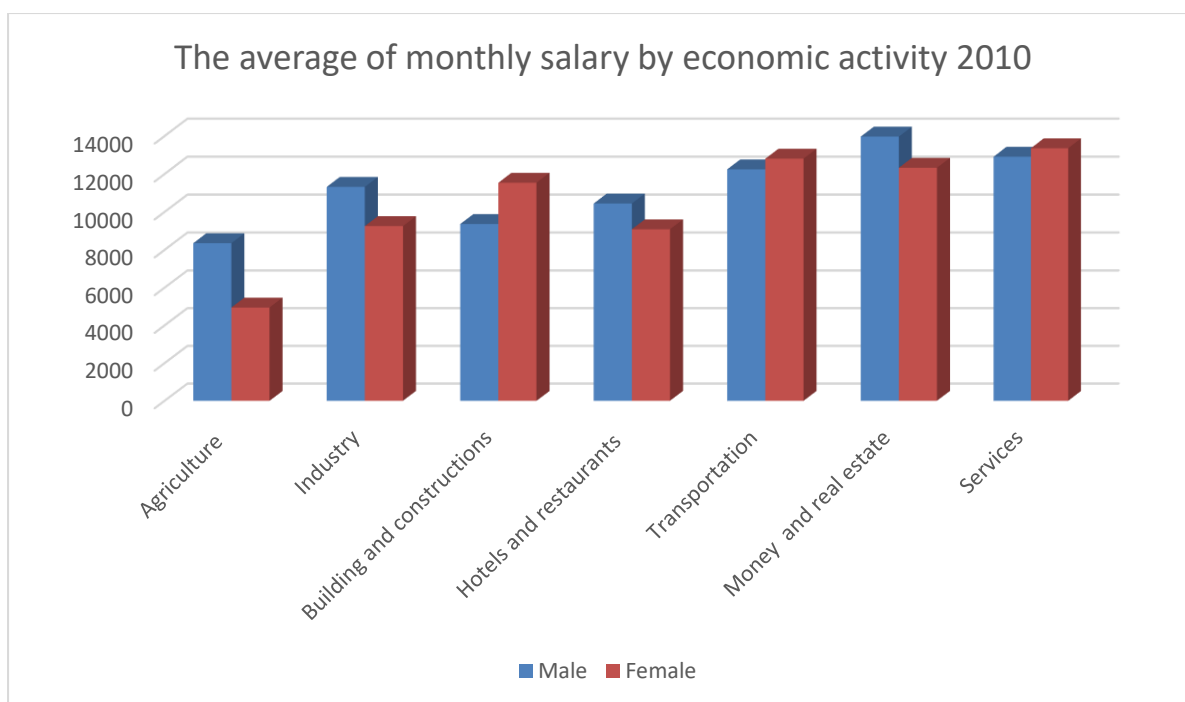
Figure 6.23: The average monthly salary by economic activity (adapted from the labour force survey, Syria, 2010).

The findings in Table 6.31 and Figure 6.24 show that, on average, public sector wages were higher than those in the private sector across all years from 2001 until 2011. Also, they show that public sector wages increased faster than those in the private sector. Surprisingly, wages in the third sector (the collective, cooperative, domestic and family) grew very fast, even exceeding wages in the other two sectors after 2008.

Sector	2001	2002	2005	2006	2007	2008	2009	2010	2011
Public	4923	6386	8364	9750	9931	12378	12730	13375	17044
Private	4782	5629	7304	7630	8040	9249	9634	9793	11268
Collective/ Cooperative / Domestic / Family	5898	7468	6520	7462	7593	10675	14836	16545	18158
Total	4859	6017	7756	8696	9017	10719	11096	11344	14069

Table 6.31: The average of monthly salary by sector for years 2001 – 2011.
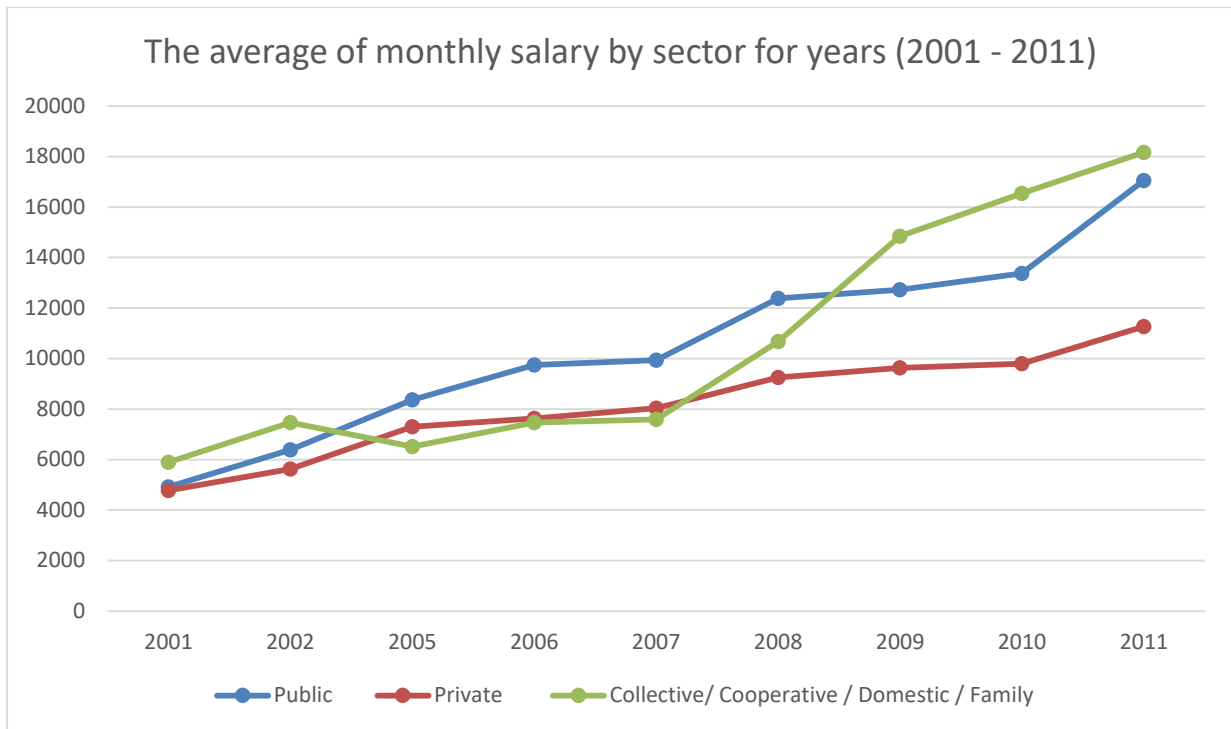
Figure 6.24: The average of monthly salary by sector for years 2001 – 2011.

6.13 Conclusion

In this chapter, the characteristics of the Syrian labour market were reviewed. This section covered the characteristics, participation rates and unemployment rates of the population in Syria. It also reviewed the distribution of gender across sectors, industries and occupations. The employment characteristics in terms of sectors, main industries, occupations, status, regions, locations, levels of education, and average wages were also analysed in this chapter. The outcomes of this chapter help in gaining an understanding of the research results.

Chapter 7: Empirical Results

7.1 Introduction

This chapter is dedicated firstly to present and comment on the results of wage equations for both males and females. As mentioned earlier, the final model was formed gradually, first by adding the variables of human capital, which are widely agreed to be less affected by discrimination. This was followed by the second model, which contains job variables as well as human capital variables, and finally, the ultimate model with full specifications (human capital, job, and social variables) was formulated.

Secondly, this chapter calculates the rates of return to education in Syria using both return to education years and educational attainments. Both estimates are presented for males, females and the whole sample on the three previously mentioned consecutive models.

Finally, Oaxaca decomposition results are discussed. In the same way as for the discussion of wage equations, the results of decomposition are presented using the human capital model first, followed by the decomposition based on the sequential inclusion of each group of variables to the model. Oaxaca's decomposition approach was employed with proportional weighted market returns (proposed by Cotton, 1988) for both males and females according to their weights in this study.

This chapter starts by reporting the results of the wage equations based on the sequential inclusion of groups of variables in the model. As explained earlier, this starts with human capital variables which are believed to have the greatest effect on an individual's wage and to be less affected by labour market discrimination. Having reported human capital variables, the work then moves to the next set of variables (job characteristic variables) which are supposed to carry more discrimination if compared to the human capital variables group and which therefore increase the explanatory power of the model. Finally, the social characteristics variables are added to the model in order to offer a thorough examination of the model with all the specifications included, thus explaining more of the variance of the dependent variable (lnW). All of the regressions above were completed first for males, then for females, and finally for the whole sample.

7.2 Wage Equations Results

Three groups of independent variables are included successively here in order to capture the effect of each group in determining an individual's wage. These groups of variables are: human capital, job characteristics, and social characteristics[23].

7.2.1 Human Capital Variables

The results of human capital specifications are reported in Table (7.1), as suggested by Human Capital Theory and as addressed widely by countless studies in different countries as being influential in an individual's earnings. Human capital variables in this study significantly affected the level of earnings for both males and females. All together, they explain 11.65% of earnings' variance for males, 20.24% for females, and 12.38% for the whole sample. All the coefficients resulting from the first model of human capital variables are significant at a .01 level for males, females and the whole group, with the exception of an elementary dummy variable for male regression which is significant at a .05 level. The following is a brief discussion of the variables included.

Table 7.1 Human Capital Wage Equation			
	Human		
	Male	**Female**	**Total**
Intercept	7.767***	7.3178***	7.7032***
Age	0.0461***	0.0459***	0.0353***
Age square	-0.0006***	-0.0005***	-0.0004***
Elementary	0.4309**	0.307***	0.4024***
Preparatory	0.5821***	0.5192***	0.5357***
Secondary	0.669***	0.63***	0.7285***
Intermediate	0.6262***	0.6966***	0.687***
University	0.8507***	0.8008***	0.8092***
Years in the job	0.0049***	0.0059***	0.0051***
N	**983**	**945**	**1928**
R^2	**11.65%**	**20.24%**	**12.38%**

*** Significant at the 0.01 level.
** Significant at the 0.05level.
* Significant at the 0.1 level.

Age and Age-squared: it is widely accepted that age increases an individual's earnings until a certain point in life, then earnings decline. To capture this, authors have included both

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[23] Diagnostic tests for all regressions were performed and reported in Appendix 2.

age and the squared form. Similar to the findings of most studies, age positively affected the earning for both males and females as well as for the whole sample. Men's and women's returns with regard to age were almost identical at 4.6%. In contrast to age, age-squared has a negative or trivial impact on the wages of the whole sample, and on males' and females' wages. It was intended to be so as this was included in the model to address the decrease of return to age after it reached its maximum.

Education levels[24]: education is theoretically supposed to have the greatest effect on an individual's earnings. In this study the levels of education, with the "no study" being the reference category, were found to have the highest impact on earnings for both males and females. Males' coefficients on elementary, preparatory, and secondary education levels (43.1%, 58.2%, and 66.9% respectively) were greater than females' (30.7%, 51.9%, and 63.0% respectively). Females' returns for intermediate education were noticeably greater than those for males, with coefficients of 69.6% compared to 62.6% for men. Then, males' returns for university education (85%) exceeded females' (80.0%). It was found that men's returns were greater than females' for all educational levels except for intermediate education.

Years in the job: this study has found that years spent in the current job had very little effect on earnings for both men and women and for the whole sample as well; the coefficients for this were: 0.5%, 0.6% and 0.5% respectively, indicating that both men and women have not been compensated well for their loyalty to their current employer.

Finally, by reviewing the returns with regard to human capital variables, it was found that male returns were better than females' for age, elementary, preparatory, secondary and university while female returns were better for intermediate, and years with the same employer.

7.2.2 Job Characteristics

In addition to human capital variables, Table (7.2) shows controls for job variables which are believed to have an impact on the individual's wage and to contribute further in explaining returns for both males and females. By adding job variables in the second set of regressions, human capital variables remained statistically significant with slightly different coefficients. As anticipated, job variables, together with human capital variables, explained more of the variance of the dependent variable and together they were able to explain 21.92%

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[24] More details about return to education in the Syrian labour market are discussed in Section 7.3.

of the variance of earning for the model of the pooled sample, 18.93% and 27.14% for the models of males and females respectively.

	+Job Characteristics		
Table 7.2: Human Capital and Job Characteristics' Wage Equation	**Male**	**Female**	**Total**
Intercept	7.3897***	7.2909***	7.4499***
Age	0.0433***	0.0353***	0.0322***
Age square	-0.0005***	-0.0004**	-0.0004***
Elementary	0.4117*	0.2421***	0.3042***
Preparatory	0.5423***	0.424***	0.4415***
Secondary	0.5984***	0.5414***	0.5864***
Intermediate	0.5696***	0.5896***	0.5596***
University	0.837***	0.7417***	0.7826***
Years in the job	0.0064***	0.0043**	0.0056***
Hours per week	0.0058***	0.0059***	0.0072***
Administrators & clerks	0.0952	0.225***	0.1335**
Production workers	0.1464***	0.0261	0.1087***
Professionals & technicians	0.2112***	0.1378**	0.2404***
Sales & services	0.1965***	0.095*	0.0908**
Private	0.0623	-0.1292***	-0.0683**
Building & construction	0.2074***	0.0872	0.1688***
Hotels & restaurants	0.0032	-0.1023*	-0.078
Industrial	0.1357*	-0.1558**	-0.0329
Insurance	0.3614	0.2659***	0.2803***
Transport & communication	0.199***	0.1635*	0.205***
Service	0.2541***	0.0651	0.1668***
N	**982**	**943**	**1925**
R2	**18.93%**	**27.14%**	**21.92%**

*** Significant at the 0.01 level.
** Significant at the 0.05level.
* Significant at the 0.1 level.

Work Load: as expected, work load has a positive effect on earnings. It was found that, statistically, there was no difference between men's and women's returns with regard to their weekly hours worked, both being roughly 0.06% and significant at a .01 level. This indicates that employers reward men and women for their weekly attendance at the same rate.

Occupation: by setting agricultural workers as the base category, and running the regressions for men, women and pooled, all the results for occupation dummies were statistically significant at least at a .05 level, except for "Sales & services" in the female regression at a level of .10, and both "Administrators & clerks" in the male regression and "Production workers" in the female regression; these were insignificant.

Women working as "Administrators & clerks" received 22.5% higher wages than those working in "Agriculture", compared to 9.5% for men. In contrast, men employed in "Production" earned 14.6% more than those in "Agriculture", while the coefficient of 2.6% was insignificant for women. Moving to "Professionals & technicians", it was found that the men's return of 21.1% was higher than the women's of 13.8%. In the same way, men made 19.6% more money from being employed in "Sales & services" compared to 9.5% for women. Hence, it was found that men's returns were higher than women's for all occupations examined in this study except for "Administrators & clerks" where women earned more than men.

Sector: the public sector was set as a reference and the private sector used for comparison. By running three regressions for males, females and pooled, it was concluded that individuals who worked in the private sector received 6.8% less earnings than those who worked in the public sector at a .05% significance level. The decrease in wages from being in the private sector was doubled for women who received 12.9% less at a .01 level. A completely different result was found in the men's case since the statistically insignificant coefficient suggests that they were paid 6% more if they were employed in the private rather than the public sector.

Industry: with the agricultural industry being the base category for the industry variables, the regressions for males, females and whole sample returned mixed significant and insignificant results on different variables. It was found that men benefitted by 20.7% from working in the "Building & construction" industry rather than working in "Agriculture", while the benefit was 16.9% for the pooled group, and the coefficient was 8.7% for women although this was insignificant. Women's earnings were found to be affected negatively (-10.2%) by working in the "Hotels & restaurants" industry compared to "Agriculture" at a .10 significance level, whereas men's earnings seemed not to be affected: 0.3%, an insignificant coefficient. Comparable significant outcomes were reached for "Industrial" professions for males and females, as men were positively affected by 13.5% at a .10 significance level while women were negatively affected by -15.5% at a level of .05. In the "Insurance" industry, women profited by 26.6% more income than those working in "Agriculture" at a .01 significance level. This was similar to the pooled 28% but the coefficient of 36% was insignificant for the men's regression. The results showed that working in "Transport & communication" was more profitable for women and further for men than working in "Agriculture" as men scored 19.9% at a .01 level while this figure was 16.3% at a .10 level for women and 20.5% at a .01 significance level for the pooled sample. Finally, being employed in the "Service" industry gave a bonus to males' earning by 25.4% at a .01 level, and by 16.7% at the same level for the

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pooled group, whereas the corresponding coefficient in the females' regression (6.5%) was statistically insignificant.

Roughly speaking, men's returns were better than those for females for all industry variables with the proviso that some of the estimated coefficients for males' and females' regressions were statistically insignificant and therefore not completely comparable.

7.2.3 Social Characteristics

The third and last stage of the successive model was attained by adding the social characteristics variables to both the human capital and job variables (see Table 7.3). In doing so, the final model was obtained with a full set of variables representing human capital, job and social characteristics. By adding the social characteristics variables to the first two sets, the significance levels of both human capital and job variables remained nearly unaffected, and the coefficients, to some extent, stayed unchanged. As anticipated, the full model offers more explanatory power of the variance of the dependent variable (LnW) for men, women and the pooled sample since the corresponding R^2 statistics were 25.35%, 31.31%, and 29.77% respectively.

Table 7.3: Human Capital, Job and Social Characteristics' Wage Equation			
	+Social Characteristics		
	Male	**Female**	**Total**
Intercept	7.8001***	7.6109***	7.7032***
Age	0.0258**	0.0295**	0.025***
Age square	-0.0004***	-0.0003*	-0.0003***
Elementary	0.4724**	0.2488***	0.3708***
Preparatory	0.5918***	0.4331***	0.5227***
Secondary	0.6639***	0.5236***	0.6323***
Intermediate	0.6234***	0.5933***	0.621***
University	0.8222***	0.7167***	0.7844***
Years in the job	0.0055***	0.0041**	0.0051***
Hours per week	0.0061***	0.0055***	0.0067***
Administrators & clerks	0.1008	0.2474***	0.1868***
Production workers	0.1335***	0.0149	0.091***
Professionals & technicians	0.1799***	0.1046*	0.1934***
Sales & services	0.1628**	0.0795	0.1021***
Private	0.0603	-0.0872*	-0.0347
Building & construction	0.1788***	0.1216**	0.1449***
Hotels & restaurants	-0.0366	-0.0924	-0.0848*
Industrial	0.0957	-0.155**	-0.0583
Insurance	0.293	0.2666***	0.265***

Transport & communication	0.178**	0.1817**	0.162***
Service	0.2115***	0.0939*	0.1424***
Family head	0.0605	0.0627	0.2468***
Single	-0.117*	-0.0527	-0.0165
Divorced	0.0099	-0.0419	-0.082*
Widow	0.0347	0.0341	-0.0992**
One child <5	-0.0577	-0.0928*	-0.0572
Two children <5	0.0978	-0.2987***	-0.043
Family number <5	0.1086**	-0.0346	-0.0047
Northern	-0.1547***	-0.1806***	-0.1615***
Coastal	-0.104**	-0.0607	-0.0695**
Middle	-0.3138***	-0.1727***	-0.2099***
Southern	-0.3216***	-0.2315***	-0.2682***
Eastern	-0.2435***	-0.2067***	-0.2096***
Urban	0.0539	0.0623*	0.0425
N	982	943	1925
R2	25.35%	31.31%	29.77%

*** Significant at the 0.01 level.
** Significant at the 0.05level.
* Significant at the 0.1 level.

Family Head: being the head of family was found to have significantly positive impact (24.7%) on returns for individuals in the pooled sample at a .01 level over those who were not a family head. However, this was found to have a statistically insignificant impact for both men and women.

Civil Status: with "Married" being the reference category for civil status, the three separate regressions for males, females and all returned insignificant (or with little significance) results. Women's regression coefficients were statistically insignificant for "Single", "Divorced", and "Widow" variables. Similarly, men's regression coefficients were also insignificant for both "Divorced" and "Widow" variables, but the coefficient (-11.7%) for the "Single" variable was significant at a .10 level, indicating that single men receive 11.7% less in wages than married men. Moving to the whole sample, the "Single" variable was not significant, whereas the "Divorced" and "Widow" variables were both significant at .10 and .05 respectively. These coefficients indicate that a divorced individual earns 8.2% less than his/her married counterpart; in the same way, a widowed individual makes about 10% less than someone who is married.

The Presence of a Child under 5 Years: this is one of the major determinants of women's work as it is well documented that the presence of a child under 5 years old usually limits the mother's ability to work. This factor restriction is expected to affect women's earning

negatively as they have to leave their job or move to a "manageable" work condition while it does not usually affect men's earnings. Using "No Child under 5" as a reference category, it was noticed that the presence of one/two children under 5 has no statistically significant effect on men's earning. In contrast, the female regression results indicated that the presence of one child under 5 reduced women's earning by 9.3% at a .10 significance level, and the presence of two children reduced women's earnings by 29.8% at a .01 level.

Family Members: it was concluded that there is a statistically significant relationship between men's income and their living in a household with fewer than 5 members. The earnings of men who live in families of 5 members or fewer are 10.8% (at a .05 level) higher than those of men who live in families of more than 5 members. However, the female regression results indicated no significant relationship between women's earnings and their family sizes.

Region: it is well established that there are differences in earnings with regard to different regions in any country, depending on cultural and economic dimensions, and the degree to which each region has developed and government policies have been implemented. Setting the capital, Damascus, as a reference category, the resulting coefficients which emerged from running separate regressions for males, females and the pooled group were all statistically significant at a .01 level for the Northern, Middle, Southern and Eastern regions. However, the Coastal region's coefficients were significant at a .05 level for men, indicating that men in this region earned 10.4% less than those in Damascus; this was similar to the pooled sample (-7%). However, the female regression coefficient was not significant for the Coastal region. In the Northern region, women were more disadvantaged (-18%) than men (-15.4) from being in this region rather than Damascus. Unlike in the Northern area, women who lived in the Middle, Southern and Eastern regions were disadvantaged less (-17.3%, -23.1%, -20.6% respectively) than men (-31.4%, -32.1%, 24.3% respectively) rather than living in Damascus. Hence, market returns were in favour of women for the dummy variables of all the regions with the exception of the Northern region where they were in favour of men.

Location: living in urban/rural areas is an important factor in determining the return as a result of different wage structures between the two locations. In this study, it was found that location has no statistically significant relationship with income for men and for the pooled sample. However, women's earning increased by 6.2% (at a .05 level) from working in an urban rather than a rural area.

Determinants of wage equations for males, females and the pooled sample are estimated and discussed in this section, focusing on the relative importance of each of these factors in explaining wages for the aforementioned three groups.

In accordance with other studies (e.g. Nasir, 1998), the human capital variables used in this study were found to be the most influential and educational level variables were found to have the greatest impact on earnings for the male, female and pooled models. Therefore, they deserved to be discussed in more detail which follows in the next section. Age and years spent in the current job were found to add an inconsiderable premium on both males' and females' earnings with a little advantage for men in the former and for women in the latter in the human capital model. However, both favoured men in the second model whereas the age return favoured women in the third model.

Having discussed the determinants of wages for men and women, the next section discusses returns to education, first based on educational level and then according to years of education.

7.3 Return to Education

Since the establishment of "Human Capital" in the early of 1960s in the literature of economic growth and development, the relationship between education and earnings has been examined widely around the world, making this subject a cornerstone of the economics of education (Psacharopoulos and Ng Ying, 1994). Human capital is an agglomeration of educational achievements, training, skills and experience that enable individuals to produce goods and services in the labour market or, as agreed on a large scale, what can be defined as education and experience. As mentioned earlier, Human Capital Theory suggests that individuals attend schools and acquire educational qualifications in order to increase their expected future returns, which is conventionally referred to as investment in education. They keep accumulating human capital until they equalise the marginal cost of their human capital building with the marginal expected return from their investments in human capital (Becker, 1964).

As stated before, the main perception of Human Capital Theory is that workers' income depends on their productivity which, in turn, depends on their past investment in their human capital, assuming that they will get a return to their investment (e.g. Schultz, 1971; Elliot, 1991; Polachek, 1993; Fagerlind and Saha, 1997; Psacharopoulos and Woodhall, 1997; McMahon, 1999; Roos and Gatta, 1999; Blau and Ferber, 1992; Wharton, 2004). Mincer (1974) was the first author to estimate a function linking earnings and education in order to find out the relative importance of each specification in determining earnings; in its most basic form, the Mincerian model regresses earnings on both education and experience.

Since Mincer's (1974) work, there has been debate among economists on how education is measured, or how can it be expressed in the wage model, with a note that the attention here is paid to the private rate of return rather than public rates of return (see section 3.4.1.1). The private rate of return to education has been estimated in two ways: first, it has been estimated based on the returns to education level (which has been used in all regressions), and the second is the rate of return based on years of education as a whole, regardless of the time spent on each level or the level being achieved or not.

7.3.1 Rates of Return to Education Using Educational Qualification Level

Returns to education by level are the marginal returns of each educational level over the previous one. This indicator utilises the private rates of return for each year spent to achieve the level which is calculated by dividing the resulting coefficients (marginal net increase of the coefficient of the education level under consideration) from regressions by the corresponding number of years spent to achieve the particular qualification. In the current study, it can be expressed as:

$r_{(elementary)} = \beta_{(elementary)}$ / number of years of the elementary level (i.e. 6)

$r_{(Preparatory)} = \beta_{(Preparatory)} - \beta_{(Elementary)}$ / number of years of the preparatory level (i.e. 3)

$r_{(Secondary)} = \beta_{(Secondary)} - \beta_{(Preparatory)}$ / number of years of the secondary level (i.e. 3)

$r_{(Intermediate)} = \beta_{(Intermediate)} - \beta_{(Secondary)}$ / number of years of the intermediate level (i.e. 2)

$r_{(University)} = \beta_{(University)} - \beta_{(Secondary)}$ / number of years of the university level (i.e. 4)

Applying the above equations, Table (7.4) shows the resultant marginal rates of return to education by qualification level for males, females and the whole sample. Thus, the dummy variables for educational levels, which are presented in Table (7.4), have been repeated three times as the coefficients discounted by the years required to achieve the level are first derived from the human capital variables model and afterwards for those models adding successively job characteristics and social variables respectively.

The results of the first part (Human Capital) suggest that women's marginal rates of return are higher than those of men for Preparatory, Secondary and Intermediate education levels. They were 7.07%, 3.69% and 3.33% for women relative to 5.04%, 2.90% and -2.14% for men whereas men's marginal rates of return (7.18% and 5.61%) were greater than women's (5.12% and 2.61%) for both Elementary and University education levels. These results

remained valid for the other two models (the second and third parts of Table 7.4) with slightly different estimated rates of return for different education levels.

		Male	Female	Total
Human	Elementary	7.18%	5.12%	6.71%
	Preparatory	5.04%	7.07%	4.44%
	Secondary	2.90%	3.69%	6.43%
	Intermediate	-2.14%	3.33%	-2.08%
	University	5.61%	2.61%	3.06%
+Job	Elementary	6.86%	4.04%	5.07%
	Preparatory	4.35%	6.06%	4.58%
	Secondary	1.87%	3.91%	4.83%
	Intermediate	-1.44%	2.41%	-1.34%
	University	6.69%	3.80%	5.58%
+Social	Elementary	7.87%	4.15%	6.18%
	Preparatory	3.98%	6.14%	5.06%
	Secondary	2.40%	3.02%	3.65%
	Intermediate	-2.03%	3.49%	-0.56%
	University	4.97%	3.09%	4.09%

Table 7.4: Marginal Returns to Educational Level

7.3.2 Rates of Return to Education Using Years of Education

A separate regression was run using years of education for men, women and the pooled sample (see Table 7.5). This was carried out in a consistent way with what had been done earlier: i.e. using the successive inclusion of each group of variables: human capital, job characteristics, and social variables.

The results using years of education suggested that women's average rate of return for each extra year of education (5.48%) exceeded men's (5.08%) in the human capital model while the average rate of returns for individuals in the whole sample was (5.16%); all of these were statistically significant at a .01 level.

Table 7.5: Return to Years of Education

	Male	Female	Total
Human	5.08%	5.48%	5.16%
+ Job	4.90%	5.51%	5.57%
+Social	4.36%	5.03%	4.78%

Moving to the second model (human and job variables), similar results to the first model were obtained with all coefficients being significant at level of .01. Female's average rates of return for additional years of education was 5.5% compared to 4.9% for males while the pooled sample's return was the same as for the females.

Finally, by including all three groups of variables together, it was found that the statistically significant average earning premiums for additional year of education were 5%, 4.36% and 4.77% for women, men and the whole sample, respectively.

In terms of the explanatory power of the model using years of schooling compared to that of the previously discussed model using educational qualification levels, the reported R squared of both successive models were fairly close.

7.4 Oaxaca Decomposition Results

The analysis of gender wage differentials is mainly devoted to finding out the portion of pay differences between males and females that can be explained by the differences in attributes which are referred to as justifiable differentials. The remaining portion that cannot be justified by different characteristics between men and women can be attributed to labour market discrimination. This is exactly the aim of this section below.

The estimation of gender discrimination firmly depends on the selection of variables to be included in the wage equation, as the accuracy of the gender wage gap's decomposition is highly reliant on the quality of the wage model upon which the decomposition is based; this requires the cautious selection of variables to be controlled in the wage equation. On the one hand, some characteristics variables are due to discrimination and including them in the wage equations yields an under-stated estimation of discrimination. On the other hand, excluding variables which are subject to discrimination from the model will limit the analysis to only a few variables (mainly human capital variables); this prevents deep examination and reduces the explanatory power of the model (Cain, 1986; Gunderson, 1989; Greenhalgh, 1980). As mentioned earlier, the approach adopted in this study, with regard to decomposing the gender wage differentials, was to define three groups of variables according to the likelihood that they would be affected by discrimination. Each group therefore contained a set of variables believed to be similar in terms of their probability of being affected by labour market discrimination. Then, the groups (human capital, job characteristics and social variables) were added successively in the models in order to confine the upper and lower boundaries of gender wage discrimination.

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The order of adding the groups of variables was defined as starting from the least discriminatory group (human capital) to the most discriminatory. The decomposition began only with the human capital variables because they were believed to be least likely to be affected by discrimination. This was followed by job characteristics' variables which were believed to reflect some discrimination while the final model was obtained by adding the third group which was viewed as the most affected by gender discrimination.

Table 7.6: Oaxaca Decomposition Results				
		Total Gender Wage Gap	Explained (Difference in Characteristics)	Unexplained (Difference in Treatment)
Human	**standardized by male mean**	0.32	-0.02	0.34
			-6.25%	106.25%
	standardized by female mean	0.32	-0.03	0.35
			-9.38%	109.38%
+job	**standardized by male mean**	0.32	0.03	0.29
			9.38%	90.63%
	standardized by female mean	0.32	0.02	0.3
			6.25%	93.75%
all	**standardized by male mean**	0.32	0.05	0.27
			15.63%	84.38%
	standardized by female mean	0.32	0.06	0.26
			18.75%	81.25%

	Total Gender Wage Gap	Explained (Difference in Characteristics)	Nepotism for male	Discrimination against female
Human	0.32	-0.03	0.18	0.17
		-9.38%	56.25%	53.13%
+job	0.32	0.03	0.14	0.15
		9.38%	43.75%	46.88%
all	0.32	0.06	0.13	0.13
		18.75%	40.63%	40.63%

Starting with the non-discriminatory human capital variables in the first model, which contained age, age squared, dummy variables representing educational levels, and years spent in the current job, the Oaxaca decomposition method was employed on the human capital wage equations in order to achieve the upper limit of discrimination. Table 7.6 shows the results of the decomposition based on human capital variables. It suggests that none of the differentials can be explained by human capital differences, as the unexplained portion of the differentials exceeds the whole gender gap in pay. The unexplained portion is 106.25% if standardised by

the males' means and 109.38% if standardised by the females'; on average, 107.81% of the gender wage differentials are not explained by the different characteristics of the men and women.

Moving to the decomposition based on the second model, which contains both human capital and job characteristics (Table 7.6), the decomposition results indicate that the unexplained portion (compared to the previous one) has now been reduced to 90.63% if standardised by the males' means or to 93.75% if standardised by the females'; on average, 92.19% of the gender wage differentials are not explained by the different characteristics of the men and women. Hence, by including both human capital and job characteristics as variables, on average, 7.81% of the total gender pay gap can be explained. This accords with what was expected: that the inclusion of the second group with variables subject to some forms of discrimination increases the explained portion and reduces what is unexplained, which is usually referred to as labour market discrimination. Finally, it is useful to note that certain groups of variables which are subject to some labour market discrimination have been included in order to estimate discrimination, so the successive models in this study can show the contribution of each group in increasing the explained portion of the gender pay gap.

Finally, decomposing the gap using the last model, which consists of the three groups together with a full set of variables, was expected to increase the explained portion further. Table 7.6 represents the results of the third model decomposition. As anticipated, the explained portion further increased, reaching 15.63% if standardised by males' means and 18.75% if standardised by the females', leaving the unexplained percentages as 84.38% and 81.25% respectively. Hence, on average, applying the decomposition to the full model with the three groups together, was able to explain 17.19% of the gender wage gap in terms of the different characteristics between men and women, while the remaining of 82.81%, on average, could not be explained and was consequently attributed to labour market discrimination.

If the variables were controlled for are regarded as the result of individual preferences rather than differences in treatment, then the lower limit of discrimination is (82.81%), which means that (82.81%) of the gender wage gap is not explained by the different attributes of men and women. In other words, the disadvantaged females in the prevailing wage structure would earn 0.265 (logged wage) more if discrimination was eradicated from the labour market.
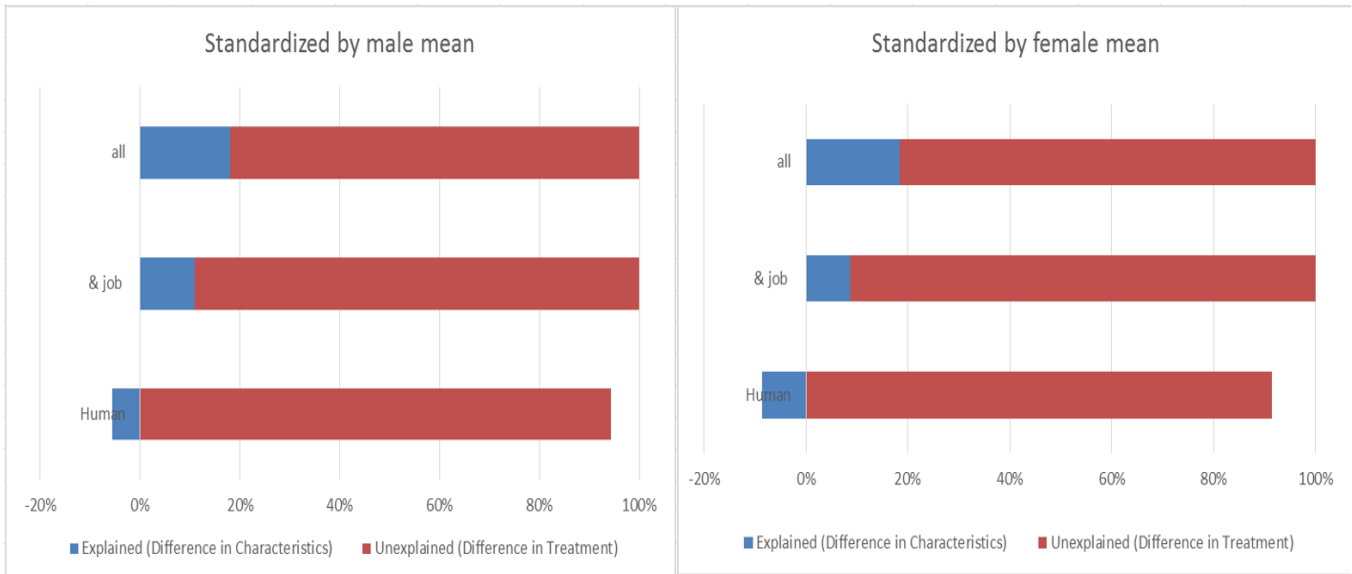
Figure 7.1: Oaxaca Decomposition Results.

Figure (7.1) and Table (7.6) illustrate the changes that occurred in the decompositions due to the successive inclusions of variable groups. More precisely, they show that the explained component of the gender pay gap increased from zero (or even negative) in the decomposition based only on the human capital model, to 7.81% in the second model which contained the variables of both human capital and job characteristics; this reached 17.19% in the third model with a full set of variables. At the same time, the unexplained component, which is usually attributed to discrimination, decreased from 100% to 92.19% and finally to 82.81% of the gender pay gap in the respective three models.

The lower part of Table (7.6) presents the decomposition results based on Cotton's (1988) method which dealt with the index number problem. As mentioned earlier, it is not possible to know whether the males' or the females' wage structures prevailed in the absence of discrimination; this resulted in two equations using the main Oaxaca method: one, if the males' structure prevailed and the other, if this was the case with the females' (expressed as standardised by the male and female means, X_m, X_f). Alternatively, Cotton (1988) argued that neither the males' wage structure (β_m) nor the females' (β_f) would prevail in the absence of discrimination. Rather, Cotton (1988) suggested that a non-discriminatory wage structure would be the weighted structure according to male and female proportions in the sample (β^*). By adopting the Cotton (1988) method, the explained portion of the gender pay gap remained the same as in the previous classical Oaxaca method but the unexplained part of the gender wage differentials, which was considered as "discrimination against females" in the previous equations, was then divided into two parts: the first was favouritism or nepotism for men and

the second was discrimination against women. The results indicated that, similar to the previous analysis, the first model with only human capital variables included was unable to explain any of the observed gender wage differentials (the negative explained portion) while nepotism for men and discrimination against women were (56.25%) and (53.13%) respectively.

Regarding the second model, which contained both human capital and job characteristics variables, the decomposition results showed that the explained part was (9.38%) while nepotism for males was (43.75%) and discrimination for females was (46.88%). Finally, in the last model with all three groups together, the explained portion increased to 18.75% while both the nepotism for men and discrimination against women were reduced to 40.66% (see the lower part of Table 7.6). Figure 7.2 represents the results of the Oaxaca decomposition according to the Cotton method and shows the changes to the explained, nepotism and discrimination portions with each group of variables included.
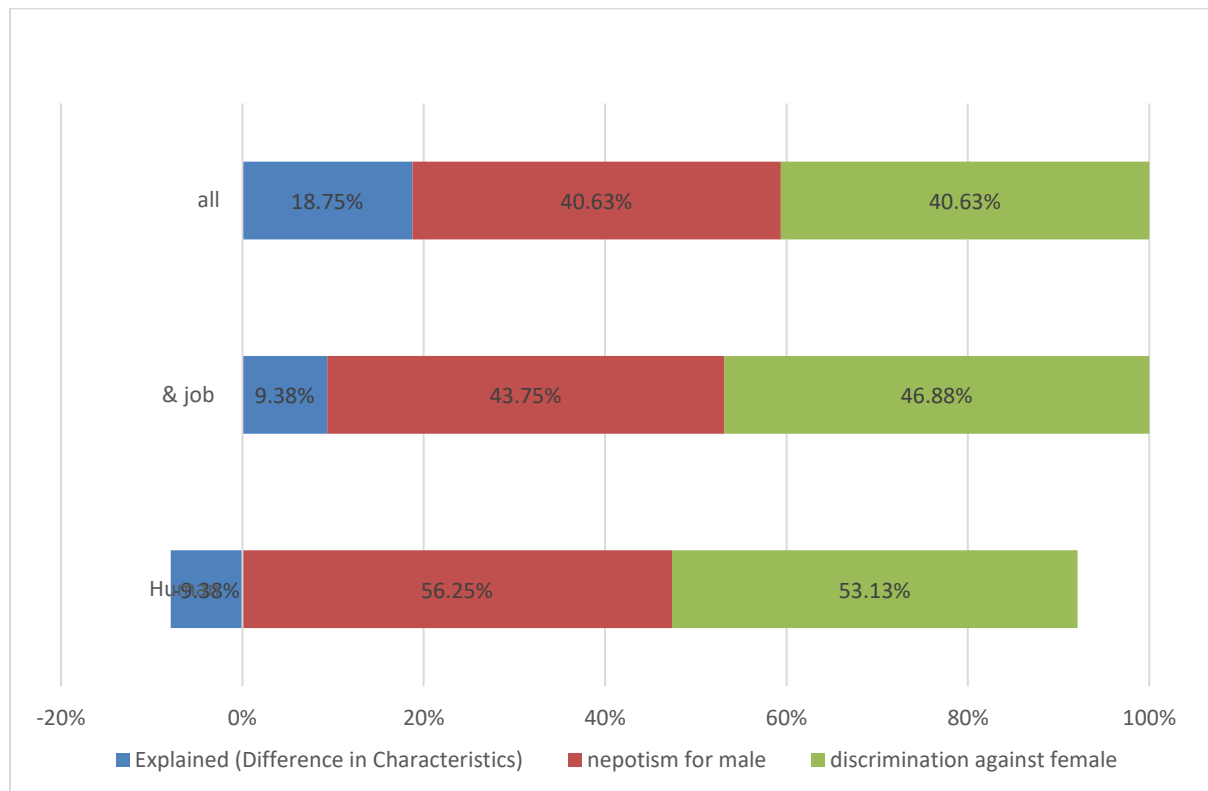
Figure 7.2: Oaxaca Decomposition Results (using Cotton, 1988).

The decomposition analysis which has been carried out so far, even by using a successive order for the groups of controlled variables included in the analysis, suffers from some shortcomings. Apart from the limitations discussed earlier in Chapter (5), an important

factor in the analysis has been ignored which is the interaction effects among the three groups of controlled variables. The next chapter demonstrates this in detail.

7.5 Conclusion

This chapter firstly presented the results of the wage equations that were built using an extended form of the Mincer model by gradually adding three groups of variables successively; all the models were then run for males, females and the whole sample. The next section calculated the rates of return for both educational levels and years of education for males and females. Finally, this chapter decomposed the gender pay gap and found the portion which was attributed to differences in characteristics and that which was attributed to labour market discrimination. The next chapter tests the relationships in the proposed model.

Chapter 8: Results of the Statistical Tests

8.1 Introduction

This chapter begins by summarising the data using descriptive statistics to provide basic information about the variables used. It then tests the direct relationships in the proposed model. After that, the main and interaction effects in the model are studied using General Linear Modelling Univariate ANOVA (GLM ANOVA) while, in the final section, pairwise comparisons of means between groups are used to determine whether there are significant differences of means between groups in the models.

8.2 Descriptive Statistics

Tables were used provide basic information about variables in the study using descriptive statistics including counts, percentage distributions, means and standard deviations. The frequency distribution tables indicate that out of 2023 valid cases, males were (N=1030) 50.9 % and females (N=993) 49.1%.

8.2.1 Human Characteristics

The human characteristics included: Years in the Job, Age Group, Education Level, and Years of Education. In terms of years in the job, the results in Table 8.1 indicate that the respondents were fairly distributed with about 26.3% of respondents with 1-5 years in the job and 16.3% with 11-15 years in the job. About 55.4 % of males had over 20 years in the job compared to 44.6% of females. However, about 52 % of females had experience of 6 to 20 years compared to 47% of males. The results in Table 8.1 indicate that the respondents were reasonably distributed across all age groups. However, only 0.7% of the respondents were aged between 15-19 years while about 17% the respondents were aged between 45 and 49 years. The majority of men (89.8%) were aged between 55-59 years compared to 10.2 % of females in the same age group. On the other hand, in the 15-19 years' age groups, 86.7% of the respondents were female compared to 13.3% who were male. In the 20-24 years' age group, the majority were male (60.4%) while the majority of respondents (above 50%) aged between 25-49 years were female.

Table 8.1: Independent Variables - Frequencies and Percentages – Human Characteristics

		Gender						Total (N=2026)	
		Male (N=1030) =50.9 %			Female (N=993)=49.1%				
		N	Column %	Row %	N	Column %	Row %	N	Column %
Years in the Job	1-5 Years	247	27.6%	53.0%	219	25.0%	47.0%	466	26.3%
	6-10 Years	160	17.9%	47.2%	179	20.5%	52.8%	339	19.1%
	11-15 Years	138	15.4%	47.8%	151	17.3%	52.2%	289	16.3%
	16-20 Years	139	15.5%	47.3%	155	17.7%	52.7%	294	16.6%
	20 and above	212	23.7%	55.4%	171	19.5%	44.6%	383	21.6%
	Total	**896**			**875**			**1771**	**100.0%**
Age Group	15-19 Years	2	0.2%	13.3%	13	1.3%	86.7%	15	0.7%
	20-24 Years	93	9.0%	60.4%	61	6.1%	39.6%	154	7.6%
	25-29 Years	96	9.3%	46.6%	110	11.1%	53.4%	206	10.2%
	30-34 Years	125	12.1%	46.6%	143	14.4%	53.4%	268	13.2%
	35-39 Years	152	14.8%	49.5%	155	15.6%	50.5%	307	15.2%
	40-44 Years	167	16.2%	46.3%	194	19.5%	53.7%	361	17.8%
	45-49 Years	169	16.4%	49.0%	176	17.7%	51.0%	345	17.1%
	50-54 Years	129	12.5%	51.2%	123	12.4%	48.8%	252	12.5%
	55-59 Years	79	7.7%	89.8%	9	0.9%	10.2%	88	4.3%
	60 and above Years	18	1.7%	66.7%	9	0.9%	33.3%	27	1.3%
	Total	**1030**			**993**			**2023**	**100.0%**
Education Level	No study	11	1.1%	55.0%	9	0.9%	45.0%	20	1.0%
	Elementary	198	19.3%	55.8%	157	15.8%	44.2%	355	17.6%
	Preparatory	181	17.7%	42.0%	250	25.2%	58.0%	431	21.4%
	Secondary	286	27.9%	65.7%	149	15.0%	34.3%	435	21.6%
	Intermediate	156	15.2%	52.9%	139	14.0%	47.1%	295	14.6%
	University	192	18.8%	40.1%	287	29.0%	59.9%	479	23.8%
	Total	**1024**			**991**			**2015**	**100.0%**
Years of Education	0-3 Years	14	1.4%	45.2%	17	1.7%	54.8%	31	1.6%
	4-7 Years	65	6.4%	56.5%	50	5.1%	43.5%	115	5.8%

		N	Column %	Row %	N	Column %	Row %	N	Column %
	8-11 Years	522	51.3%	50.4%	514	52.6%	49.6%	1036	51.9%
	12-15 Years	272	26.7%	51.8%	253	25.9%	48.2%	525	26.3%
	16 Years and above	144	14.2%	50.0%	144	14.7%	50.0%	288	14.4%
	Total	**1017**			**978**			**1995**	**100.0%**

At an educational level, the respondents were reasonably distributed across levels with only 1% of the respondents in the No Study category and about 23.8% with a university education. About 60% of the females had a university education compared to only 40% of the males. On the other hand, the majority of males (65.7%) had undergone secondary education compared to 34.3% of females. In terms of years of education, the majority of respondents (51.9%) had spent between 8-11 years in school while only 1.6% had spent less than 3 years. 56.5% of men had spent at least 4-7 years in education while 54.8% had spent at least 0-3 years in education.

8.2.2 Job Characteristics

The job characteristics included: Occupation, Industry Sector, and Hours worked per week. With regard to occupation, about 41% of the respondents were production workers and only 7% were administrators and clerks.

Table 8.2: Independent Variables - Frequencies and Percentages – Job Characteristics

		Gender							
		Male (N=1030) =50.9 %			Female (N=993)=49.1%			Total (N=2026)	
		N	Column %	Row %	N	Column %	Row %	N	Column %
Occupation	Administrators & clerks	44	4.3%	28.4%	111	11.2%	71.6%	155	7.7%
	Professionals & technicians	235	22.8%	74.6%	80	8.1%	25.4%	315	15.6%
	Sales & services	112	10.9%	25.2%	333	33.5%	74.8%	445	22.0%
	Agriculture workers	141	13.7%	50.7%	137	13.8%	49.3%	278	13.7%

	Production workers	498	48.3%	60.0%	332	33.4%	40.0%	830	41.0%
	Total	**1030**			**993**			**2023**	**100.0%**
Industry	Agriculture	116	11.3%	53.7%	100	10.1%	46.3%	216	10.7%
	Industrial	131	12.7%	39.5%	201	20.2%	60.5%	332	16.4%
	Building & construction	179	17.4%	63.0%	105	10.6%	37.0%	284	14.0%
	Hotels & restaurants	127	12.3%	30.7%	287	28.9%	69.3%	414	20.5%
	Transport & communication	128	12.4%	84.2%	24	2.4%	15.8%	152	7.5%
	Insurance	7	0.7%	17.1%	34	3.4%	82.9%	41	2.0%
	Service	342	33.2%	58.6%	242	24.4%	41.4%	584	28.9%
	Total	**1030**			**993**			**2023**	**100.0%**
Sector	Public	234	22.7%	57.2%	175	17.6%	42.8%	409	20.2%
	Private	796	77.3%	49.3%	818	82.4%	50.7%	1614	79.8%
	Total	**1030**			**993**			**2023**	**100.0%**
Hours Per week	1-20 Hours	61	5.9%	32.6%	126	12.7%	67.4%	187	9.3%
	21-40 Hours	698	67.8%	51.2%	666	67.2%	48.8%	1364	67.5%
	40 Hours and above	270	26.2%	57.6%	199	20.1%	42.4%	469	23.2%
	Total	**1029**			**991**			**2020**	**100.0%**

Over 70% of the females were either administrators or clerks, or in sales and services (sectors with lower wages) compared to 30% of males in the same occupations. Over 74.6 % of males in the sample were professionals and technicians compared to only 25.4% of females in similar occupations. Over 60% of production workers were male. Regarding industry, the results in Table 8.2 indicate that about 28.9% of the respondents were from the service industry and 20.5 % in hotels and restaurants while only 2% of the respondents were in insurance and 7.5 % in transport and communications. The majority of the females worked in the insurance industry (82.9%) and with 69.3 % working in hotels and restaurants (which offer lower wages) while the majority of men worked in transport and communication (84.2%) and building and construction (63.0%). The results in Table 8.2 reveal that the majority of respondents worked in the private sector (79.8%) while only 20.2% were in the public sector. The majority of males

(57.2%) worked in the public sector while about 50.7% of the females worked in the private sector. Lastly, the majority of respondents (67.5%) worked 21-40 hours per week. However, the majority of women (67.4%) worked between 1 to 20 hours per week indicating fewer wages.

8.2.3 Social Characteristics

The social characteristics included Family Number, Child under 5 Years, Family Head, Civil Status, Region, and Location.

Table 8.3: Independent Variables - Frequencies and Percentages – Social Characteristics								
		Gender						
		Male (N=1030) =50.9 %			Female (N=993)=49.1%			Total (N=2026)	
		N	Column %	Row %	N	Column %	Row %	N	Column %
Family Number	1-5 members	895	86.9%	50.7%	871	87.7%	49.3%	1766	87.3%
	6-10 members	135	13.1%	52.5%	122	12.3%	47.5%	257	12.7%
	Total	1030			993			2023	100.0%
Child Under 5 Years	No	856	83.1%	50.3%	846	85.2%	49.7%	1702	84.1%
	Yes	174	16.9%	54.2%	147	14.8%	45.8%	321	15.9%
	Total	1030			993			2023	100.0%
Family Head	Head	738	71.7%	89.0%	91	9.2%	11.0%	829	41.0%
	Other	292	28.3%	24.5%	902	90.8%	75.5%	1194	59.0%
	Total	1030			993			2023	100.0%
Civil Status	Married	840	81.6%	51.0%	806	81.2%	49.0%	1646	81.4%
	Single	137	13.3%	60.4%	90	9.1%	39.6%	227	11.2%
	Divorced/Widowed	53	5.1%	35.3%	97	9.8%	64.7%	150	7.4%
	Total	1030			993			2023	100.0%
Region	Damascus	132	12.8%	47.5%	146	14.7%	52.5%	278	13.7%
	Northern	157	15.2%	50.3%	155	15.6%	49.7%	312	15.4%
	Middle	94	9.1%	51.9%	87	8.8%	48.1%	181	8.9%
	Coastal	231	22.4%	51.0%	222	22.4%	49.0%	453	22.4%
	Southern	208	20.2%	53.5%	181	18.2%	46.5%	389	19.2%
	Eastern	208	20.2%	50.7%	202	20.3%	49.3%	410	20.3%
	Total	1030			993			2023	100.0%
Location	Urban	784	76.1%	49.7%	793	79.9%	50.3%	1577	78.0%
	Rural	246	23.9%	55.2%	200	20.1%	44.8%	446	22.0%
	Total	1030			993			2023	100.0%

The results indicate that the majority (87.3%) had a family number below 5 and only 12.7% had family members above 5 in their households. There was no major difference

between male and females in terms of family number. From Table 8.3 it can be concluded that the majority (84.1%) of the sample had no children less than 5 years old. However, the majority of females (85.2 %) in the sample had no children under 5 years compared to half (54.2%) of the men who had children under age of 5 years. About 41 % of the population sample were heads of family but the majority of males (71.7%) were family heads compared to only 11 % of the women. In terms of civil status, the results indicate that the majority of the respondents (81.4%) were married, 60.4 % of the males were single and 64.7% of the females were either divorced or widowed. The results on region indicate that the respondents were fairly distributed in all regions with the lowest number from the Middle region (8.4%) and the highest from the Southern region (22.4%). The Southern region had the highest number of males (53.5%) compared to females while Damascus had the highest number of females (52.5%) compared to males. Regarding location, the results in Table 8.3 indicate that the majority of the respondents were located in urban areas (78%) compared to only 22% in rural situations. About 55.2% of males were located in rural areas while 50.3% of females were located in an urban environment.

8.2.4 Wages

The dependent variable in this study was wage. The results in Table 8.4 show that the average wage was S.P 10,733 with a minimum of S.P. 354 and a maximum of S.P. 177,000 per annum. The average wage for males (S.P. 12,513) was higher than that for females (S.P. 8,887). Skewness and kurtosis were used to test for normality in the wages variable. Skewness measures the symmetry, or lack of it, in the distribution. The distribution is regarded as symmetric if looks the same on both sides (left and right) of the centre point. Kurtosis measures the distribution's peakedness or flatness in comparison to the normal distribution; it tells whether the data are "heavy-tailed" or "light-tailed" (Hair *et al*., 2014). The results indicate that wages were not normally distributed: Skewness (t=9.6, SE=0.05) and Kurtosis (t=167.7, SE=0.10). The natural log of wages was computed to normalise the data.

Table 8.4: Dependent Variable - Descriptive statistics - Wages												
	Gender									Normality		
	Male		Female		Total					Skewness		Kurtosis	
	M	SD	M	SD	M	SD	Min	Max	N	t	SE	t	SE
Wage	12,513.54	10,070.63	8,887.03	5,310.80	10,733.45	8,290.80	354	177,000	**2023**	9.642	0.054	167.7	0.109
LnWage	9.29	52	8.97	0.49	9.13	0.53	6	12	**2023**	-0.085	0.054	3.284	0.109

8.3 Correlations Social with Human and Job Characteristics

This section aims to test the direct relationships in the proposed model. First, it begins by studying the relationship between the social and the human characteristics variables. After that, the relationships between the variables of the social and job characteristics are examined[25].

8.3.1 Correlations between Social Characteristics and Human Characteristics

The Kruskal Wallis Test was used to test relationships between the variables of social and human characteristics. The results in Table 8.5 indicate that family number was significantly related with all human characteristic variables; years in the job (χ^2 (1, N = 2023) = 23.34, p <.05), age group (χ^2 (1, N = 2023) = 26.98, p <.05), education level (χ^2 (1, N = 2023) = 23.29, p <.05) and years of education (χ^2 (4, N = 2023) = 20.60, p <.05). Regarding the relationship between having a child under 5 and human characteristics, the results reveal that having a child under 5 was significantly related to years in the job ($\chi2$ (1, N = 2023) = 152.90, p <.05), age group ($\chi2$ (1, N = 2023) = 354.32, p <.05) and education level ($\chi2$ (1, N = 2023) = 6.93, p <.05). The results in Table 8.5 indicate that being the family head was significantly related to years in the job ($\chi2$ (1, N = 2023) = 52.41, p <.05), age group ($\chi2$ (1, N = 2023) = 225.17, p <.05) and years of education ($\chi2$ (1, N = 2023) = 6.86, p <.05). Regarding the relationship between civil status and human characteristics, the results reveal that civil status was significantly related to years in the job ($\chi2$ (2, N = 2023) = 112.65, p <.05) and age group ($\chi2$ (2, N = 2023) = 301.01, p <.05) while in terms of the relationship between region and human characteristics, the results reveal that region was significantly related to education level ($\chi2$ (5, N = 2023) = 39.03, p <.05) and years of education ($\chi2$ (5, N = 2023) = 54.16, p <.05).

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[25] Appendix 5 reports on the correlation between gender, and social, human and job characteristics.

With regard to the relationship between location and human characteristics, the results reveal that location was significantly related to years in the job ($\chi2$ (1, N = 2023) = 4.09, p <.05), education level ($\chi2$ (1, N = 2023) = 117.54, p <.05) and years of education ($\chi2$ (1, N = 2023) = 90.98, p <.05). The results indicated that there is a correlation between social characteristics and human capital characteristics, hence, H1 is accepted.

Table 8.5: Chi-Square Tests: Social Characteristics (Independent Variable) and Human Characteristics

Variable	Test	Value	df	Asymp. Sig. (2-sided)
Grouping Variable: Family number				
Years in the Job	Kruskal Wallis Test	23.34	1	0.00
Age Group	Kruskal Wallis Test	26.98	1	0.00
Education Level	Kruskal Wallis Test	23.29	1	0.00
Years of Education	Kruskal Wallis Test	20.60	1	0.00
Grouping Variable: Child under 5 years				
Years in the Job	Kruskal Wallis Test	152.90	1	0.00
Age Group	Kruskal Wallis Test	354.32	1	0.00
Education Level	Kruskal Wallis Test	6.93	1	0.01
Years of Education	Kruskal Wallis Test	3.69	1	0.06
Grouping Variable: Family Head				
Years in the Job	Kruskal Wallis Test	52.41	1	0.00
Age Group	Kruskal Wallis Test	225.17	1	0.00
Education Level	Kruskal Wallis Test	0.22	1	0.64
Years of Education	Kruskal Wallis Test	6.86	1	0.01
Grouping Variable: Civil Status				
Years in the Job	Kruskal Wallis Test	112.65	2	0.00
Age Group	Kruskal Wallis Test	301.01	2	0.00
Education Level	Kruskal Wallis Test	0.70	2	0.71
Years of Education	Kruskal Wallis Test	0.44	2	0.80
Grouping Variable: Region				
Years in the Job	Kruskal Wallis Test	3.54	5	0.62
Age Group	Kruskal Wallis Test	7.10	5	0.21
Education Level	Kruskal Wallis Test	39.03	5	0.00
Years of Education	Kruskal Wallis Test	54.16	5	0.00
Grouping Variable: Location				
Years in the Job	Kruskal Wallis Test	4.09	1	0.04
Age Group	Kruskal Wallis Test	0.86	1	0.35
Education Level	Kruskal Wallis Test	117.54	1	0.00
Years of Education	Kruskal Wallis Test	90.98	1	0.00

8.3.2 Correlations between Social Characteristics and Job Characteristics

The Pearson Chi-Square and Kruskal Wallis tests were used to examine relationships between the variables of social and job characteristics. In terms of job characteristics, the results reveal a significant relation between family number and occupation $(\chi^2$ (4, N = 2023) = 22.67, p <.05), industry $(\chi^2$ (6, N = 2023) = 13.93, p <.05), and sector $(\chi^2$ (1, N = 2023) = 5.51, p <.05). Having a child under 5 was significantly related to sector (χ^2 (1, N = 2023) = 31.79, p <.05). The results in Table 8.6 further reveal a significant relation between being the family head and occupation (χ^2 (4, N = 2023) = 88.93, p <.05), industry (χ^2 (6, N = 2023) = 81.71, p <.05). Regarding the effect of civil status, the results indicate that that there is significant relation between civil status and occupation $(\chi^2$ (8, N = 2023) = 17.70, p <.05), industry $(\chi^2$ (12, N = 2023) = 42.21, p <.05), sector $(\chi^2$ (2, N = 2023) = 30.00, p <.05) and hours worked per week (χ^2 (2, N = 2023) = 6.55, p <.05). In terms of the association between region and job characteristics, the results in Table 8.6 reveal that that there was a significant relation between region of the respondent and occupation (χ^2 (20, N = 2023) = 65.56, p <.05), industry (χ^2 (30, N = 2023) = 78.71, p <.05), sector (χ^2 (5, N = 2023) = 24.03, p <.05) and hours worked per week (χ^2 (1, N = 2023) = 16.42, p <.05). Moreover, with regard to the association between location and job characteristics, the results in Table 8.6 show that a significant relation between location of the respondent and occupation (χ^2 (4, N = 2023) = 69.31, p <.05), industry (χ^2 (6, N = 2023) = 95.74, p <.05), and hours worked per week (χ^2 (1, N = 2023) = 16.42, p <.05). The results indicated that there is a correlation between social characteristics and job characteristics, hence, H2 is accepted.

Table 8.6: Chi-Square Tests: Social Characteristics (Independent Variable) and Job Characteristics

Variable	Test	Value	df	Asymp. Sig. (2-sided)
Grouping Variable: Family number				
Occupation	Pearson Chi-Square	22.67	4	0.00
Industry	Pearson Chi-Square	13.93	6	0.03
Sector	Pearson Chi-Square	5.51	1	0.02
Hours Per week	Kruskal Wallis Test	0.24	1	0.63
Grouping Variable: Child Under 5 Years				
Occupation	Pearson Chi-Square	2.95	4	0.57
Industry	Pearson Chi-Square	11.46	6	0.08
Sector	Pearson Chi-Square	31.79	1	0.00
Hours Per week	Kruskal Wallis Test	0.68	1	0.41
Grouping Variable: Family Head				
Occupation	Pearson Chi-Square	88.93	4	0.00
Industry	Pearson Chi-Square	81.71	6	0.00
Sector	Pearson Chi-Square	3.09	1	0.08
Hours Per week	Kruskal Wallis Test	1.29	1	0.26
Grouping Variable: Civil Status				
Occupation	Pearson Chi-Square	17.70	8	0.02
Industry	Pearson Chi-Square	42.21	12	0.00
Sector	Pearson Chi-Square	30.00	2	0.00
Hours Per week	Kruskal Wallis Test	6.55	2	0.04
Grouping Variable: Region				
Occupation	Pearson Chi-Square	65.56	20	0.00
Industry	Pearson Chi-Square	78.71	30	0.00
Sector	Pearson Chi-Square	24.03	5	0.00
Hours Per week	Kruskal Wallis Test	16.42	1	0.00
Grouping Variable: Location				
Occupation	Pearson Chi-Square	69.31	4	0.00
Industry	Pearson Chi-Square	95.74	6	0.00
Sector	Pearson Chi-Square	2.06	1	0.15
Hours Per week	Kruskal Wallis Test	16.42	1	0.00

8.4 The Effect of Gender and Social, Human and Job Characteristics on Wages

This section tested the proposed hypotheses using General Linear Modelling Univariate ANOVA (GLM ANOVA). The aim of this section was to uncover the main and interaction effects in the model. To determine the main effects of gender, and social, human, and job characteristics on wages, a custom factorial UNIANOVA model was conducted. In addition,

the interaction effects of gender, and social, human and job characteristics on wages were also tested. GLM Univariate ANOVA was also conducted to test the interaction effects of social, human and job characteristics on wages.

As discussed in the data analysis section, seven custom factorial UNIANOVA models were tested in order to achieve the objectives of this study. The models were: Main effects without Gender Model, Male only Model, Female only Model, Main effects Model, Main effects and Interaction effects Model, Female only Main effects and Interaction effects Model and Male only Main effects and Interaction effects Model (see Table 8.7). In the Main Effects model, the dependent variable was the natural log of wages (continuous) while the independent variables (categorical) were gender, social characteristics (Family Number, Child Under 5 Years, Family Head, Civil Status, Region, and Location), human characteristics (Years in the Job, Age Group, Education Level, Years of Education) and job characteristics (Occupation, Industry Sector, Hours Per week).

In the interaction model, the dependent variable was the natural log of wages (continuous) while the independent variables included both categorical variables and effects, and the interaction effects variables between Gender and Social characteristics (Family Number, Child Under 5 Years, Family Head, Civil Status, Region, and Location), Human characteristics (Years in the Job, Age Group, Education Level, Years of Education) and Job characteristics (Occupation, Industry Sector, Hours Per week). In addition the interaction effects between Social characteristics (Family Number, Child Under 5 Years, Family Head, Civil Status, Region, and Location) and Human characteristics (Years in the Job , Age Group, Education Level, Years of Education) and Job characteristics (Occupation, Industry Sector, Hours Per week) were included in the custom interaction model.

Table 8.7: Levene's Test of Equality of Error Variances

Dependent Variable: Wage

Model	F	df1	df2	Sig.	R-Squared	Adjusted R Squared
Main effects Model[a] without Gender	1.001	1706	44	.52	0.38	0.30
Main effects Model[b] Male	3.778	867	19	.00	0.27	0.23
Main effects Model[c] Female	.496	841	22	.99	0.33	0.30

Main effects Model[d]	.939	1709	41	.63	0.35	0.33
Main and Interaction Effects Model[e]	.695	1709	41	.96	0.55	0.40
Main & Inter. Effects Model[f] Male	1.92	867	19	0.05	0.61	0.30
Main & Inter. Effects Model[g] Female	.419	841	22	1.00	0.64	0.35

Independent Variables

a. Design: Intercept + Family Number + Child Under 5 Years + Family Head + Civil Status + Region + Location + Years on the job + Age Group + Education Level + Years of Education + Occupation + Industry + Sector + Hours worked per week

b. Design: Intercept + Family Number + Child Under 5 Years + Family Head + Civil Status + Region + Location + Years on the job + Age Group + Education Level + Years of Education + Occupation + Industry + Sector + Hours worked Per week

c. Design: Intercept + Family Number + Child Under 5 Years + Family Head + Civil Status + Region + Location + Years on the job + Age Group + Education Level + Years of Education + Occupation + Industry + Sector + Hours worked Per week

d. Design: Intercept + Gender + Family Number + Child Under5 Years + Family Head + Civil Status + Region + Location + Years on the job + Age Group + Education Level + Years of Education + Occupation + Industry + Sector + Hours worked Per week

e. Design: Intercept + Gender + Family Number + Child Under5 Years + Family Head + Civil Status + Region + Location + Years on the job + Age Group + Education Level + Years of Education + Occupation + Industry + Sector + Hours worked Per week + Family Number * Gender + Child Under5 Years * Gender + Family Head * Gender + Civil Status * Gender + Region * Gender + Location * Gender + Years on the job * Gender + Age Group * Gender + Education Level * Gender + Years of Education * Gender + Occupation * Gender + Industry * Gender + Sector * Gender + Hours worked Per week * Gender + Child Under 5 Years * Years on the job + Child Under 5 Years * Age Group + Child Under 5 Years * Education Level + Child Under 5 Years * Years of Education + Child Under 5 Years * Occupation + Child Under 5 Years * Industry + Child Under 5 Years * Sector + Child Under 5 Years * Hours worked Per week + Family Number * Years on the job + Family Number * Age Group + Family Number * Education Level + Family Number * Years of Education + Family Number * Occupation + Family Number * Industry + Family Number * Sector + Family Number * Hours worked Per week + Family Head * Years on the job + Family Head * Age Group + Family Head * Education Level + Family Head * Years of Education + Family Head * Occupation + Family Head * Industry + Family Head * Sector + Family Head * Hours worked Per week + Civil Status * Years on the job + Civil Status * Age Group + Civil Status * Education Level + Civil Status * Years of Education + Civil Status * Occupation + Civil Status * Industry + Civil Status * Sector + Civil Status * Hours worked Per week + Region * Years on the job + Region * Age Group + Region * Education Level + Region * Years of Education + Region * Occupation + Region * Industry + Region * Sector + Region * Hours worked Per week + Location * Years on the job + Location * Age Group + Location * Education Level + Location * Years of Education + Location * Occupation + Location * Industry + Location * Sector + Location * Hours worked Per week

f &g. Design: Intercept + Family Number + Child Under5 Years + Family Head + Civil Status + Region + Location + Years on the job + Age Group + Education Level + Years of Education + Occupation + Industry + Sector + Hours worked Per week + Child Under 5 Years * Years on the job + Child Under 5 Years * Age Group + Child Under 5 Years * Education Level + Child Under 5 Years * Years of Education + Child Under 5 Years * Occupation + Child Under 5 Years * Industry + Child Under 5 Years * Sector + Child Under 5 Years * Hours worked Per week + Family Number * Years on the job + Family Number * Age Group + Family Number * Education Level + Family Number * Years of Education + Family Number * Occupation + Family Number * Industry + Family Number * Sector + Family Number * Hours worked Per week + Family Head * Years on the job + Family Head * Age Group + Family Head * Education Level + Family Head * Years of Education + Family Head * Occupation + Family Head * Industry + Family Head * Sector + Family Head * Hours worked Per week + Civil Status * Years on the job + Civil Status * Age Group + Civil Status * Education Level + Civil Status * Years of Education + Civil Status * Occupation + Civil Status * Industry + Civil Status * Sector + Civil Status * Hours worked Per week + Region * Years on the job + Region * Age Group + Region * Education Level + Region * Years of Education + Region * Occupation + Region * Industry + Region * Sector + Region * Hours worked Per week + Location * Years on the job + Location * Age Group + Location * Education Level + Location * Years of Education + Location * Occupation + Location * Industry + Location * Sector + Location * Hours worked Per week

8.4.1 Homogeneity of Variances

Levene's test for equality of variances was found to be violated for the Main Effects Model[b] (Male), $F (867, 19) = 3.778, p = 0.01$ and for the Main and Interaction Model[F] (Male) $F (867, 19) = 1.92, p = 0.05$ in the present analysis. Type I errors in the F-test (wrongly rejecting the null hypothesis) increase if a violation in the homogeneity of the variances' assumption is violated. However, for small and even moderate departures from homogeneity of variance, ANOVA is robust (Garson, 2009).

8.4.2 Lack of Fit Test

The researcher selected custom models which had fewer terms than a full factorial univariate ANOVA model. The lack of fit tests, which are reported in Table 8.8, indicated that only the Main Effects Model[b] (Male) (F (821, 19) = 1.87, p = 0.05) showed a lack of fit as it was significantly different from the full factorial model. Therefore, the researcher concluded that the necessary terms present in the full factorial model are present in the other custom models. Furthermore more, the observed power > .80 in other models indicates the probability that the *F*-test statistic is greater than the critical value and hence the non- significance is valid.

Table 8.8: Lack of Fit Tests

Dependent Variable: Wage

	Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta	N.P P	Observed Power
Main effects Model[a] without Gender	Lack of Fit	317.85	1660	.19	1.38	.09	.98	2293.39	.99
	Pure Error	6.10	44	.14					
Main effects Model[b]	Lack of Fit	163.99	821	.20	1.87	.05	.99	1539.26	.93
Male	Pure Error	2.02	19	.11					
Main effects Model[c]	Lack of Fit	128.78	795	.16	.92	.64	.97	733.27	.63
Female	Pure Error	3.86	22	.18					
	Lack of Fit	304.67	1662	.18	1.28	.16	.98	2121.47	.98
Main effects Model[d]	Pure Error	5.89	41	.14					
	Lack of Fit	205.59	1254	.16	1.14	.31	.97	1431.57	.96

Main and Interaction Effects Model[e]	Pure Error	5.89	41	.14					
Main & Inter. effects Model[f] Male	Lack of Fit	87.47	476	.18	1.72	.08	.98	821.07	.90
	Pure Error	2.02	19	.11					
Main & Inter. effects Model[g] Female	Lack of Fit	67.69	452	.150	.85	.73	.94	385.45	.57
	Pure Error	3.86	22	.176					

8.4.3 Test of Overall Model Significance and Effect Size Measures

To test the overall significance of the model and the effect size measures, F-test of difference of group means and Partial eta-squared were reported in the "Tests of between Subjects Effects" table. This table, according to Garson (2015, p. 28), "provides an F-test of the significance of the model overall (the "omnibus test", in the "Corrected Model" row).....it answers the question, "Is the model significant for at least one of the predictors?" This table also reports the significance of the intercept and of each predictor variable in the model". Computations of the F-test take the following into account: total sum of squares, between group sum of squares, within group sum of squares, between group df and within group df. Also, the researcher used partial ETA to determine the strength (i.e., measure the effect size) of the main and interaction effects. According to Garson (2015), when the partial eta-square is 1.0, this indicates a maximum effect, and when it is 0.0, this means that no effect is indicated. Thus, the conclusion is that "the closer to 0.0, the less the variable is contributing to the model. Partial eta-square is a nonlinear analog to R-square in regression, similarly interpreted as percent of variance explained" (Garson, 2015, p.14).

The table also reports on the "observed power" where the coefficient of the power points to the probability that the F-test is greater than the critical value; in such a case the alternative hypothesis will be found to be significant. As a rule of thumb, when power $> = 0.80$ it is considered acceptable. On the other hand, when the lack of fit F-test shows non-significance, and if power $> = 0.80$, there is a sufficiently low chance of a Type II error and the researcher may accept the finding of non-significance as valid.

8.4.3.1 Main Effects Model[a] without Gender

The Main Effects Model[a] without Gender variable was specified in GLM ANOVA using IBM SPSS 24. The results in Table 8.9 show that the corrected model is significant F

(150.55, 46) = 17.21, p =0.00 and the effect size, Partial Eta squared= 0.32, meaning Social, Human and Job characteristics explain about 32% of the variance in the wages in the sample studied. Table 8.9 also shows that the Child Under 5 Years F (1.45, 1) = 7.61 p<0.05, Family Head F (22.17, 1) = 116.09, p<0.05, Region F (14.09, 5) =14.83, p<0.05, Years in the job F (4.55, 4) =5.99, p<0.05, Age Group F (3.78, 9) = 2.21, p<0.05, Education Level F (8.33,5) = 8.67, p<0.05, Years of Education F (2.92, 4) = 3.85, p<0.05, Occupation F (2.54, 4) = 3.34, p<0.05, Industry F (11.88, 6) = 10.41, p<0.05, Sector F (1.04, 1) = 5.57, p<0.05 and Hours worked per week F (6.78, 2) = 17.83, p<0.05 were significant in influencing the wages of the respondents. Surprisingly, Family Number, Civil Status and Location were not significant.

Table 8.9: Main effects Model[a] without Gender: Tests of Between-Subjects Effects

Dependent Variable: Wage

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Corrected Model	150.55	46	3.27	**17.21**	**.00**	**.32**	791.89	1.00
Intercept	7810.55	1	7810.55	41084.41	.00	.96	41084.41	1.00
Family Number	.03	1	.03	.18	.67	.00	.18	.07
Child Under 5 Years	**1.45**	**1**	**1.45**	**7.61**	**.01**	**.01**	**7.61**	**.80**
Family Head	**22.07**	**1**	**22.07**	**116.09**	**.00**	**.06**	**116.09**	**1.00**
Civil Status	.72	2	.36	1.89	.15	.00	3.78	.39
Region	**14.09**	**5**	**2.82**	**14.83**	**.00**	**.04**	**74.14**	**1.00**
Location	.27	1	.27	1.40	.24	.00	1.40	.22
Years in the job	**4.55**	**4**	**1.14**	**5.99**	**.00**	**.01**	**23.95**	**.99**
Age Group	**3.78**	**9**	**.42**	**2.21**	**.02**	**.01**	**19.88**	**.90**
Education Level	**8.33**	**5**	**1.67**	**8.76**	**.00**	**.03**	**43.82**	**1.00**
Years of Education	**2.92**	**4**	**.73**	**3.85**	**.00**	**.01**	**15.38**	**.90**
Occupation	**2.54**	**4**	**.63**	**3.34**	**.01**	**.01**	**13.35**	**.85**
Industry	**11.88**	**6**	**1.98**	**10.41**	**.00**	**.04**	**62.49**	**1.00**
Sector	**1.04**	**1**	**1.04**	**5.47**	**.02**	**.00**	**5.47**	**.65**
Hours Per week	**6.78**	**2**	**3.39**	**17.83**	**.00**	**.02**	**35.67**	**1.00**
Error	323.95	1704	.19					

Total	147333.03	1751						
Corrected Total	474.49	1750						

8.4.3.2 Main Effects Model[b] Male

Main affects Model[b] Male was tested in GLM ANOVA using IBM SPSS 24. The results in Table 8.10 show that the corrected model is significant $F_{(61.87, 46)} = 6.81$, $p<0.05$ and the effect size, Partial Eta squared= 0.27, meaning Social, Human and Job characteristics explain about 27% of the variance in the wages of males in the sample. Table 8.10 also shows that, among males in the sample population, only Region $F_{(9.38, 5)} = 9.50$, $p<0.05$, Years in the job $F_{(2.25, 4)} = 2.85$, $p<0.05$, Age Group $F_{(4.31, 9)} = 2.42$, $p<0.05$, Industry $F_{(5.22, 6)} = 4.41$, $p<0.05$, Sector $F_{(1.51, 1)} = 7.66$, $p<0.05$ and Hours worked per week $F_{(1.31, 2} = 3.32$, $p<0.05$ were significant in influencing the wages of the male respondents. Surprisingly, Family Number, Child under 5, Family Head, Civil Status, Location, Years of Education, Education Level and Occupation were not significant.

Table 8.10: Main effects Model[b] Male: Tests of Between-Subjects Effects

Dependent Variable: Wage

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Corrected Model	61.87	46	1.34	**6.81**	**.00**	**.27**	313.04	1.00
Intercept	2977.12	1	2977.12	15063.76	.00	.95	15063.76	1.00
Family Number	.42	1	.42	2.14	.14	.00	2.14	.31
Child Under 5 Years	.50	1	.50	2.55	.11	.00	2.55	.36
Family Head	.47	1	.47	2.40	.12	.00	2.40	.34
Civil Status	.45	2	.22	1.13	.32	.00	2.26	.25
Region	**9.38**	**5**	**1.88**	**9.50**	**.00**	**.05**	**47.48**	**1.00**
Location	.43	1	.43	2.19	.14	.00	2.19	.31
Years in the job	**2.25**	**4**	**.56**	**2.85**	**.02**	**.01**	**11.41**	**.78**
Age Group	**4.31**	**9**	**.48**	**2.42**	**.01**	**.03**	**21.80**	**.93**

	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Education Level	1.82	5	.36	1.84	.10	.01	9.21	.63
Years of Education	1.60	4	.40	2.02	.09	.01	8.09	.61
Occupation	1.03	4	.26	1.30	.27	.01	5.19	.41
Industry	**5.22**	**6**	**.87**	**4.41**	**.00**	**.03**	**26.43**	**.98**
Sector	**1.51**	**1**	**1.51**	**7.66**	**.01**	**.01**	**7.66**	**.79**
Hours Per week	**1.31**	**2**	**.66**	**3.32**	**.04**	**.01**	**6.64**	**.63**
Error	166.01	840	.20					
Total	77287.60	887						
Corrected Total	227.88	886						

8.4.3.3 Main Effects Model[c] Female

The Main Effects Model[c] Female was specified in GLM ANOVA using IBM SPSS 24. The results in Table 8.11 show that the corrected model is significant $F_{(66.41, 46)} = 8.89$, p =0.00 and the effect size, Partial Eta squared= 0.33, meaning Social, Human and Job characteristics explain about 33% of the variance in the wages of the females in the sample studied. Table 8.11 also shows that the Child Under 5 Years $F_{(1.59, 1)} = 9.81$ p<0.05, Region $F_{(5.62, 5)} = 6.92$, p<0.05, Years in the Job $F_{(2.64, 4)} = 4.06$, p<0.05, Education Level $F_{(5.97, 5)} = 7.36$, p<0.05, Years of Education $F_{(1.63, 4)} = 2.41$, p<0.05, Industry $F_{(6.30, 6)} = 6.47$, p<0.05, and Hours worked per week $F_{(3.53, 2)} = 10.88$, p<0.05 were significant in influencing the wages of the female respondents. Surprisingly, Family Number, Family Head, Civil Status, Location, Age Group, Occupation and Sector were not significant.

Table 8.11: Main effects Model[c] Female: Tests of Between-Subjects Effects

Dependent Variable: Wage

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Corrected Model	66.41	46	1.44	**8.89**	**.00**	**.33**	409.03	1.00
Intercept	3362.11	1	3362.11	20707.88	.00	.96	20707.88	1.00
Family Number	.02	1	.02	.12	.73	.00	.12	.06
Child Under 5 Years	**1.59**	**1**	**1.59**	**9.81**	**.00**	**.01**	**9.81**	**.88**

Family Head	.13	1	.13	.81	.37	.00	.81	.15
Civil Status	.08	2	.04	.26	.77	.00	.52	.09
Region	**5.62**	**5**	**1.12**	**6.92**	**.00**	**.04**	**34.58**	**1.00**
Location	.07	1	.07	.44	.51	.00	.44	.10
Years in the job	**2.64**	**4**	**.66**	**4.06**	**.00**	**.02**	**16.26**	**.91**
Age Group	.60	9	.07	.41	.93	.00	3.67	.21
Education Level	**5.97**	**5**	1.19	**7.36**	**.00**	**.04**	36.78	1.00
Years of Education	**1.63**	**4**	.41	**2.51**	**.04**	.01	10.03	.71
Occupation	1.43	4	.36	2.21	.07	.01	8.82	.65
Industry	**6.30**	**6**	1.05	**6.47**	**.00**	.05	38.81	1.00
Sector	.01	1	.01	.06	.81	.00	.06	.06
Hours Per week	**3.53**	**2**	1.77	**10.88**	**.00**	.03	21.76	.99
Error	132.65	817	.16					
Total	70045.42	864						
Corrected Total	199.06	863						

8.4.3.4 Main Effects Model[d]

The Main Effects Model was specified in GLM ANOVA using IBM SPSS 24. The results in Table 8.12 show that the corrected model is significant $F_{(163.94, 47)} = 19.13$, $p<0.05$ and the effect size, partial Eta squared= 0.35, meaning Gender, Social, Human and Job characteristics explain about 35% of the variance in wages in this study. Table 8.12 also shows that Gender $F_{(13.39, 1)} = 73.43$, $p<0.05$, Child Under 5 Years $F_{(1.80, 1)} = 9.87$ $p<0.05$, Family Head $F_{(0.74, 1)} = 4.04$, $p<0.05$, Region $F_{(14.89, 5)} = 16.33$, $p<0.05$, Years in the job $F_{(4.94, 4)} = 6.78$, $p<0.05$, Age Group $F_{(4.14, 9)} = 2.52$, $p<0.05$, Education Level $F_{(7.64, 5)} = 8.37$, $p<0.05$, Years of Education $F_{(2.61, 4)} = 3.58$, $p<0.05$, Occupation $F_{(2.17, 4)} = 2.98$, $p<0.05$, Industry $F_{(10.15, 6)} = 9.27$, $p<0.05$, and Hours worked per week $F_{(4.98, 2)} = 13.66$, $p<0.05$ were significant in influencing the wages of the respondents. Surprisingly, Family Number, Civil Status, Location and Sector were not significant.

Table 8.12: Main effects Model[d]: Tests of Between-Subjects Effects

Dependent Variable: Wage

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Corrected Model	163.94	47	3.49	**19.13**	**.00**	**.35**	898.98	1.00
Intercept	7707.86	1	7707.86	42267.67	.00	.96	42267.67	1.00
Gender	**13.39**	**1**	**13.39**	**73.43**	**.00**	**.04**	**73.43**	**1.00**
Family Number	.10	1	.10	.54	.46	.00	.54	.11
Child Under 5 Years	**1.80**	**1**	**1.80**	**9.87**	**.00**	**.01**	**9.87**	**.88**
Family Head	**.74**	**1**	**.74**	**4.04**	**.04**	**.01**	**4.04**	**.52**
Civil Status	.42	2	.21	1.15	.32	.00	2.29	.25
Region	**14.89**	**5**	**2.98**	**16.33**	**.00**	**.05**	**81.65**	**1.00**
Location	.65	1	.65	3.58	.06	.00	3.58	.47
Years in the job	**4.94**	**4**	**1.24**	**6.78**	**.00**	**.02**	**27.10**	**.99**
Age Group	**4.14**	**9**	**.46**	**2.52**	**.01**	**.01**	**22.68**	**.94**
Education Level	**7.64**	**5**	**1.53**	**8.37**	**.00**	**.02**	**41.87**	**1.00**
Years of Education	**2.61**	**4**	**.65**	**3.58**	**.01**	**.01**	**14.31**	**.87**
Occupation	**2.17**	**4**	**.54**	**2.98**	**.02**	**.01**	**11.91**	**.80**
Industry	**10.15**	**6**	**1.69**	**9.27**	**.00**	**.03**	**55.64**	**1.00**
Sector	.73	1	.73	4.02	.06	.01	4.02	.52
Hours Per week	**4.98**	**2**	**2.49**	**13.66**	**.00**	**.02**	**27.31**	**1.00**
Error	310.56	1703	.18					
Total	147333.03	1751						
Corrected Total	474.49	1750						

The results obtained from the previous models indicated that human capital, job and social characteristics have a positive impact on wages for males, females and the whole group. Hence, hypothesis H3 (H3.1, H3.2, H3.3), H4 (H4.1, H4.2, H4.3) and H5 (H5.1, H5.2, H5.3) are all accepted.

8.4.3.5 Main and Interaction Effects Model[e]

The Custom Main and Interaction Effects Model[e] was tested in GLM ANOVA using IBM SPSS 24. The results in Table 8.13 show that the corrected model is significant F (263.01, 455) = 3.54, p<0.05 and the effect size, Partial Eta squared= 0.55, meaning Gender, Social, Human and Job characteristics, and the interaction effects of Gender and Social characteristics with Human and Job characteristics explain a majority (55%) of the variance in the wages in this study.

For the main effects, Table 8.13 also shows that among the sample population only Gender F (1.38, 1) = 8.42, p<0.05, Child Under 5 Years F (1.80, 1) = 9.87 p<0.05, Region F (2.74, 5) =3.36, p<0.05, Years in the job F (3.20, 4) =4.90, p<0.05, Industry F (2.69, 6) = 2.75, p<0.05 and Hours worked per week F (1.70, 2) = 5.20, p<0.05 were significant in influencing the wages of the respondents. Surprisingly, Family Number, Family Head, Civil Status, Location, Age Group, Education Level, Years of Education, Occupation and Sector were not significant.

Table 8.13: Main and Interaction Effects Model[e]: Tests of Between-Subjects Effects

Dependent Variable: Wage

Main effects	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Corrected Model	263.01	455	.58	3.54	.00	.55	1610.59	1.00
Intercept	911.80	1	911.80	5583.44	.00	.81	5583.44	1.00
Gender	1.38	1	1.38	8.42	.00	.01	8.42	.83
Family Number	.21	1	.21	1.27	.26	.00	1.27	.20
Child Under 5 Years	2.19	1	2.19	13.39	.00	.01	13.39	.96
Family Head	.59	1	.59	3.61	.06	.00	3.61	.48
Civil Status	.59	2	.30	1.81	.16	.00	3.63	.38
Region	2.74	5	.55	3.36	.01	.01	16.78	.90
Location	.00	1	.00	.00	.96	.00	.00	.05
Years in the job	3.20	4	.80	4.90	.00	.01	19.58	.96
Age Group	2.54	9	.28	1.73	.08	.01	15.53	.79
Education Level	1.59	5	.32	1.95	.08	.01	9.76	.66

	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Years of Education	.18	4	.04	.27	.90	.00	1.09	.11
Occupation	.73	4	.18	1.11	.35	.00	4.45	.35
Industry	**2.69**	**6**	**.45**	**2.75**	**.01**	**.01**	**16.48**	**.88**
Sector	.10	1	.10	.60	.44	.00	.60	.12
Hours Per week	**1.70**	**2**	**.85**	**5.20**	**.01**	**.01**	**10.40**	**.83**

Interaction effects	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Child Under 5 Years * Hours Per week	2.75	2	1.38	8.43	.00	.01	16.87	.97
Sector * Gender	1.19	1	1.19	7.26	.01	.01	7.26	.77
Civil Status * Industry	4.45	12	.37	2.27	.01	.02	27.22	.96
Civil Status * Years on the job	3.08	8	.39	2.36	.02	.01	18.88	.89
Child Under 5 Years * Industry	2.25	6	.38	2.30	.03	.01	13.78	.80
Family Head * Hours Per week	1.10	2	.55	3.37	.03	.01	6.75	.64
Region * Age Group	9.07	37	.25	1.50	.03	.04	55.55	1.00
Child Under 5 Years * Years in the job	1.63	4	.41	2.49	.04	.01	9.98	.71
Civil Status * Sector	1.05	2	.52	3.21	.04	.00	6.42	.61
Region * Sector	1.84	5	.37	2.25	.05	.01	11.27	.74
Location * Education Level	1.53	4	.38	2.35	.05	.01	9.38	.68

To test the interaction effects of Gender and Social, Human and Job characteristics, the Interaction Effect Model was specified in GLM ANOVA by creating temporary interaction terms; this was done by placing an asterisk between the variables. In terms of Gender, the results in Table 8.13 indicate that the interactions between 'Sector * Gender' *F (1.19, 1) = 7.26 p<0.05* had a significant influence on wages after controlling the other main effects as well as interactions. Among the Social characteristics, the results reveal that 'Child under 5 Years * Hours Per week' F (2.75, 2) = 8.43 p<0.05, 'Civil Status * Industry' F (4.45, 12) = 2.27 p<0.05, 'Civil Status * Years in the job' F (3.08, 8) = 2.36 p<0.05, 'Child Under 5 Years * Industry' F (2.25, 6) = 2.30 p<0.05, 'Family Head * Hours Per week' F (1.10, 2) = 3.37 p<0.05, 'Region * Age Group' F (9.07, 37) = 1.50 p<0.05, 'Child Under 5 Years * Years in the job' F (1.63, 4) =

2.49 p<0.05, 'Civil Status * Sector' F (1.05, 2) = 3.21 p<0.05, 'Region * Sector' F (1.84, 5) = 2.25 p<0.05, and 'Location * Education Level' F (1.53, 4) = 2.35 p<0.05 interaction terms had a significant influence on wages. It can be noted that Family Number, Family Head, Location and Civil Status did not have a direct main effect on wages, but their interaction with other variables influenced the variance in wages.

8.4.3.6 Main and Interaction Effects Model[f] –Male

The Custom Main and Interaction Effects Model[f] was tested in GLM ANOVA using IBM SPSS 24. The results in Table 8.14 show that the corrected model is significant F (138.38, 391) = 1.96, p<0.05 and the effect size, Partial Eta squared= 0.61, meaning Social, Human and Job characteristics, and the interaction effects of Social characteristics with Human and Job characteristics for males explain a majority (61%) of the variance in the wages in this study.

For the main effects, Table 8.14 also shows that among the sample population only Child Under 5 Years F (1.06, 1) = 5.88 p<0.05, Years in the job F (2.50, 4) =3.46, p<0.05, Years of Education F (2.25, 4) = 3.11, p<0.05 and Hours worked per week F (1.47, 2) = 4.06, p<0.05 were significant in influencing the wages of the respondents. Surprisingly, Family Number, Family Head, Civil Status, Region, Location, Age Group, Education Level, Occupation, Industry and Sector were not significant.

Table 8.14: Main and Interaction Effects Model[f] Male-Tests of Between-Subjects Effects

Dependent Variable: Wage

Main effects	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Corrected Model	138.38	391.00	.35	1.96	.00	.61	765.36	1.00
Intercept	326.68	1.00	326.68	1806.83	.00	.78	1806.83	1.00
Family Number	.67	1.00	.67	3.69	.06	.01	3.69	.48
Child Under 5 Years	**1.06**	**1.00**	**1.06**	**5.88**	**.02**	**.01**	**5.88**	**.68**
Family Head	.00	1.00	.00	.03	.87	.00	.03	.05
Civil Status	.44	2.00	.22	1.23	.29	.00	2.46	.27
Region	.52	5.00	.10	.58	.72	.01	2.90	.21
Location	.23	1.00	.23	1.25	.27	.00	1.25	.20

	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Years in the job	**2.50**	**4.00**	**.63**	**3.46**	**.01**	**.03**	**13.85**	**.86**
Age Group	1.49	8.00	.19	1.03	.41	.02	8.27	.48
Education Level	1.40	5.00	.28	1.54	.17	.02	7.72	.54
Years of Education	**2.25**	**4.00**	**.56**	**3.11**	**.02**	**.02**	**12.42**	**.81**
Occupation	.72	4.00	.18	.99	.41	.01	3.98	.32
Industry	2.23	6.00	.37	2.06	.06	.02	12.36	.75
Sector	.00	1.00	.00	.00	.97	.00	.00	.05
Hours Per week	**1.47**	**2.00**	**.73**	**4.06**	**.02**	**.02**	**8.13**	**.72**
Interaction effects	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**	**Partial Eta Squared**	**Noncent. Parameter**	**Observed Power**
Civil Status * Industry	**5.24**	**10.00**	**.52**	**2.90**	**.00**	**.06**	**29.00**	**.98**
Family Head * Hours Per week	**1.57**	**2.00**	**.78**	**4.33**	**.01**	**.02**	**8.67**	**.75**
Child Under 5 Years * Industry	**2.63**	**6.00**	**.44**	**2.43**	**.03**	**.03**	**14.57**	**.82**
Child Under 5 Years * Years of Education	**1.96**	**4.00**	**.49**	**2.70**	**.03**	**.02**	**10.82**	**.75**

The interaction effects of Social, Human and Job characteristics of the males were tested as before. The results in Table 8.14 indicate that the interactions between 'Civil Status * Industry' $F_{(5.24, 10)} = 2.90$ $p<0.05$, 'Family Head * Hours Per week' $F_{(1.57, 2)} = 4.33$ $p<0.05$, 'Child under 5 Years * Industry' $F_{(2.63, 6)} = 2.43$ $p<0.05$ and 'Child Under 5 Years * Years in the job' $F_{(1.96, 4)} = 2.70$ $p<0.05$ had a significant influence on wages after controlling the other main effects as well as interactions. It can be noted that Family Head and Civil Status did not have a direct main effect on wages, but their interaction with other variables influenced the variance in wages.

8.4.3.7 Main and Interaction Effects Model[g] –Female

Finally, the Custom Main and Interaction Effects Model[g] was tested in GLM ANOVA using IBM SPSS 24. The results in Table 8.15 show that the corrected model is significant $F_{(127.50, 389)} = 2.17$, $p<0.05$ and the effect size, Partial Eta squared= 0.64, meaning Social, Human and Job characteristics, and the interaction effects of Social characteristics with Human

and Job characteristics for females explain a majority (64%) of the variance in the wages in this study.

For the main effects, Table 8.15 also shows that among the sample population only Hours worked per week $F (0.97, 2) = 3.20$, $p < 0.05$ was significant in influencing the wages of the respondents. Surprisingly, all other variables were not significant.

Table 8.15: Main & Interaction effects Model[g] Female-Tests of Between-Subjects Effects

Dependent Variable: Wage

Main effects	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
Corrected Model	127.50	389.00	.33	2.17	.00	.64	844.51	1.00
Intercept	213.86	1.00	213.86	1416.59	.00	.75	1416.59	1.00
Family Number	.12	1.00	.12	.78	.38	.00	.78	.14
Child Under 5 Years	.28	1.00	.28	1.84	.18	.00	1.84	.27
Family Head	.03	1.00	.03	.21	.64	.00	.21	.07
Civil Status	.13	2.00	.06	.43	.65	.00	.86	.12
Region	.89	5.00	.18	1.18	.32	.01	5.88	.42
Location	.09	1.00	.09	.63	.43	.00	.63	.12
Years in the job	.55	4.00	.14	.91	.46	.01	3.63	.29
Age Group	.41	9.00	.05	.30	.97	.01	2.70	.16
Education Level	.87	5.00	.17	1.15	.33	.01	5.74	.41
Years of Education	.25	4.00	.06	.41	.80	.00	1.64	.15
Occupation	.99	4.00	.25	1.64	.16	.01	6.56	.51
Industry	1.10	6.00	.18	1.21	.30	.02	7.26	.48
Sector	.19	1.00	.19	1.25	.26	.00	1.25	.20
Hours Per week	**.97**	**2.00**	**.48**	**3.20**	**.04**	**.01**	**6.40**	**.61**

Interaction effects	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power
ChildUnder5Years * Hours Per week	**2.60**	**2.00**	**1.30**	**8.60**	**.00**	**.04**	**17.19**	**.97**
Region * Industry	**7.14**	**30.00**	**.24**	**1.58**	**.03**	**.09**	**47.32**	**.99**

Region * Education	5.24	21.00	.25	1.65	.04	.07	34.69	.97
Location * Sector	.64	1.00	.64	4.21	.04	.01	4.21	.54
Region * Occupation	4.71	20.00	.24	1.56	.05	.06	31.22	.95

The interaction effects of Social, Human and Job characteristics of the females were tested as before. The results in Table 8.15 indicate that the interactions between and 'Child Under 5 Years * Hours per Week' $F_{(2.60, 2)} = 8.60$ $p<0.05$, 'Region * Industry' $F_{(7.14, 30)} = 1.58$ $p<0.05$, 'Region * Education Level' $F_{(5.24, 21)} = 1.65$ $p<0.05$, 'Location * Sector' $F_{(0.64, 1)} = 4.21$ $p<0.05$ and 'Region * Occupation' $F_{(4.71, 20)} = 1.56$ $p<0.05$ had a significant influence on wages after controlling the other main effects as well as interactions. It can be noted that Child Under 5 Years, Region and Location did not have a direct main effect on wages, but their interaction with other variables influenced the variance in wages.

The results obtained from models (e,f,g) indicated that the indirect interaction effects between social characteristics and Human & Job characteristics significantly influence wages Syria. Therefore, hypotheses H6 is accepted.

8.4.3.8 Main and Interaction Effects Models: Summary

The summary of the Partial ETA squared, shown in Table 8.16 below, shows that independent variables (Social characteristics, Human characteristics and Job characteristics) explained 32% variance, 27% variance and 33% variance in wages in the Main Effects Model[a] without Gender, Main Effects Model[b] Male, and Main Effects Model[c] Female respectively. Models with the interactive effects explained 55% variance, 61% variance and 64% variance in wages in the Main and interaction Effects Model[e], Main and interaction Effects Model[f] Male, and Main and interaction Effects Model[g] Female respectively.

Table 8.16: Summary of the effect of independent variables on the wages variable

Partial ETA	0.32	0.27	0.33	0.35	0.55	0.61	0.64
Adjusted R- Squared	0.30	0.23	0.30	0.33	0.40	0.30	0.35
Variable	Model[a]	Model[b]	Model[c]	Model[d]	Model[e]	Model[f]	Model[g]
Corrected Model	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Intercept							
Gender	N/A	N/A	N/A	Yes	Yes	N/A	N/A
Family Number	No	No	No	No	No	No	No
Child Under 5 Years	Yes	No	Yes	Yes	Yes	Yes	No
Family Head	Yes	No	No	Yes	No	No	No
Civil Status	No	No	No	No	No	No	No
Region	Yes	Yes	Yes	Yes	Yes	No	No
Location	No	No	No	No	No	No	No
Years in the job	Yes	Yes	Yes	Yes	Yes	Yes	No
Age Group	Yes	Yes	No	Yes	No	No	No
Education Level	Yes	No	Yes	Yes	No	No	No
Years of Education	Yes	No	Yes	Yes	No	Yes	No
Occupation	Yes	No	No	Yes	No	No	No
Industry	Yes	Yes	Yes	Yes	Yes	No	No
Sector	Yes	Yes	No	No	No	No	No
Hours Per week	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gender*Sector	N/A	N/A	N/A	N/A	Yes	No	No
Child Under 5 Years * Hours Per week	N/A	N/A	N/A	N/A	Yes	No	Yes
Child Under 5 Years * Industry	N/A	N/A	N/A	N/A	Yes	Yes	No
Child Under 5 Years * Years on the job	N/A	N/A	N/A	N/A	Yes	No	No

Child Under 5 Years * Years of Education	N/A	N/A	N/A	N/A	No	Yes	No
Civil Status * Industry	N/A	N/A	N/A	N/A	Yes	Yes	No
Civil Status * Years on the job	N/A	N/A	N/A	N/A	Yes	No	No
Civil Status * Sector	N/A	N/A	N/A	N/A	Yes	No	No
Family Head * Hours Per week	N/A	N/A	N/A	N/A	Yes	Yes	No
Region * Age Group	N/A	N/A	N/A	N/A	Yes	No	No
Region * Sector	N/A	N/A	N/A	N/A	Yes	No	No
Location * Education Level	N/A	N/A	N/A	N/A	Yes	No	No
Region * Occupation	N/A	N/A	N/A	N/A	No	No	Yes
Region * Industry	N/A	N/A	N/A	N/A	No	No	Yes
Region * Education	N/A	N/A	N/A	N/A	No	No	Yes
Location * Education Level	N/A	N/A	N/A	N/A	Yes	No	No
Location * Sector	N/A	N/A	N/A	N/A	No	No	Yes

The variance in wages that is explained is lower for males than for females, indicating that the independent variables have more effect in influencing wages among females compared to males. It can also be noted that Gender, Social characteristics, Human characteristics and Job characteristics explain 35% of the variance in wages in the Main Effects Model[d]. Compared to the three previous models without gender as a variable, the percentage of variance explained is higher, meaning that Gender has an influence on wages.

The results in Table 8.16 indicate that the main effects of the independent variables and the interaction effects of Gender and Social characteristics on Human and Job characteristics explain about 55% of the variance in wages in the Main and Interaction Effects Model[e]. There is a significant increase in the Partial ETA in the Model[e] compared to other models, confirming the influence of the interaction effects of Gender and Social characteristics on Human and Job characteristics. Moreover, running the model (the main and interaction effect) once for females group and once for male's, revealed that they Model[f] Male explained 61% of the variance in wages and Model[g] Female 64% of the variance in wages.

Among the independent variables, it can be concluded that Region, Years in the job, Industry and Hours worked per week significantly explain variance in the wages in at least five of the seven models after controlling the main and interaction effects of other variables. On the other hand, Family Number, Civil Status and Location did not have a significant influence on wages in all seven models. Comparing the two genders (main models), it can also be noted from Table 8.16 that Age Group and Sector variables had a significant effect on wage variance only among the males. On the other hand, Child under 5, Education Level, and Years of Education had an influence on female wages only.

Finally, the results in Table 8.16 indicate that the interaction between Gender and the Sector a respondent works in, influence the wages they earn. Regarding Social characteristics, the interaction effects between the variables Child under 5 Years and Industry, Years in the job and Hours Per week significantly influence wages. Although Civil Status had no main effect on wages, its interaction effects with Industry, Years in the job and Sector influenced wages in this study. Similarly, the interaction effects between Location and Education Level significantly influenced wages, despite the non-significant main effects of Location. Furthermore, the interaction effects between Region, Age Group and Sector influenced the wages earned. Family Head interacted with the number of Hours worked per week to influence wages. It is important to note that there may be other interaction effects between the study variables but after controlling the interaction terms of Gender and Social characteristics, the independent variables in the Model[e] significantly predicted variances in wages. Comparing the last two models (Model[f] Males and Model[g] Females) reveals that the interaction effects that influence the wages in the male model are not the same in the females'.

8.4.4 Decomposition of the Interaction Effects

In this study, estimated marginal means were used to compare the means of the interaction effects of factors[26]. Pairwise comparisons were used as these adjust means for the effects of any covariates in the model. The Bonferroni-adjusted t-test (also called the Dunn test) was used to test pairwise comparisons of means between Gender and other variables, as well as Social characteristics. The pairwise comparison tables below present the same information as the estimated marginal means but also show whether there is a significant

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[26] Appendix 6 compare the main effect means.

difference in estimated marginal means between the level in the first column and the level in the second.

8.4.4.1 Decomposition of the Interaction Effects of Gender and Social Characteristics

The pairwise comparisons of the decomposed interaction effects of Gender and Social characteristics on wages are presented in Table 8.17. The results indicate that there were significant differences in wages between male and female respondents with a family which numbered between 1-5 members as the males with 1-5 family members earned significantly higher wages (M.D=0.25, P<0.05). Males with children under 5 years earned significantly higher wages than females with children of the same age (M.D=0.24, P<0.05). This could be attributed to the fact that females with children under 5 years tend to spend a lot of time at home. Similarly, the results in Table 8.17 show that married men earned significantly higher wages than married women (M.D=0.22, P<0.05). Male respondents from Damascus (M.D=0.25, P<0.05), the Northern (M.D=0.28, P<0.05) and Eastern (M.D=0.23, P<0.05) regions earned higher wages than females from the same regions. Finally, males located in urban areas earned more wages than females in the same areas (M.D=0.22, P<0.05).

Table 8.17: Gender and Social Characteristics: Decomposed Interaction Effects - Pairwise Comparisons

Dependent Variable: Wage

	(I) Gender	(J) Gender	Mean Difference (I-J)		Std. Error	Sig.
Family Number						
1-5 members	Male	Female	.245*		0.096	0.011
6-10 members	Male	Female		0.152	0.108	0.158
Child Under 5 Years						
No	Male	Female		0.162	0.09	0.08
Yes	Male	Female	.235*		0.11	0.04
Family Head						
Head	Male	Female		0.20	0.11	0.07
Other	Male	Female		0.19	0.10	0.05
Civil Status						
Married	Male	Female	.218*		0.10	0.02
Single	Male	Female		0.16	0.12	0.18
Divorced/Widowed	Male	Female		0.21	0.12	0.08
Region						
Damascus	Male	Female	.248*		0.11	0.02
Northern	Male	Female	.275*		0.11	0.01
Middle	Male	Female		0.12	0.12	0.32
Coastal	Male	Female		0.18	0.10	0.08

	(I) Gender	(J) Gender	Mean Difference (I-J)		Std. Error	Sig
Southern	Male	Female		0.14	0.11	0.19
Eastern	Male	Female	.234*		0.10	0.02
Location						
Urban	Male	Female	.215*		0.10	0.03
Rural	Male	Female		0.18	0.10	0.08

8.4.4.2 Decomposition of the Interaction Effects of Gender and Human Characteristics

The decomposed interaction effects of Gender and Human characteristics on wages are presented in Table 8.18. The results there indicate that males who had been in the same job for between 1-5 years (M.D=0.21, P<0.05), 11-15 years (M.D=0.23, P<0.05) and 20 and above years (M.D=0.25, P<0.05) had significantly higher wages than females with the same number of years in their employment. The results in Table 8.18 also show that males aged between 20 and 54 years generally had significantly higher wages compared to females in the same age group. However, a huge difference was discovered in the 25-29 years age group (M.D=0.47, P<0.05). In terms of educational level, wage differences between males and females were only significant in respondents with an elementary level of education (M.D=0.28, P<0.05). Finally, with regard to years of education, wages significantly differed between males and females with 8-11 years of education (M.D=0.23, P<0.05).

Table 8.18: Gender and Human characteristics: Decomposed interaction effects - Pairwise Comparisons

Dependent Variable: Wage

	(I) Gender	(J) Gender	Mean Difference (I-J)		Std. Error	Sig
Years in the Job						
1-5 Years	Male	Female	.207*		0.10	0.04
6-10 Years	Male	Female		0.18	0.11	0.09
11-15 Years	Male	Female	.230*		0.11	0.03
16-20 Years	Male	Female		0.13	0.11	0.23
20 and above	Male	Female	.246*		0.11	0.03
Age Group						
15-19 Years	Male	Female		-0.19	0.51	0.72
20-24 Years	Male	Female	.342*		0.13	0.01
25-29 Years	Male	Female	.465*		0.11	0.00
30-34 Years	Male	Female	.339*		0.10	0.00
35-39 Years	Male	Female	.276*		0.10	0.01
40-44 Years	Male	Female	.235*		0.10	0.02
45-49 Years	Male	Female	.202*		0.10	0.05
50-54 Years	Male	Female	.244*		0.11	0.02
55-59 Years	Male	Female		-0.05	0.18	0.81

	(I) Gender	(J) Gender		Mean Difference (I-J)	Std. Error	Sig.
60 and above Years	Male	Female		0.12	0.26	0.66
Education Level						
No study	Male	Female		0.29	0.30	0.33
Elementary	Male	Female	.283*		0.12	0.01
Preparatory	Male	Female		0.22	0.12	0.06
Secondary	Male	Female		0.17	0.12	0.14
Intermediate	Male	Female		0.07	0.12	0.54
University	Male	Female		0.15	0.13	0.22
Years of Education						
0-3 Years	Male	Female		0.06	0.24	0.80
4-7 Years	Male	Female		0.26	0.14	0.07
8-11 Years	Male	Female	.235*		0.11	0.03
12-15 Years	Male	Female		0.20	0.11	0.08
16 Years and above	Male	Female		0.24	0.13	0.07

8.4.4.3 Decomposition of the Interaction Effects of Gender and Job Characteristics

Table 8.19 presents the results of the decomposed interaction effects of Gender and Job characteristics on wages. In terms of occupation, the results reveal that male respondents had significantly higher wages than females among professionals and technicians (M.D=0.25, P<0.05) and production workers (M.D=0.29, P<0.05). Males working in industrial settings (M.D=0.35, P<0.05) and the service industries (M.D=0.21, P<0.05) had significantly higher wages than females in the same industries. Finally, males who worked between 0 to 20 hours per week (M.D=0.23, P<0.05) and those working over 40 hours per week (M.D=0.22, P<0.05) had significantly higher wages than those females working the same hours.

Table 8.19: Gender and Job Characteristics: Decomposed Interaction Effects - Pairwise Comparisons

Dependent Variable: Wage						
	(I) Gender	(J) Gender		Mean Difference (I-J)	Std. Error	Sig.
Occupation						
Administrators & clerks	Male	Female		0.05	0.14	0.74
Professionals & technicians	Male	Female	.249*		0.11	0.03
Sales & services	Male	Female		0.20	0.11	0.07
Agriculture workers	Male	Female		0.20	0.11	0.06
Production workers	Male	Female	.293*		0.10	0.01
Industry						
Agriculture	Male	Female		0.08	0.11	0.46
Industrial	Male	Female	.346*		0.11	0.00
Building & construction	Male	Female		0.14	0.11	0.21
Hotels & restaurants	Male	Female		0.12	0.11	0.25
Transport & communication	Male	Female		0.15	0.14	0.31

Insurance	Male	Female		0.34	0.22	0.12
Service	Male	Female	.210*		0.11	0.05
Sector						
Public	Male	Female		0.26	0.11	0.07
Private	Male	Female		0.13	0.10	0.17
Hours Per week						
0-20 Hours	Male	Female	.231*		0.12	0.05
21-40 Hours	Male	Female		0.14	0.10	0.15
40 Hours and above	Male	Female	.224*		0.10	0.03

8.5 Conclusion

After providing descriptive statistics concerning the sample, this chapter tested the direct relationships in the proposed model. After that, it uncovered the main and interaction effects in the model by testing seven Custom Factorial UNIANOVA Models. The results showed that variables of Social, Human and Job characteristics explained about 32% of the variance in the wages in the sample studied. If the effect of gender was eliminated, it explained about 27% of variance in the wages of the males in the sample and about 33% of the variance in the wages of the sample's females; it also explained about 35% of the variance in wages in the whole sample. When the interaction effects of the groups of variables were added, they explained a majority (55%) of the variance in the wage variable in this study. When separating the group into Males and Females the interaction effect explained 61% of the variance in the male model and 64% in the females'. Finally, pairwise comparisons of means between groups were used to determine whether there were significant differences in the means between groups in the models.

Chapter 9: Discussion and Conclusions

9.1 Introduction

The aim of this chapter is to interpret and discuss the results reported in the previous two chapters and to offer some contributions and implications for policy makers, in addition to outlining the limitations of this research.

The issue of gender wage differentials has long been of interest, not only to economists, but also to governments and policy makers. Even though outcomes for females in the Syrian labour market, such as participation rates and educational attainments, seem to be improving, the gender pay gap is persistent and Syrian females still lag behind men in terms of employment opportunities and earning. Females still earn significantly less than men. Searching the literature revealed that almost no research exists on gender pay discrimination in the Syrian labour market. This study was conducted to assess the wage determinants, measure the gender pay inequality in Syria, and understand its extent and what could explain it in order to help the government develop appropriate policies to narrow the gender pay gap and boost economic growth.

Using data from the Syrian Labour Force Survey (LFS) 2010, this study adopted a positivistic research approach. Firstly, the Mincerian wage equation was used to analyse the gender wage differentials and to help in finding out the relative importance of each specification included in the equation in terms of explaining wages. After that, returns to education were calculated. Then, the wage differentials between males and females were separated into two components using Oaxaca's decomposition technique: the explained wage differentials which result from differences in attributes (education, experience...etc.) between the two groups, and the unjustified wage differentials (the discrimination). Then, to test the indirect effects of the social factors on wages (through affecting the human capital and the job characteristics variables), a model was developed and tested using General Linear Modelling Univariate ANOVA.

In the next section, the main findings of this study are restated, then the third section emphasises the research questions and their answers. The main contribution of this research is presented in the fourth section. The last section outlines the limitations of this study and offers suggestions for future research.

9.2 Restating the Main Findings

This section reports on the findings of the research objectives and questions. Three objectives were identified for this thesis: 1) to examine the earning determinants for both males and females in the Syrian labour market, 2) to investigate the existence and determinants of gender wage differentials and discrimination in Syria, and 3) to investigate the proposed theoretical model that illustrates the main and interaction effects of gender, human capital, job characteristics and social variables on wages for both males and females. To achieve those objectives, six research questions were identified:

RQ1- What roles do human capital, job characteristics and social variables have on determining earnings for both males and females in the Syrian labour market?

RQ2- What are the rates of return to education in Syria for both males and females?

RQ3- What are the total effects of human capital, job characteristics and social variables in explaining the gender wage differentials and what is the portion of discrimination in these differentials?

RQ4- Is there a correlation between the variables of social characteristics and the human and job characteristic?

RQ5- What are the direct effects of gender, social, human, and job characteristics on Wages in Syria? And what are the interactive effects of gender and social characteristics with human and job characteristics in influencing wages in Syria?

RQ6- Are there significant differences between males and females wages across variables?

To address the first three questions, the Mincerian wage equation was used to analyse gender wage differentials and to help in finding out the relative importance of each specification included in the equation in explaining wage. After that, the wage differentials between males and females were separated into two components using Oaxaca's decomposition technique: the explained wage differentials which result from differences in attributes (education, experience...etc.) between the two groups, and the unjustified wage differentials (the discrimination). The last three research questions and their related hypotheses were addressed firstly by employing the Pearson Chi-Square and Kruskal Wallis tests, then by using General Linear Modelling Univariate ANOVA (GLM ANOVA). GLM ANOVA was tested to reveal the main and interaction effects of the factors specified in the theoretical model. Finally, the Bonferroni-adjusted *t*-test (also called the Dunn test) was used to test pairwise

comparisons of means between gender and other variables. The data used in this research came from the Syrian Labour Force Survey (LFS) 2010, conducted by the Government through the Central Bureau of Statistics.

9.2.1 RQ1- Wage Equations

Wage equations were formulated using an extended form of the basic Mincer model. This extended model was built gradually by adding three groups of variables successively; all the models were run for males, females and the whole sample.

The results indicated that human capital variables were vital in explaining an individual's earnings for the three successive models with education variables being the most influential. It was obvious that males' returns were better than females' for all educational levels except for intermediate education where women's returns were higher in the first two models. The returns for both males and females were close and small for age and years in the same job, with much smaller returns for the latter. All the coefficients of human capital variables were significant in the three models at a .01 level for males, females and the whole group; there were a few exceptions of significance at .05 or .10 levels.

Then, when job characteristics variables were included, it was concluded that returns for weekly work load for both males and females were trivial and almost identical. The resulting returns for all occupation variables were statistically significant for the whole group in the second and third models, with an increasing returns for individuals to "Production workers" and "Sales & services", which were characterised by the lowest returns, to "Administrators & clerks" with relatively higher returns, while returns to "Professionals & technicians" were the highest among all the occupations. However, it was not possible to compare returns for most of the occupation dummy variables between males and females in the second and third models as a result of a lack of significant results in one or both of the variables. Nevertheless, they were comparable for "Sales & services" in the second model, as well as for "Professionals & technicians" in both the second and third models where men's returns were higher than females'. Moreover, the results indicated that being in the private sector, compared to the public sector, had a negative impact on an individual's wages in the second model and an insignificant impact in the third, while women's returns were negative in both models and men's returns were insignificant.

Furthermore, it was found that working in "Building & construction", "Insurance", "Transport & communication" and "Service" industries had a statistically significant positive

impact on an individual's income in both the second and third models, while working in the "Hotels & restaurants" industry had a statistically significant negative impact on an individual's wages in the third model only. Comparing males to females across industries revealed that, in the second model, male workers in "Transport & Communication" and "Industrial" work were rewarded more highly than females. In the third model, however, males were rewarded more in "Building & construction" and "Services" while females were rewarded more in "Transport & Communication"; the rest of the results were not comparable between males and females. However, examining the females' returns across industries showed that females were rewarded the highest for working in "Insurance"; this was followed by "Transport & Communication" in both the second and third models. Males, on the other hand, were rewarded the highest in "Services" followed by "Building & construction" then "Transport & Communication" in both models.

After that, social variables were added in the final models. It was found that being the family head had a statistically significant positive effect on an individual's wages, but not for both males and females. Moreover, in terms of the civil status variables, it was concluded that women's regression coefficients were statistically insignificant for the "Single", "Divorced", and "Widowed" variables. Similarly, men's regression coefficients were also insignificant for both "Divorced" and "Widowed" variables, but the coefficient for the "Single" variable was significant and negative, indicating that single men received lower wages than those who were married. Moving to the whole sample, the "Single" variable was not significant, whereas the "Divorced" and "Widowed" variables both had a significantly negative impact on wages, indicating that divorced and widowed individuals earned less compared to married ones.

The results revealed that the presence of one/two children under 5 negatively affected women's wages whilst the effects were statistically insignificant for both men and the whole sample. Furthermore, it was concluded that there was a statistically significant relationship between men's income and their living in a household with fewer than 5 members. The earnings of men who lived in families of 5 members or fewer were higher than those of men who lived in families with more than 5 members. However, the results for both the whole sample and the female regressions indicated no significant relationship between women's earnings and their family sizes.

Regarding the region of residence, individuals experienced a reduction in their wages from living in different regions if compared to Damascus, with the Coastal region being the least affected, followed by the Northern region, then both the Eastern and Middle regions which were more affected. Finally, the Southern region was the most negatively affected. Like the

group results, men's regressions returned similar results. However, the coefficient for the Coastal region was insignificant and the women's regressions revealed that the regions could be arranged according to their negative effect on women's wages from the Middle region (least affected). This was followed by the Northern region, then the Eastern region, and finally the Southern region, which was the most negatively affected. Comparing males to females across different regions revealed that women in the Northern region were disadvantaged more than men from being in this region rather than Damascus. Unlike in the Northern area, women who lived in the Middle, Southern and Eastern regions were disadvantaged less from living in their areas rather than living in Damascus than the corresponding men.

Finally, by investigating the role of location, it was found that location had no statistically significant relationship with income for men and for the pooled sample. However, women received a wage premium from working in an urban rather than a rural area.

9.2.2 RQ2- Returns to Education

Rates of return to education were estimated for both men and women using educational levels first and then by using years of education. On the one hand, from the model which utilised educational levels, the results suggested that women's marginal rates of return were higher than those of men for Preparatory, Secondary and Intermediate education levels. However, men's marginal rates of return were greater than women's for both Elementary and University education levels. On the other hand, by running another model using years of education, it was found that females' average returns for each additional year of schooling were greater than the males'.

9.2.3 RQ3- Oaxaca Decomposition

By employing the decomposition method on the gender pay gap, it was found that the explained portion of the gap ranged from zero (or negative) in the decomposition based on human capital model, to 7.81% in the second model which contained both human capital and job characteristics variables. Finally, it reached 17.19% in the third model with a full set of variables. By applying Cotton's (1988) solution for the index number problem in the successive model, it was concluded that nepotism for males ranged from (56.25%) to (40.66%) between the first and full models, while the corresponding discrimination against females ranged from (53.13%) to (40.66%).

9.2.4 The Relationships in the Proposed Theoretical Model

Testing the proposed relationships in the theoretical model gave the following results:

9.2.4.1 RQ4- The Relationship between Social and Human & Job Characteristics

The relationship between social and human variables revealed that family number was significantly related with all human characteristic variables (i.e. years in the job, age group, education level and years of education). Having a child under 5 was significantly related to years in the job, age group and education level. The results further indicated that being the family head was significantly related to years in the job, age group and years of education. Civil status was significantly related to years in the job and age group while, in terms of the relationship between region and human characteristics, the results revealed that region was significantly related to education level and years of education. Finally, the results showed that location was significantly related to education level and years of education.

In terms of the relationship between social and job characteristics, the results revealed a significant relation between family number and occupation, industry and sector. Having a child under 5 was significantly related to sector. The results further revealed a significant relation between being the family head and both occupation and industry. Regarding the effect of civil status, the results indicated a significant relation between civil status and occupation, industry, sector and hours worked per week while, in terms of the association between region and job characteristics, the results revealed that that there was a significant relation between the region of the respondent and occupation, industry, sector and hours worked per week. Moreover, with regard to the association between location and job characteristics, the results showed that a significant relation existed between the location of the respondent and occupation, industry, and hours worked per week.

9.2.4.2 RQ5- The Main and Interaction Effects in the Model

To determine the main and interaction effects of gender, and social, human and job characteristics on wages, a GLM Univariate ANOVA was conducted. Seven custom factorial UNIANOVA models were tested in order to achieve the objectives of this study. The models were: Main Effects without Gender Model, Male only Model, Female only Model, Main Effects Model, Main Effects and Interaction Effects Model, Main Effects and Interaction

Effects Model- Male, Main Effects and Interaction Effects Model- Female. The results showed that:

1- Model[a] (the Main Effects without Gender): Social, Human and Job characteristics explained about 32% of the variance in the wages in the sample studied. Having a Child Under 5 Years, Family Head, Region, Years in the job, Age Group, Education Level, Years of Education, Occupation, Industry, Sector and Hours worked per week were significant in influencing the wages of the respondents. Surprisingly, Family Number, Civil Status and Location were not significant.

2- Model[b] (the Main Effects - Males): Social, Human and Job characteristics explained about 27% of the variance in the wages of males in the sample. Among males in the sample population, only Region, Years in the job, Age Group, Industry, Sector and Hours worked per week were significant in influencing the wages of the male respondents. On the other hand, Family Number, Child under 5, Family Head, Civil Status, Location, Years of Education, Education Level and Occupation were not significant.

3- Model[c] (the Main Effects - Females): Social, Human and Job characteristics explained about 33% of the variance in the wages of the females in the sample studied. Child Under 5 Years, Region, Years in the Job, Education Level, Years of Education, Industry, and Hours worked per week were significant in influencing the wages of the female respondents. Unexpectedly, Family Number, Family Head, Civil Status, Location, Age Group, Occupation and Sector were not significant.

4- Model[d] (the Main Effects - All): Gender, Social, Human and Job characteristics explained about 35% of the variance in wages in this study. In the overall sample, Gender, Child Under 5, Family Head, Region, Years in the job, Age Group, Education Level, Years of Education, Occupation, Industry and Hours worked per week were significant in influencing the wages of the respondents. However, Family Number, Civil Status, Location and Sector were not significant.

5- Model[e] (the Main Effects and Interaction - All): Gender, Social, Human and Job characteristics, and the interaction effects of Gender and Social characteristics with Human and Job characteristics explained a majority (55%) of the variance in the wages in this study. For the main effects among the sample population, only Gender, Child Under 5 Years, Region, Years in the job, Industry and Hours worked per week were significant in influencing the wages of the respondents. On the other hand, Family Number, Family Head, Civil Status, Location, Age Group, Education Level, Years of Education, Occupation and Sector were not significant. With regard to the interaction effects of

Gender and Social, Human and Job characteristics on wages: in terms of Gender, the results indicated that the interactions between 'Sector * Gender' had a significant influence on wages after controlling the other main effects as well as the interactions. Among the Social characteristics, the results revealed that 'Child under 5 Years * Hours Per week', 'Civil Status * Industry', 'Civil Status * Years in the job', 'Child Under 5 Years * Industry', 'Family Head * Hours Per week', 'Region * Age Group', 'Child Under 5 Years * Years in the job', 'Civil Status * Sector', 'Region * Sector', and 'Location * Education Level' interaction terms had a significant influence on wages. It should be noted that Family Number, Family Head, Location and Civil Status did not have a direct main effect on wages, but their interaction with other variables influenced the variance in Model[e] wages.

6- Model[f]- Male (the Main Effects and Interaction): Social, Human and Job characteristics, and the interaction effects of Social characteristics with Human and Job characteristics for males explain a majority (61%) of the variance in the wages in this study. For the main effects, only Child Under 5 Years, Years in the job, Years of Education and Hours worked per week were significant in influencing the wages of the respondents. With regards to the interaction effects of Social, Human and Job characteristics of the males on wages, the results in indicated that the interactions between 'Civil Status * Industry', 'Family Head * Hours Per week', 'Child under 5 Years * Industry' and 'Child Under 5 Years * Years in the job' had a significant influence on wages after controlling the other main effects as well as interactions. It can be noted that Family Head and Civil Status did not have a direct main effect on wages, but their interaction with other variables influenced the variance in wages.

7- Model[g]- Female (the Main Effects and Interaction): Social, Human and Job characteristics, and the interaction effects of Social characteristics with Human and Job characteristics for females explain a majority (64%) of the variance in the wages in this study. For the main effects, only Hours worked per week was significant in influencing the wages of the respondents. Surprisingly, all other variables were not significant. The interaction effects of Social, Human and Job characteristics of the females results revealed that the interactions between and 'Child Under 5 Years * Hours per Week', 'Region * Industry', 'Region * Education Level', 'Location * Sector' and 'Region * Occupation' had a significant influence on wages after controlling the other main effects as well as interactions. It can be noted that Child Under 5 Years, Region and Location did not have

a direct main effect on wages, but their interaction with other variables influenced the variance in wages.

To summarise the result, among the independent variables, it could be concluded that Region, Years in the job, Industry and Hours worked per week significantly explained variance in the wages in all seven models after controlling the main and interaction effects of other variables. On the other hand, Family Number, Civil Status and Location did not have a significant influence on wages in all seven models. Comparing the two genders, it can also be noted that the Age Group and Sector variables had a significant effect on wage variance only among the males while Child under 5, Education Level and Years of Education had an influence on female wages only. Finally, the results indicated that the interaction between Gender and the Sector a respondent works in, influences the wages they earn. Regarding Social characteristics, the interaction effects between the variables Child under 5 Years and Industry, Years in the job and Hours Per week significantly influenced wages. Although Civil Status had no main effect on wages, its interaction effects with Industry, Years in the job and Sector influenced wages in this study. Similarly, the interaction effects between Location and Education Level significantly influenced wages, despite the non-significant main effects of Location. Furthermore, the interaction effects between Region, Age Group and Sector influenced the wages earned. Family Head interacted with the number of Hours worked per week to influence wages.

9.2.4.3 RQ6-Decomposition of the Differences in Wages between Males and Females

In this study, estimated marginal means were used to compare the means of the interaction effects of factors. Pairwise comparisons were used as these adjust means regarding the effects of any covariates in the model. The results of the pairwise comparisons of the decomposed interaction effects of Gender and Social characteristics on wages indicated that there were significant differences in wages between male and female respondents with a family which numbered between 1-5 members as the males with 1-5 family members earned significantly higher wages. Males with children under 5 years earned significantly higher wages than females with children of the same age. Similarly, the results showed that married men earned significantly higher wages than married women. Male respondents from Damascus, and the Northern and Eastern regions earned higher wages than females from the same regions. Finally, males located in urban areas earned more wages than females in the same areas.

The results of the pairwise comparisons of the decomposed interaction effects of Gender and Human characteristics on wages indicated that males who had been in the same job for between 1-5 years, 11-15 years and 20 and above years had significantly higher wages than females with the same number of years in their employment. The results also showed that males aged between 20 and 54 years generally had significantly higher wages compared to females in the same age group. However, a huge difference was discovered in the 25-29 years age group. In terms of educational level, wage differences between males and females were only significant in respondents with an elementary level of education. Finally, with regard to years of education, wages significantly differed between males and females with 8-11 years of education.

The results of the decomposed interaction effects of Gender and Job characteristics on wages revealed that, in terms of occupation, male respondents had significantly higher wages than females among professionals and technicians, and production workers. Males working in industrial settings and the service industries had significantly higher wages than females in the same industries. Finally, males who worked between 0 to 20 hours per week and those working over 40 hours per week had significantly higher wages than those females working the same hours.

9.3 Critically Discussing the Findings

This section discusses and interprets the results reported in Chapters 7 and 8 (and which are summarised in the section above). This section is organised into three sub-sections according to the research objectives. The first sub-section discusses the findings related to the first research objective of this thesis that revealed the earning determinants for males and females in the Syrian labour market, thereby answering the first two research questions. The second sub-section discusses the determinants of the wage differentials and discrimination in Syria, answering the third research question while the last sub-section discusses the relationships in the theoretical model and the results of the associated hypotheses; this answers the last three research questions.

9.3.1 Earning Determinants in Syria

9.3.1.1 RQ1- The Effects of Human Capital, Job and Social Characteristics on Wages

Wage equations were formulated using an extended form of the basic Mincer model. This extended model was built gradually by adding three groups of variables successively then all the models were run for males, females and the whole group. The results indicated that human capital variables were vital in explaining an individual's earnings for the three successive models with education variables being the most influential, as human capital is believed to enhance the productivity of workers; this accords with the findings of other studies: (e.g. Nasir 1998; Acemoglu and Autor, 2011). However, in contrast to the expectations of Human Capital Theory, returns for age and years in the same job were trivial for both males and females when both could be interpreted as representatives of experience, where age is seen as proxy for total worker experience and years in the same job are considered to be experience with the current employer (Altonji and Blank, 1999). Hence, workers are not well compensated for their experience by their employers. This result is contrary to the expectations of Human Capital Theory, as well as many studies (e.g. Schultz, 1960; Becker, 1964; Mincer, 1974; Joshi and Davies, 2002). Thus, both men and women were similar in their (relatively small) returns to experience variables and, consequently, both age and years in the same job were unable to explain any of the observed gender wage differentials.

With regard to education levels, the results showed that men receive the highest return for completing elementary education followed by university degree, while females obtain the highest return for completing the preparatory level followed by elementary. Female returns increased with each level of education. However, for males, achieving the intermediate degree did not increase their return although going to university did. In general, females' returns in higher educational attainments levels were greater than males' while males were more highly rewarded for lower educational levels (Table 9.1). These results are in line with previous studies in the Syrian context (Huitfeldt and Kabbani, 2007 and Kabbani and Salloum, 2010), as well as international studies (Tsakloglou and Cholezas, 2001; Arrazola and De Hevia, 2006; Asadullah, 2006). Clearly, the resulting returns for both men and women are completely consistent with the expectations of Human Capital Theory.

Moving on to discuss job characteristics variables, it was obvious that the weekly work load was an almost ineffective factor in determining wages for both males and females, as their returns were trivial and nearly identical although this has been found to be influential in other studies (Elliott, 1990; Groshen, 1991; Bayard *et al*., 2003; Meng, 2004; Manning, 2006;

Thomson, 2006; Mumford and Smith, 2009). This was the result of this study's analysis being limited to males and females working full-time only and hence, no significant differences were expected between the workloads of men and women.

The resulting returns from all the Occupation variables were statistically significant for the whole group but not for men or women across occupations. However, significant positive coefficients for the males' regressions were observed in the "Production", "Professionals & technicians" and "Sales & services" occupations while corresponding positive coefficients in the females' regressions were found in "Administrators & clerks" followed by "Professionals & technicians", indicating that men and women are distributed among occupations in certain way that is not necessarily the result of their choices. Consequently, women are concentrated in certain occupations which gradually become female-dominated areas of work, as suggested by the Occupational Segregation and Crowding Theory (see, for example, Watts, 1998; Bayard *et al*., 2003; Manning, 2006). Moreover, in female-dominated occupations, lower wages tend to be offered compared to earnings in male-dominated ones (MacPherson and Hirsch, 1995; Baker and Fortin, 2001; Bayard *et al*., 2003). As aforementioned, returns to most of the Occupation dummy variables were incomparable between males and females in the second and third models as a result of lack of significant results in one or both of the variables; nevertheless, they were comparable for "Sales & services" in the second model, as well as for the "Professionals & technicians" category in both the second and third models where men's returns were higher than the females'. Consequently, more of the gender pay differentials can be explained by occupational segregation, which is supported by many studies (e.g. Blau and Ferber, 1987; Baldwin *et al*., 2001).

Working in the private sector was found to negatively affect women's wages compared to working in the public sector while its effect was insignificant for men. The public sector in Syria is attractive for males and females by offering job security as "dismissal of public sector employees is very difficult once they are granted "fixed contracts," which occurs after they have completed a year-long training period (Article 17 of Law No. 50)" (Kabbani and Kamel, 2007, p. 33). The attraction of public sector jobs is more obvious for females as they offer flexibility in working hours, better policies for maternity leave and higher wages than in the private sector (Kabbani and Kamel, 2007; Kabbani, 2009).

Similar to Occupations, the results indicated that men's and women's returns across Industries were significantly mixed. The significant positive coefficients for the male regressions were observed in "Building & construction", "Transport & communication" and "Service" industries, while in the female regressions they were detected in "Industrial" and

"Insurance", followed by the "Building & construction" and "Transport & communication" industries. This rather implies gender segregation across industries where women are vulnerable to the statistical discrimination imposed by employers. The results are in line with the findings of other studies (e.g. Erdil and Yetkiner, 2001; Arbache, 2001). As a result, industrial segregation contributed more to broaden the gender pay gap, as suggested in a large number of studies (e.g. Hartog *et al*. 1999; Gibbons and Katz, 1992).

By the inclusion of social variables, it was found that, similar to Polachek (1975a), Becker (1985), Blau and Kahn (1992), and Waldfogel (1995), and contrary to Appleton *et al.* (1999), marriage was associated with higher earnings for men. However, no significance relationship between marriage and earnings were found for women.

As anticipated, the results revealed that the presence of one/two children under 5 negatively affected women's wages whilst the effects were statistically insignificant for men, which accords with the findings of Mincer and Polachek (1974), Harkmess and Waldfogel (2003). Hence, both civil status and the presence of a child under 5 variables contributed further in explaining men's higher earnings compared to women's.

Surprisingly, it was found that being the family head had no statistically significant impact on earnings for either males or females and hence, Patriarchy Theory does not hold. The findings of this study suggested that the earnings of men who lived in families of 5 members or fewer were higher than those of men who lived in families of more than 5 members. A reasonable explanation for this is that highly educated men are more concentrated in families with 5 members or less and so earn more than those living in larger families.

In accordance with the theory of regional wage determination (Dickie and Gerking 1989; Molho, 1992), regional distribution was found to be influential in explaining earnings for both men and women. Among the different regions in Syria, it was found that living in the capital, Damascus, was associated with higher earnings for both men and women, while the opposite was found to be valid in the Southern, Eastern and Middle regions. Those differences may be the result of differences in the cost of living, differences in workers' characteristics across regions, or differences in region-specific characteristics (such as amenities and climate). Moreover, regional differences in earnings have been proven by other studies: (e.g., Dickie and Gerking, 1989; Topel, 1994; Hemmings, 1991; Blackaby and Murphy, 1991; Burda, 1991; and Groot *et al.*, 1992). Finally, by investigating the role of location, it was found that location had no statistically significant relationship with income for men. However, women received a wage premium from working in an urban rather than in a rural area. This may be explained by the size of the public sector in urban and rural areas and the proportions of women who work in

the public sector in both urban and rural areas. Most public sector jobs exist in urban areas; also, the majority of Syrian women who work in the public sector are located in urban areas while a minority is located in rural areas (Ovensen and Sletten, 2007).

9.3.1.2 RQ2- The Rates of Return to Education in Syria

The results of the full model (human, social and job characteristics) are discussed in this section as it is the most realistic model and reflects what is going on in reality. The results showed that men received the highest return for completing their elementary education (7.87%) followed by university degree (4.97%), while females obtained the highest return for completing the preparatory level (6.14%), followed by elementary (4.15%). Female returns increased with each level of education. However, for males, achieving the intermediate degree did not increase their returns although a university education did. In general, female returns in higher educational attainments levels were greater than males' while males were rewarded more highly for lower educational levels (Table 9.1). The results using years of education suggested that women's average rate of return for each extra year of education (5.03%) exceeded men's (4.36%).

Table 9.1: Marginal Returns and Educational Level

		Male		Female		Total	
		%	Accumulated	%	Accumulated	%	Accumulated
All	Elementary	7.87%	7.87%	4.15%	4.15%	6.18%	6.18%
	Preparatory	3.98%	11.85%	6.14%	10.29%	5.06%	11.24%
	Secondary	2.40%	14.25%	3.02%	13.31%	3.65%	14.89%
	Intermediate	-2.03%	12.22%	3.49%	16.80%	-0.56%	14.33%
	University	4.97%	17.19%	3.09%	19.89%	4.09%	18.42%

These results are in line with previous studies in the Syrian context as in both the studies of Huitfeldt and Kabbani (2007) and Kabbani and Salloum (2010) it was found that the education rates of return were higher for females than for males. This is similar to much international evidence: (e.g. Flanagan, 1998 in the Czech Republic; Chase, 1998 in Slovakia; Tsakloglou and Cholezas, 2001 in Greece; Arrazola and De Hevia, 2006 in Spain; Moock *et al.*, 1998 in Vietnam; Asadullah, 2006 in Bangladesh and Psacharopoulos, 1994a). As an explanation of the results in Syria, larger numbers of females tend to work in the public sector rather than the private one and higher returns to education were found in the public sector with

no gender-bias against women. Also, it was found that women in the public sector receive higher returns for their education, while men's returns in the private sector are higher for all educational levels (Huitfeldt and Kabbani, 2007 and Kabbani and Salloum, 2010).

In a study of Higher Education in Syria, Kabbani and Salloum (2010) found very low returns for education in Syria. These were, on average, around 2% for preparatory schooling, 2.5% for secondary school, and 4.5% for higher education in 2001-2002. This is very similar to the results of this study although the returns were a little higher in the current study as returns to preparatory schooling were 5.6% and 3.65% for secondary school. This increase could be a result of the eight year gap between the two analysed sets of data or could be the result of different specifications in the model. The international average return to education is around 10-15% (World Bank, 2008; Kabbani and Salloum, 2010) while, in the region, the average return is around 6% (World Bank, 2008). In both Egypt and Morocco the return to higher education is around 8-9%, and around 10-11% in both Tunisia and Jordan (El-Araby, 2010). Kabbani and Kothari (2005) found that the returns to one more year of education in Syria have been estimated at between 8 and 15%, while in MENA, the rates range between 4 and 50%. However, this study found the rate to be 5.03% for females and 4.36% for males, which is consistent with other MENA countries. However, the returns found for each level of education in this study were inconsistent with those found in previous studies.

The rates of return increased by the level of education. This is in line with the conclusions of Huitfeldt and Kabbani (2007) and Kabbani and Salloum (2010) which were similar to those for most countries in the MENA region (Psacharopoulos and Patrinos, 2002) although they contradict the findings of many researches in other countries in the world where they found that the best rates of return were found at the level of primary schooling (e.g. Fiszbein and Psacharopoulos, 1993 in Venezuela; Moock *et al.*, 1998 in Vietnam; Heckman *et al.*, 2003; Trostel, 2005). This situation could be explained by the significant role of public sector employment in the MENA region where salaries are not related to improved productivity but rather where the pay is based on scales (Kabbani and Kothari, 2005).

These results are in accordance with Human Capital Theory where schooling has a productivity-enhancing effect on individuals which, in turn, leads to higher earnings (McMahon, 1999); individuals invest now in education in exchange for future returns (Becker, 1964). Additionally, employers often used educational qualifications as a signal of the potential productivity of employees before hiring them as employers often do not have enough information about an applicants' abilities.

9.3.2 Gender Wage Differentials

9.3.2.1 RQ3- The Role of Human Capital, Job and Social Characteristics in Explaining the Gender Wage Differentials

Oaxaca's decomposition was used to separate the wage differentials between males and females into two components: the first is referred to as justified or explained wage differentials which results from differences in attributes (education, experience...etc.) between the two groups, while the second component reflects unjustified wage differentials and represents the upper limit of labour market discrimination. As mentioned earlier, the approach adopted in this study with regard to decomposing the gender wage differentials, was to define three groups of variables according to the likelihood that they would be affected by discrimination. Each group therefore contained a set of variables believed to be similar in terms of their probability of being affected by labour market discrimination. Then, the groups (human capital, job characteristics and social variables) were added successively in the models in order to confine the upper and lower boundaries of gender wage discrimination. The decomposition began only with the human capital variables because they were believed to be least likely to be affected by discrimination. This was followed by job characteristics' variables which were believed to reflect some discrimination, while the final model was obtained by adding the third group which was viewed as the most affected by gender discrimination.

The first model, the non-discriminatory human capital variables, revealed that none of the differentials could be explained by human capital differences, as the unexplained portion of the differentials exceeded the whole gender gap in pay. On average, 107.81% of the gender wage differentials were not explained by the different characteristics of men and women. This result was unexpected as human capital could not explain any of the differences in wages. However, this result seems logical in the context of the Syrian labour market as, on the one hand, 43% of females in the sample had higher educational qualifications (i.e. intermediate level and university) compared to only 34% of the males (which is the same for the total labour force population). On the other hand, results in RQ2 revealed that females received higher returns for their education at intermediate and university levels. Moreover, a large number of females, especially with a higher educational level, tended to work in the public sector. Previous research results have proved a positive relationship between educational level and public sector employment in Syria (Kabbani and Kamel, 2007; Kabbani, 2009). Higher returns to education were found in the public sector with no gender-bias against women (Huitfeldt and Kabbani, 2007 and Kabbani and Salloum, 2010). Those indicators meant that females should

get higher wages than males. Thus, the explained portion of the wage differences was, on average, (-0.025) logged wage gap or -7.81% while the unexplained was (0.345) or 107.81% (see Table 7.7). In other words, human capital variables failed to explain any of the observed gender wage differentials. Rather, they suggested that women should have earned more than men according to both men's and women's average characteristics.

Comparing the second model, which contains both human capital and job characteristics, to the first one revealed that the unexplained portion has now been reduced to 92.19%, which means that an average of 92.19% of the gender wage differentials were not explained by the different characteristics of the men and women. Hence, by including both human capital and job characteristics variables, on average, 7.81% of the total gender pay gap could be explained. This means that the differences in the distribution of female and male workers between sectors, industries, occupations and hours worked (in addition to the human capital variables) justified 7.81% of the differences in the wages. Moving from the first model, with only human capital variables, to the second which included both human capital and job characteristics, improved the explained part from (-7.81%) to (+7.81%), an improvement of 15.62%. This is in accordance with previous studies that found that labour market sex segregation contributed significantly to the gender wage gap in the labour market (Kreimer, 2004). When women and men were unequally distributed across different sectors, industries and occupations, then the gender wage gap was significantly affected (García-Aracil, 2007). Also, the results of the first RQ revealed that women in Syria received lower wages in female-concentrated occupations. Similarly, according to Ovensen and Sletten (2007), women dominate agricultural occupations (46% vs. 22% of men) while men dominate occupations such as manufacturing, technical and construction work (39% vs. 8% of women). In female-dominated occupations, lower wages tend to be offered compared to male-dominated ones (MacPherson and Hirsch, 1995; Baker and Fortin, 2001; Bayard *et al*., 2003). Previous research concluded that occupational segregation explains a part of the gender pay gap (Blau and Ferber, 1987; Gornick and Jacobs, 1998; Baldwin *et al*., 2001; Dex *et al*., 2008, Isaza-Castro and Reilly, 2011). Another aspect of labour market segregation is the sectorial division into the public and private sectors. Workers with similar productivity characteristics have different pay rewards according to whether they work in the public or the private sector. Public sector employment is more vital in the MENA region in general, and particularly in Syria, than in other developing countries (Kabbani and Kothari, 2005; Kabbani and Kamel, 2007; Kabbani, 2009). In terms of wages in Syria, it was found that public sector employees in 2007 enjoyed monthly salaries that were, on average, 22% higher compared to the private sector salaries

(Kabbani, 2009). High levels of female employment are generally found in the public sector. Previous studies concluded that there is a significant gap in pay between the public andprivate sectors and this could contribute to explaining the gender pay gap (Kelly *et al*., 2009; Aslam and Kingdon, 2009; Depalo and Giordano, 2010; Giordano *et al*., 2011; Depalo *et al*., 2013). Similarly, wage differentials among different industries could affect the gender wage gap (Fields and Wolff, 1995). In Syria, according to Ovensen and Sletten (2007), agriculture is considered to be the dominant industry in rural areas, particularly among females, while industries such as services, manufacturing and construction are mainly dominated by males in urban areas. Females are concentrated in education & health, and in public administration industries in urban areas. The differences between gender representations in industries have affected the wage differences between the genders and should be considered when explaining the gender wage differences. These results are supported by Market Segmentation Theory or what is called Institutional Theory. This explains the presence of wage differentials and the variations in employment rates observed in a firm, occupation or the whole labour market; it attributes the observed gender wage differentials to institutional factors rather than variations in productivity (For more details, see Section 4.6.).

Adding the last set of variables, the social variables, to the last model increased the explained part from 7.81% on average to 17.19% while the unexplained portion was then reduced to an average of 82.81% of the gender wage differentials. This meant that the differences in the social factors between females and males (in addition to the human capital and job characteristics variables) justified 17.19% of the differences in the wages, an increase of 9.38% from the previous model. This large increase in the explained part is expected in Syria, as social and cultural norms play an important role in the Syrian context. Social norms and cultural factors would have strong effects on gender wage differentials as they may control the behaviours of men and women differently. According to Boserup (1989), pay differences may exist as a result of how males and females are grouped into different social roles. For example, institutional factors, such as marriage and having children, may affect gender wage differentials. Many previous research studies have supported this point and found that female-male wage differentials were lower for single than for married people (Blau and Kahn, 1992, Polachek and Xiang, 2014). Several researches have been conducted on the relationship between motherhood and women's earnings, focusing on the "motherhood penalty" (e.g. Waldfogel, 1998; Budig and England, 2001; Baum, 2002; Anderson *et al*., 2003; Johnson, 2008). Similarly, wages may differ between regions and locations; those differences may be seen as a reflection of differences in the cost of living, differences in workers' characteristics

across regions, or differences in region-specific characteristics (such as amenities and climate). The results are supported by Family Wage Theory where women are paid in the labour market according to their social responsibilities, not according to their human capital characteristics. It is also supported by Patriarchy Theory, which is similar to Family Wage Theory, as it attributes the observed gender wage differentials in the labour market to cultural and social structures. However, it differs from the previous theories in that it claims that the subordinate position of women in the family and society leads to a similarly subordinate position in the labour market (Hartmann, 1979).

9.3.3 The Relationships in the Model

9.3.3.1 RQ4 - The Correlation between Social and Human & Job Characteristic variables

As expected, the results revealed a correlation between the social variables and the human and job characteristics variables. In the relationship between social and human variables, it was revealed that almost all the relationships were significant. This means that all studied social factors (being the head of the household, civil status, having a child under 5, family number, the region and location of the individual) affect the human capital of individuals significantly in Syria. Similarly, the results revealed that social factors had an effect on the job characteristics of individuals. These results were expected since social norms play an important role in the Syrian labour market. Social norms and traditions in the country influence the decisions made by women both in life and labour market as those decisions are shaped by stereotypes and acceptable behaviours in that society. Social norms may influence women's social status, women's decisions on educational investments and women's jobs (Vella, 1993 and 1994). In the same vein, Loury (1998) stated that social norms may shape human capital development for job searches.

9.3.3.2 RQ5- The Main and Interaction Effects in the Model

The seven custom factorial UNIANOVA models revealed that the independent variables (social characteristics, human characteristics and job characteristics) explained 32%, 27%, 33% and 35% respectively of the variance in wages in the following: Main Effects Model[a] without Gender, Main Effects Model[b] Male, Main Effects Model[c] Female and Main Effects Model[d] All. At the same time, Models with the interactive effects explained 55%, 61% and

64% respectively of the variance in wages in: the Main and Interaction Effects Model[e], the Main and Interaction Effects Model[f] Male, and the Main and Interaction Effects Model[g] Female. If the models for males and females without the interaction effect of the social factors are compared with those with the interaction, a huge improvement in explaining the variance in wages can be seen. This was 27% for males without the interaction and increased to 61% when including the interactive effect of the social factors. For females, this was 33% without the interaction and increased to 64% when the interaction was included. The same result could be found for the whole group as, without the interaction, 35% of the variance was explained; this improved to 55% with the interaction effect. These results prove that social factors play a direct as well as an indirect role in affecting wages in Syria. The indirect role can be seen in their effects on the human capital and job characteristics variables. The effects of the social factors were obviously stronger in the female model.

The interactive effect in the male model appeared between: "civil status and industry", "Family head and hours per week", "child under 5 years and industry" and "child under 5 years and years of education". On the other hand, the interactive effects for the female model appeared between: "child under 5 years and hours per week", "Region and industry", "Region and occupation", "Location and sector" and "Region and education level". Analysing the interaction effects of gender and social, human and job characteristics on wages for the Main and Interaction Effects Model[e] (All) revealed significant relationships in terms of the interactions between: "child under 5 years and hours per week", "child under 5 years and industry" and "child under 5 years and years in the job". Also, an interaction effect was found between "civil status and industry", "civil status and years in the job", "civil status and sector", and "family head and hours per week". Finally, regions and locations also interact with other variables: "region and age group", "region and sector", and "location and education level".

The results of these models revealed the existence, as well as the significance, of the relationships between social factors on human and job characteristics which, in turn, affect wages. For example, adding this indirect relationship explained 55% of the variance in the wages in the Syrian labour market (Model[e]) while the direct relationships explained only 35% of the variance in the wages (Model[d]). Therefore, adding the indirect effects of the social factors explained 20% extra in the wage variance. Moreover, the Oaxaca method in RQ3 indicated that only 17.19% of the wage differences were explained by human, job and social characteristics variables (the direct effect only). Even though these are two totally different methods to calculate the explained part of the wage differences or variances, the gap between them is huge and, to a large extent, this is as a result of the interaction effects. According to Fernandez (2001,

p.2), "the role of culture in economic outcomes were largely absent in economic research. This was primarily the result of the absence of an empirical methodology that would allow one to investigate this issue".

The results of the direct effect models revealed that all variables (social, human and job characteristics) contributed to the explanation of wage variances. Thus, the variables that affected each model (male, female and all) differed. For example, the males' model "Model[b]" showed significant influences on the part of Region, Years in the job, Age Group, Industry, Sector and Hours worked per week on wages while, in the females' model "Model[c]", Child under 5 Years, Region, Years in the Job, Education Level, Years of Education, Industry, and Hours worked per week significantly influenced the wages of women. Thus, those direct factors were more successful in explaining females' wage variances (33%) than men's (27%). From the point of view of social factors, only the region had an effect on the wage variance for men, so we can conclude that males are, to a great extent, not directly affected by social factors. The greatest effect came from the job characteristic variables as wage variances for men were explained by the industry, sector and hours worked per week while the variance in wages in the female model were mostly explained by human capital factors, namely education level and years of education.

The results of the models above are supported by various economic theories, such as Human Capital Theory, that advocate that gender wage differentials can be seen as a result of different levels of educational attainment, training and experience that both men and women possess when they move into the labour market. Patriarchy Theory states that the subordinate position of women in the family and society leads to similarly subordinate positions in the labour market (Hartmann, 1979). It also refers to the control imposed by men on women's participation in the labour market (Hartmann, 1976) while Crowding Theory suggests that the observed wage differentials between men and women are a result of differences in supply and demand for men and women in both crowded and not-crowded sectors.

9.3.3.3 RQ6- The Differences in Wages between Males and Females

After establishing that there is a significant difference in wages between males and females, this section uncovers in which particular variables these differences exist. As mentioned before, this was performed utilising pairwise comparisons of means between gender and other variables using the Bonferroni-adjusted *t*-test (also called the Dunn test).

The first set of variables that was tested was the social characteristics variables. The results revealed that males with families sized between 1-5 members, with children under 5 years, and who were married earned significantly more than their female counterparts. This was expected beforehand as the social norms and culture in Syria imply that women are responsible for the housework and childcare while men are the bread-winners. Therefore, getting married, having a family and young children compel men to work harder to earn more in order to support their families, while those factors for females mean having to reduce working hours and devote more time to the family and child care. This is well supported in the literature: married females with children earn lower wages than married females without children (Harkmess and Waldfogel, 2003) while married men with children have higher wages (Polachek, 1975b)[27]. Location-wise, male respondents from Damascus, and the Northern and Eastern regions earned higher wages than females from the same regions; males located in urban areas earned more wages than females in the same areas. The Damascus region is the capital of Syria and the Northern region is considered as the economic capital (Aleppo, in particular). In those big cities, the private sector is more active and, as mentioned before, women are paid less than men in the private sector. This could explain the significant differences in wages in those two regions while, in the Eastern region, this is not the case. The differences in the Eastern region may be attributed to the strong social and cultural norms that regulate every aspect of life there. Women are seen as only responsible for domestic work, child bearing and caring.

The second set of variables that was tested were the human capital characteristics variables. The results indicated that males whose job tenures were of (1-5), (11-15) and (20 and above) years earned significantly more than their female counterparts. The first number might be seen as a reflection of differences between males and females in the starting salaries and hence, Statistical Theory would hold. The second is usually associated with the mid-employment period where women's employment is usually interrupted by childbearing and rearing; consequently, the differences are somehow justified. The third, however, reflects differences in treatment imposed by employers in rewarding loyal males and females and is partly explained by Becker's employer's Taste for Discrimination. However, it is also partly justified by productivity-enhancing differences between men and women as women's interruptions in the previous period caused them to miss some training while men continued to accumulate their human capital over that time. Similarly, differences between wages of males

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[27] For more see for example: Blau and Kahn, 1992; Harkness and Waldfogel, 2003; Polachek and Xiang, 2014.

and females were observed over different age groups. Men's wages were higher than females over almost all age groups except for two: 15-19 years, where only a few male and female teenagers could be perceived to be employed, and the senior age group above 55 years of age. With levels/years of education, it was found that males' wages were significantly higher for only those with an elementary education; this was found to be consistent with other studies (Huitfeldt and Kabbani, 2007 and Kabbani and Salloum, 2010). In addition, they were higher than females' in the (8-11) years of education. This was discussed in detail in sub-section 9.3.1.2.

The third set of variables that was tested was job characteristics variables. The results showed that, in terms of occupation, male respondents had significantly higher wages than females among 'professionals and technicians', and 'production workers'. This is normal as those two occupations are usually male dominated ones and it is normal for them to be paid significantly higher wages or even be preferred by employers. Industry-wise, males working in 'industrial settings' and 'service' industries had significantly higher wages than females in the same industries. A large number of the "industrial" jobs in Syria are in the private sector where women are not treated the same as men and the service industry is normally low paid, especially for women in Syria. Finally, males who worked between 0 to 20 hours per week and those working over 40 hours per week had significantly higher wages than those females working the same hours. In other words, it was only in the 20-40 hours group that no significant differences were found between males and females. So, working in jobs with longer or shorter than normal hours would disadvantage women in Syria.

9.4 Contribution and Implications

This thesis makes significant contributions to the field of gender wage differentials and discrimination. The first contribution of this research is that it was conducted for Syria. This study, being the first to investigate the gender wage gap in the Syrian labour market, might serve as a basis for future research into wage inequality. The results of this study can help the Syrian government to develop tailored policies for the Syrian labour market to narrow the pay gap as lessening gender inequality would enhance productivity and increase economic growth.

The second contribution concerns the way in which the variables were grouped and added to the wage equations to capture the full effect of each group in determining an individual's wage, investigating the earning premium for each specification of the three groups,

and obtaining multiple discrimination levels based on the groups included sequentially in the analysis; these factors enabled the researcher to achieve more conclusive results when previous studies offered mixed results on returns to education and the gender pay gap as a result of using different model specifications, different data sets and different measures.

Thirdly, through the development of a theoretical model, this study captured the interaction effects of the social factors on human and job characteristics (a relationship that was previously ignored). In this way, this study makes an important contribution to the understanding of the gender wage gap.

Finally, this study makes a methodological contribution as, according to Fernandez (2001, p.2), there is a lack of an empirical methodology that investigates the full effect of culture on economic outcomes as previous studies used either historical case studies, experiments or epidemiological approaches (i.e., they tested the behaviour of immigrants or their descendants). The method used in this study is unique (GLM ANOVA) and, to the best of the researcher's knowledge, it has never been used before in gender pay gap studies.

In accordance with the findings of this study, some possible recommendations to policy makers are suggested. The aim of these policies is to reduce the gender pay gap (across industries, sectors, regions and locations) and, hopefully, to reduce the unemployment rate which, in turn, will lead to boosting economic growth and stabilising the economy.

The results revealed that there are significant differences between men's and women's wages, with the existence of discrimination against women. The Government needs to develop policies to minimise such inequality. Therefore, the Government needs to address this inequality, both in the labour market and before the market is entered. As revealed in the empirical part of this study, social norms have effects on both the human capital and job characteristic variables. Hence, the Government must tackle the influence of those norms. For example, some policies need to be in place for educating females (currently there is a compulsory education policy but perhaps more attention needs to be paid to its implementation, especially in rural areas). Policies should be developed to remove the barriers, such as men's control imposed by the social norms, which are preventing women from entering the labour markets. This could be done by increasing awareness programmes for females, and increasing women's unions and their activities. According to Kingsmill (2003), policies that encourage female participation are the most effective strategies in narrowing the gender pay gap.

There is a need for policies that help women balance their life and work, such as more generous maternity leave, available child care, flexible working hours and, particularly, policies to re-train women after time out of the labour market due to childbearing.

The results revealed that returns to education in Syria are low, even if compared to neighbouring countries. The calculated rates of return to education are usually used as a diagnostic tool to provide policy recommendations (Bennell, 1996c). Also, reforming the educational system could close a large portion of the gender pay gap. In 2002, the Syrian Government launched a reform of the educational system in Syria. Those changes included: allowing the establishment of private universities; revising the syllabuses of public schools at all levels; rewriting textbooks with the help of specialists from outside the government; making the educational content more responsive to the labour market's needs by adopting some inputs from the private sector, especially for the vocational education curricula; and increasing the training period for teachers by two years (Kabbani and Kamel, 2007; Kabbani and Salloum, 2010). However, those reforms were not enough as the focus of the students is still on the national examination to increase their odds of obtaining public sector jobs rather than on developing employability skills or searching for the best career option. The education system in Syria does not provide students with the occupational skills required for the labour market (Kabbani, 2009). This mismatch between the skills of recent graduates and the needs of the labour market have contributed to low labour productivity and low returns to education (Huitfeldt and Kabbani, 2007). Therefore, the Government needs to address policies in order to increase the employment skills graduates have. This could be done by introducing a placement system into schools and universities. Also, the Government needs to tackle career stereotypes early in schools. This could be done by providing secondary school students (or even elementary pupils) with career advice from specialists located within their schools and helping female students to obtain some work experience (through placements) in non-traditional female occupations.

The private sector absorbs 70% of the total labour force in Syria and hence, more policies to boost this sector are required as it will then be able to absorb a bigger proportion of the labour force. Policies to improve the female participation rate in this sector are required by guaranteeing women rights and maternity leave. Also, policies are needed to promote small- and medium-sized private projects, especially in the rural areas, in order to lower the high unemployment rate, especially among young people.

To tackle the high unemployment rate, especially among the young, more training programmes are needed and the Government needs to address the development of a system of unemployment benefits.

9.5 Limitations and Suggestions for Future Research

As with any other research, this study suffers from some limitations. This section summarises the main limitations of this study along with some suggested ways forward for future researches.

The main limitation in this study concerns data constraints and their availability. Since the CBS is the only entity entitled to collect such data, and since it publishes only the macro results, obtaining micro data proved to be very difficult. Also, the LFS is supposed to be performed yearly (except in the census year). However, recently, only data for 2001, 2002 and 2010 can be found (with no clear explanation why, according to Aita, 2009a). Also, data constraints were an issue (albeit minor) in this research. For example, some variables, such as school quality, students' ability, parents' education, etc., could not be included in this study. However, according to Glewwe (2002) and Bonjour *et al*. (2003), their effect has been found to be negligible.

Moreover, according to Aita (2009b) and Ovensen and Sletten (2007), the key indicators produced by the Syrian Central Bureau of Statistics (such as the unemployment rates, the labour force…etc.) fluctuates from year to year. Ovensen and Sletten (2007) attributed this phenomenon to the timing of the surveys. Seasonal work is very important in Syria (especially for agricultural work) and hence, the month in which the survey is conducted affects the labour force indicators significantly (Ovensen and Sletten, 2007). The authors suggested a solution for this: conducting the survey more periodically on a quarterly or even monthly basis.

With further regard to data limitations, Aita (2009 a, b) questioned the treatment (or non- treatment) of two major events that occurred in 2003 and 2005: i.e., the arrival of Iraqi refugees and the return of Syrian workers from Lebanon. Also, according to Aita (2009a), the Syrian government should consider child labour as examples of this are increasing in number.

The definition of the Syrian LFS of employed and unemployed is problematic. As mentioned earlier, the survey classifies an individual as unemployed if he/she is at the working age (over 15 years), does not have a job, is actively looking for a job, would accept a job that gives the normal wage rate, and has not worked at least 1 hour in the week prior to the survey, while it considers an individual as employed if he/she is over 15 years and has worked for at least one hour in the week prior to the survey. According to Ovensen and Sletten (2007), this

definition is problematic as it may lead to misleading employment (and unemployment) figures For example, if an individual was not working in the week before the survey and was seeking only a part-time job, then he/she would be classified as unemployed.

The magnitude of gender wage differentials varies significantly according to how wage differentials are measured. Different estimation methods have been used by labour economists in order to explain gender wage differentials. The Mincerian earnings function method suffers from some shortcomings. For example, it does not include the direct costs of education and hence, it overestimates the rate of return to education (Bennell, 1996c); it does not consider variations in school quality (Glewwe, 1996) and most previous researchers, using this method, linked the rate of return to a typical year of schooling, not to each level of education (Psacharopoulos, 1994a). However, this research studied the effect of educational levels on wage and then calculated the rates of return to both educational levels and year of schooling. Also, a vast variety of variables was used, grouped into three sets, to capture their full effects on wages, without compromising the model's power.

Blinder-Oaxaca's decomposition suffers from some limitations as well. For example, it only measures discrimination in the labour market (Madden, 1999). Thus, some unobserved productivity characteristics (variables) between males and females could contribute to pay differences and could be interpreted as discrimination (Becker, 1985; Altonji and Blank, 1999). Moreover, some differentials in the observed characteristics could be the result of social factors or feedback effects, for example, and these may be ignored in this decomposition as it supposes that the differences are as a result of choice. In this study, to overcome these limitations, Oaxaca's decomposition was used to capture labour market discrimination first but it was then followed by the GLM to capture the effects of the social factors on wages through their interactions with the human capital and job characteristics.

This study was conducted using data from the LFS of 2010 only, which makes it difficult to compare the development of inequality over time, or the effect of some policies in narrowing this gap. Hence, future studies could use more than one year to compare or they could even study the issue from the point of view of before and after the crisis (if the data could be obtained).

As mentioned before, some variables were not used in this study as a result of data limitations and so future studies could perhaps add more variables to this study to see their effects on wages and the wage gap. Those variables could be human capital variables, related, for example, to job training, computer skills and knowledge of languages. They could also be related to job characteristics, such as the size of the company and the type of ownership.

Finally, those extra variables could be related to social factors, such as parents' education, parents' job and religion. Future studies could overcome the data limitations of this work by researchers collecting the necessary data themselves (although this would be time consuming and expensive) or hopefully the LFS might start to include some extra sections to capture some of those factors.

Caution should be taken when generalising the results of this study as, firstly, this research sample was limited to full-time workers only to minimise the effect of the labour supply decision and to compare males and females in the sample. Future research could include both types of work and could divide the analysis into four groups: i.e. full-time males vs. full-time females, and part-time males vs part-time females), considering the social factors behind the choice to work part-time (particularly for females). Secondly, this study also was limited to considering the wage from the main job; it did not include any other income from secondary jobs. Future studies may include all income although this would make it more difficult to capture the labour market discrimination as other factors would play a part in the differences when including the secondary incomes.

However, in spite of the limitations, this research makes significant contributions to the field of gender wage differentials and discrimination in Syria. The results of this study can help the Syrian government to develop tailored policies for the Syrian labour market to narrow the gender pay gap as decreasing gender inequality would enhance productivity and foster economic growth.

References

Abowd, J., Kramarz, F., and Margolis, D. (1999) 'High wage workers and high wage firms', Econometrica, 67(2), pp. 251-333.

Abu-Ismail, K. and Valensisi, G. (2005) 'The Syrian Economic Challenge', in *Macroeconomic Policies for Poverty Reduction: the case of Syria*. UNDP United Nation Development Programme, pp. 11-25.

Abu-Ismail, K., Moustafa, A., and Vernengo, M. (2005) 'Trade and Industry', in *Macroeconomic Policies for Poverty Reduction: the case of Syria*. UNDP United Nation Development Programme, pp. 64-93.

Acemoglu, D. and Autor, D. (2011) *Lectures in Labor Economics.* Manuscript, MIT, available at http://economics.mit.edu/files/4689.

Adamchik, V. and Bedi, A. S. (2000) 'Wage differentials between the public and the private sectors: evidence from an economy in transition', *Labour Economics*, 7, pp. 203-224.

Aguilar, A., Carranza, E., Goldstein, M., Kilic, T., and Oseni G. (2015) 'Decomposition of gender differentials in agricultural productivity in Ethiopia', *Agricultural economics*, 46(3): 311–334.

Aigner, D. and Cain, G. (1977) 'Statistical theories of discrimination in labor markets', *Industrial and Labor Relations Review*, 30(2), pp. 749-76.

Aita, S. (2009a) 'Labour Markets Performance and Migration Flows in Syria', National Background Paper, European University Institute, Florence.

Aita, S. (2009b) 'Labour Markets Policies and Institutions, with a Focus on Inclusion, equal Opportunity and the Informal Economy', National Background Paper, The case of: Syria.

Albers, R. and Peeters, M. (2011) 'food and energy prices, government subsidies and fiscal balances in south Mediterranean countries', *Economic Papers,* 437, European Commission.

Albrecht, J., Björklund, A., and Vroman, S. (2003) 'is there a glass ceiling in Sweden?', *Journal of Labour Economics*, 21 (1), pp. 145-177.

Albrecht, J., Van Vuuren, A., and Vroman, S. (2009) 'Counterfactual distributions with sample selection adjustments: econometric theory and an application to the Netherlands', *Labour Economics*, 16 (4), pp.383–396.

Alesina, A., Algan, Y., Cahuc, P. and Giuliano, P. (2010) '*Family Values and the Regulation of Labor'*, NBER Working Paper, No.15747.

Altonji, J. and Pieret, C. (2001) 'Employer learning and statistical discrimination', *Quarterly Journal of Economics*, 116, pp. 313-350.

Altonji, J. and Blank, M. (1999) *Race and Gender,* in Ashenfelter O. and Card, D. (eds) *the Labor Market. Handbook of Labor Economics*. Volume IIIC. Amsterdam: North-Holland.

Anderson, D., Binder, M., and Krause, K. (2003) 'the motherhood wage penalty revisited: Experience, heterogeneity, work effort, and work-schedule flexibility', *Industrial and Labor Relations Review*, 56(2), pp. 273-294.

Anos-Casero, P. and Seshan, G. (2006) '*Public-Private Sector Wage Differentials and Returns to Education in Djibouti*', Washington, D.C.: World Bank Policy Research Working Paper 3923.

Appleton, S., Hoddinott, J. and Krishnan, P. (1999) 'The Gender Wage Gap in Three African Countries', *Economic Development and Cultural Change*, 47(2), pp. 289-312.

Arabsheibani, R., Carneiro, G., and Henley, A. (2003) '*Human capital and earnings inequality in Brazil, 1988-1998: quantile regression evidence',* World Bank Policy Research Working Paper, No 3147.

Arbache, S. (2001) 'Wage differentials in Brazil: theory and evidence', *The Journal of Development Studies*, 38(2), pp.109-130.

Arrazola, M. and De Hevia, J. (2006) 'Gender Differentials in Returns to Education in Spain', *Education Economics*, 14(4), pp. 469–486.

Arrow, K. (1972) 'Models of Job Discrimination' in Pascal, A. (eds.) *Radical Discrimination in Economic Life*. Lexington, Mass: Lexington Books, pp. 83-102.

Arrow, K. (1973) 'Higher Education as Filter', *Journal of Public Economics*, August, Vol. 2, pp. 193-216.

Arrow, K. (1998) 'What Has Economics to Say About Racial Discrimination?', *The Journal of Economic Perspectives*, 12(2), pp. 91-100.

Arulampalam, W., Booth, A., and Bryan, M. (2007) 'Is There a Glass Ceiling over Europe? Exploring the Gender Pay Gap across the Wage Distribution', *Industrial and Labour Relations Review*, 60(2), pp. 163-86.

Asadullah, M. (2006) 'Returns to education in Bangladesh', *Education Economics*, 14(4), pp. 453-468.

Ashenfelter, O., Harmon, C., and Oosterbeek, H. (1999) 'A Review of Estimates of the Schooling/Earnings Relationship, with Tests for Publication Bias', *Labour Economics*, 6, pp. 453-470.

Aslam, M. (2006) '*Rates of return to education by gender in Pakistan'*. Global Poverty Research Group, Working Paper, GPRG-WPS-064.

Aslam, M. and Kingdon, G. (2009) 'Public–private sector segmentation in the Pakistani labour market', *Journal of Asian Economics*, 20(1), pp. 34-49.

Assaad, R. (1997) 'The effects of public sector hiring and compensation policies on the Egyptian labour market', *The World Bank Economic Review*, 11(1), pp. 85-118.

Assaad, R. and Arntz, M. (2005) 'Constrained Geographical Mobility and Gendered Labour Market Outcomes Under Structural Adjustment: Evidence from Egypt', *World Development,* 33(3), pp. 431-454.

Atal, J., Nopo, H., and Winder, N. (2009) '*New Century, Old Disparities: Gender and Ethnic Wage Gaps in Latin America*', IDB Working Papers, 109, 76.

Atkinson, A. and Micklewright, J. (1992) *Economic Transformation in Eastern Europe and the Distribution of Income*. Cambridge Univ. Press, Cambridge.

Autor, D., Katz, L., and Kearney, M. (2005) '*Rising Wage Inequality: the Role of Composition and Prices*', NBER Working Paper No. 11628.

Baker, M. and Fortin, N. (2001) 'Occupational Gender Composition and Wages in Canada, 1987-1988', *The Canadian Journal of Economics*, 34, pp. 345-376.

Baldwin M. L., Butler R., and Johnson W. (2001) 'A Hierarchical Theory of Occupational Segregation and Wage Discrimination', *Economic Inquiry,* 39(1), pp. 94-110.

Bardasi, E. and Gornick, J. (2008) 'Working for less? Women's part-time wage penalties across countries', *Feminist Economics*, 14 (1), pp.37-72.

Bargain, O. and Melly, B. (2008) '*Public sector pay gap in France: new evidence using panel data*', IZA Discussion Paper, No 3427.

Barro, R. and Lee, J. (2000) '*International data on educational attainment: updates and implications*'. National Bureau of Economic Research, working paper 7911.

Baum, C. (2002) 'The Effect of Work Interruptions on Women's Wages', *Labour*, 16(1), pp. 1-36.

Baunach, D. (2002) 'Trends in Occupational Sex Segregation and Inequality, 1950 to 1990', *Social Science Research*, 31, pp. 77-98.

Bayard, K., Hellerstein, J., Neumark, D., and Troske, K. (2003) 'New Evidence on Sex Segregation and Sex Difference in Wages from Matched Employee-Employer Data', *Journal of Labour Economics*, 21(4), pp. 887-922.

Beblavy, M. Thum, A., and Potjagailo, G. (2013) '*When do Adults Learn? A Cohort Analysis of Adult Education in Europe*', CEPS Working Document no. 383 May 2013.

Becker, G. (1957) *The Economics of Discrimination. Chicago*. University of Chicago Press.

Becker, G. (1962), 'Investment in Human Capital: A Theoretical Analysis', *Journal of Political Economy,* 70(5) Part 2, pp. S9-S49.

Becker, G. (1964) *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*. New York: Columbia University Press.

Becker, G. (1971) *The Economics of Discrimination (2nd edition).* Chicago: University of Chicago Press.

Becker, G. (1981) *A Treatise on the Family. Cambridge, Massachusetts*. Harvard University Press.

Becker, G. (1985) 'Human Capital, Effort, and the Sexual Division of Labour', *Journal of Labour Economics*, 3(1) Part 2, pp. S33-S58.

Becker, G. (1993) [1964] *Human Capital*. Chicago: The University of Chicago Press.

Bedi, A. and Born, J. (1995) 'Wage Determinants in Honduras: Credentials versus Human Capital', *Social and Economic Studies*, 44, (1), pp. 145-63.

Beechey, V. (1977) 'Some Notes on Female Wage labour in Capitalist Production', *Capital and Class*, 3, pp. 45-66.

Behrman, J. and Stacey, N. (1997) *The social benefits of education*. Michigan: The University of Michigan Press.

Behrman, J. and Knowles, J. (1999) 'Household Income and Child Schooling in Vietnam', *The World Bank Economic Review*, 13(2), pp. 211-256.

Bell, D. and Ritchie, F. (1998) 'Female earnings and gender differentials in Great Britain 1977-1994', *Labour economics,* 5(3), pp. 331-357.

Belzil, C. (2006) 'Testing the Specification of the Mincer Wage Equation', *Working Papers* (06-08), GATE Groupe d'Analyse et de Théorie Économique.

Benito, A. (2000) 'Inter-industry wage differentials in Great Britain', *Oxford Bulletin of Economics and Statistics*, 62, pp. 727-746.

Bennell, P. (1996a) 'Rates of return to education: does the conventional pattern prevail in sub-Saharan Africa?', *World Development*, 24(1), pp. 183–199.

Bennell, P. (1996b) 'General versus vocational secondary education in developing countries: A review of the rates of return evidence', *Journal of Development Studies*, 33(2), pp. 230-247.

Bennell, P. (1996c) 'Using and Abusing Rates of Return to Education: A Critique of the World Bank's 1995 Education Sector Review', *International Journal of Educational Development,* 16(3), pp. 235-248.

Berg, A. and Ostry, J. (2011) '*Inequality and unsustainable growth: Two sides of the same coin?*', IMF Staff Discussion Note, SDN/11/08.

Bergmann, B. (1971) 'The effect on white incomes of discrimination in employment', *Journal of Political Economy*, 79 (2), pp. 294-313.

Bergmann, B. (1974) 'Occupational Segregation, Wages and Profits When Employers Discriminate by Race and Sex', *Eastern Economic Journal*, 1(2), pp. 103-110.

Berk, R. (1983) 'An Introduction to Sample Selection Bias in Sociological Data', *American Sociological Review*, 48 (3), pp. 386-398.

Bertrand, A. and Hallock, K. (2001) 'The gender gap in top corporate jobs', *Industrial and Labour Relations Review,* 55, pp. 3-21.

Bertrand, M. and Mullainathan, S. (2003) '*Are Emily and Greg more employable than Lakisha and Jamal? A field experiment evidence on labour marker discrimination*', NBER Working Paper No. 98 73.

Bertrand, M. Goldin, C., and Katz, L. (2010) 'Dynamics of the gender gap for young professionals in the financial and corporate sectors', *American Economic Journal: Applied Economics*, 2(3), pp. 228-255.

Bettio F. and Verashchagina, A. (2009) '*Gender segregation in the labour market: Root causes, implications and policy responses in the EU*', Luxembourg: Publications Office of the European Union.

Betz, M. and O'connell, L. (1989) 'Work orientations of males and females: exploring the gender socialization approach', *Sociological Inquiry*, 59(3), pp. 318-330.

Blackaby, D. and Murphy, P. (1991) 'Industry characteristics and interregional wage differences', *Scottish Journal of Political Economy*, 38(2), pp. 142-161.

Blackaby, D. Clark, K., Leslie, D., and Murphy, P. (1997) 'The Distribution of Male and Female Earnings 1973-91: Evidence for Britain', *Oxford Economic* Papers, 49 (2), pp. 256-272.

Blackburn, M. and Neumark, D. (1993) 'Omitted-ability bias and the increase in the return to schooling', *Journal of Labour Economics*, 11, pp. 521 – 544.

Blackburn, M. and Jarman, J. (2005) '*Segregation and Inequality'*, GeNet Working Paper, No. 3.

Blackburn, M. Browne, J., Brooks, B., and Jarman, J. (2002) 'Explaining gender segregation', *British Journal of Sociology*, 53, (4), pp. 513-536.

Blackburn, M. and Jarman, J. (2006) 'Gendered occupations: exploring the relationship between gender segregation and inequality', *International Sociology*, 21 (2), pp.289-315.

Blanchflower, D.G. and A.J. Oswald (1994) '*The Wage Curve'*, MIT Press, Cambridge Mass.

Blau, F. and Ferber, M. (1987) 'Discrimination: Empirical evidence from the US', *American Economic review*, 77(2), pp. 316-320.

Blau, F. (1989) 'Gender', in Eatwell, J., Milgate, M., and Newman, P. (Eds) *Social Economics. London*. The Macmillan Press Ltd.

Blau, F. and Kahn, L. (1992) 'The Gender Earnings Gap: Learning from International Comparisons', *American Economic Review*, 82(2), pp. 533–538.

Blau, F. and Kahn, L. (1997) 'Swimming upstream: Trends in the gender wage differential in the 1980's', *Journal of Labour Economics,* 15(1 part 1), pp.1-42.

Blau, F. and Kahn, L. (2001) '*Understanding international differences in the gender pay gap'*, Working Paper 8200, NBER, Cambridge, MA.

Blau, F. and Kahn, L. (2003) 'Understanding international differences in the gender pay gap', *Journal of Labour Economics*, 21, pp. 106-144.

Blau, F. and Kahn, L. (2000) 'Gender Differences in Pay', *The Journal of Economic Perspectives*, 14 (4), pp. 75-99.

Blau, F. and Kahn, L. (2003) Understanding International Differences in the Gender Pay Gap. *Journal of Labor Economics*, 21(1): 106-144.

Blau, F. and Ferber, M. (1992) *The Economics of Women, Men, and Work*. 2nd edn. Englewood Cliffs, N. J.: Prentice-Hall.

Blau, F. and Jusenius. C. (1976) 'Economists' Approaches to Sex Segregation in the Labour Market: An Appraisal', in Blaxall, M. and Reagan, B. (Eds) *Women and the Workplace: The occupations of occupational segregation.* Chicago: the University of Chicago Press, pp. 181-199.

Blau, F. and Ferver, M. (1992) 'Differences in Occupations and Earnings: The role of labour market discrimination', in *The Economics of Women, Men and Work.* New Jersey: Prentice Hall, pp. 188-236.

Blinder, A. (1973) 'Wage Discrimination: Reduced Form and Structural Estimates', *Journal of Human Resources*, 8(4), pp. 436-455.

Bluestone, B. (1970) 'The Tripartite Economy: Labour Markets and the Working Poor', *Poverty and Human Resources Abstracts*, 5(4), pp. 15-35.

Bonjour, D., Cherkas, L., Haskel, J., Hawkes, D. and Spector, T. (2003) 'Returns to Education: Evidence from U.K. Twins', *American Economic Review,* 93(5), pp.1799-1812.

Booth, A., Francesconi, M., and Frank, J. (2003) 'A sticky floors model of promotion, pay, and gender', *European Economic Review*, 47, pp. 295-322.

Boraas, S. and Rodgers, W. (2003) 'How does gender play a role in the earnings gap? An update', *Monthly Labour Review*, March, pp. 9-15.

Boserup, E. (1989) 'Inequality between the sexes', in Eatwell, J., Milgate, M., and Newman, P. (eds.) *Social Economics*. London: The Macmillan Press Ltd.

Boudarbat, B. (2004) '*Employment Sector Choice in a Developing Labour Market'*, Mimeo, Department of Economics, University of British Columbia.

Bourne, C. and Dass, A. (2003) 'Private and Social Rates of Return to Higher Education in Science and Technology in a Caribbean Economy', *Education Economics*, 11(1), pp. 1-10.

Bowles, S., Gintis, H., and Osborne, M. (2001) 'the determinants of earnings: A behavioural approach', *journal of Economic Literature*, 39, pp. 1137-1176.

Brambor, T., Clark, W., and Golder, M. (2006) 'Understanding Interaction Models: Improving Empirical Analyses', *Political Analyses*, 14 (1): 63-82.

Brodolini, F. (2011) 'Equal pay for equal work and work of equal value: Responding to unequal pay', in *equality between women and men.* Brussels: European Commission.

Browne, J. (2006) *Sex Segregation and Inequality in the Modern Labour Market*. Cambridge, UK: Polity Press.

Buddelmeyer, H., Mourre, G., and Ward, M. (2005) '*Part-time work in EU countries: labour market mobility, entry and exit'*, IZA Discussion Paper No. 1550.

Budig, M. and England P. (2001) 'The Wage Penalty for Motherhood', American Sociological Review, 66(2), pp. 204-225.

Burda, M. (1991) '*Some new insights on the interindustry wage structure from the German Socio Economic Panel'*, INSEAD working papers 91/63/EP: pp. 1-32.

Cai, L., and Liu, A. Y. C. (2008) '*Public-private wage gap in Australia: variation along the distribution*', CEPR Discussion Paper No 581, Centre for Economic Policy Research, Research School of Economics, Australian National University.

Cain, G. (1986) 'The economic analysis of labor market discrimination: A survey', in Ashenfelter, O. and Layard, R. (eds) *Handbook of Labor Economics, Vol 1*. Amsterdam: North-Holland, pp. 693–785.

Calonico, S. and Nopo, H. (2008) '*Gender segregation in the workplace and wage gaps: Evidence from urban Mexico 1994-2004*', RES Working Papers 4579, Inter- American Development Bank, Research Department.

Card, D., and Krueger, A. (1992) 'Does School Quality Matter? Return to Education and the Characteristics of Public School in the United States', *Journal of Political Economy*, 100, Feb: 1-40.

Campos, N. and Jolliffe, D. (2003) 'After, before and during: returns to education in Hungary (1986-1998)', *Economic Systems*, 27(4), pp. 377-390.

Card, D. (1999) 'The causal effect of education on earnings', in Ashenfelter, O. and Card, D. (Eds.) *Handbook of Labour Economics Vol. 3A*. Amsterdam: North Holland, pp. 1801-1863.

Cawley, J., Heckman, J., and Vytlacil, E. (1995) '*Cognitive ability and the rising returns to education*', National Bureau of Economic Research, WP6388.

Central Bureau of Statistics (2010) '*Labour force survey*', Damascus: The Central Bureau of Statistics.

Chakravarty, S. and Silber, J. (2007) 'A generalized index of employment segregation', *Mathematical Social Sciences*, 53 (2), pp.185-195.

Charles, M. (2003) 'Deciphering sex segregation: vertical and horizontal inequalities in ten national labour markets', *ACTA Sociologica*, 46 (4), pp.267-287.

Chase, R. (1998)' Markets for communist human capital: returns to education and experience in the Czech Republic and Slovakia', *Industrial and Labour Relations Review*, 51(3), pp. 401-423.

Cheidvasser, S. and Benítez-Silva, H. (2007) 'The educated Russian's curse: returns to education in the Russian Federation during the 1990s', *Labour*, 21(1), pp. 1-41.

Chiswick, B. (1973) 'Racial Discrimination in the Labor Market: A Test of Alternative Hypotheses', *Journal of Political Economy*, University of Chicago Press, 81(6), pp. 1330-52.

Christofides, L. and Pashardes, P. (2002) 'Self/paid-employment, public/private sector selection, and wage differentials', *Labour Economics*, 9(6), pp. 737-762.

Clark, A. (2003) 'Returns to human capital investment in a transition economy: The case of Russia, 1994-1998', *International Journal of Manpower*, 24(1), pp. 11-30.

Coate, S. and Loury, G. (1993) 'Will Affirmative-Action policies eliminate negative stereotypes?', *American Economic Review*, 83, pp. 1220-1240.

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Collis, J. and Hussey, R. (2003) *Business research: a practical guide for undergraduate and postgraduate students*, second edition, Palgrave Macmillan.

Collis, J. and Hussey, R. (2009) *Business research: a practical guide for undergraduate and postgraduate students,* third edition, Palgrave Macmillan.

Collis, J. and Hussey, R. (2014) *Business research: a practical guide for undergraduate and postgraduate students,* fourth edition, Palgrave Macmillan.

Connolly, S. and Gregory, M. (2008) 'Moving down: women's part-time work and occupational change in Britain 1991-2001', *Economic Journal*, 118 (526), pp. F52–F76.

Connolly, S. and M. Gregory (2007) 'Women and work since 1970', in Crafts, N., Gazeley, I., Newell, A. (Eds) *Work and pay in 20th century Britain*. Oxford, Oxford University Press.

Coppin, A. and Olsen, R. (2007) 'Public versus Private Sector Earnings Differentials in the Caribbean Region: Evidence from the Economy of Trinidad & Tobago', *Journal of Developing Areas*, 40(2), pp. 51-74.

Cotton, J. (1988) 'On the decomposition of wage differentials', *The Review of Economics and Statistics,* 70(2), pp. 236-243.

Creswell. J. (2003) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. London: Sage. 2nd ed.

Creswell. J. (2009) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. London: Sage. 3rd ed.

Crompton, R. and Lyonette, C. (2008) 'Mothers' employment, work-life conflict, careers and class', in Scott, J., Dex, S.and Joshi, H.(eds.) *Women and employment: changing lives and new challenges*. Cheltenham, Edward Elgar Publishing.

Cunha, F. and Heckman, J. (2009) 'The Economics and Psychology of Inequality and Human Development', *Journal of the European Economic Association*, MIT Press, 7(2–3). pp. 320–364.

Dale, A. (1985) '*The Role of Theories of Labour Market Segmentation in Understanding the Position of Women in the Occupational Structure'*, Surrey: Department of Sociology, University of Surrey.

Davies, H. (1997) 'Test for Sample Selection Bias', in Dale, A. and Egerton, M. (eds.) *Highly Educated Women: Evidence from the National Child Development Study*. London: HMSO.

De la Rica, S., Dolado, J., and Llorens, V. (2008) 'Ceilings or floors? Gender wage gaps by education in Spain', *Journal of Population Economics*, 21 (3), pp.751–776.

Dearing, R. (1997) *Higher Education in the Learning Society*, HMSO, Norwich

Deaton, A. (1989) 'Looking for Boy-Girl Discrimination in Household Expenditure Data', *The World Bank Economic Review,* 3(1), pp. 1-15.

Depalo, D., and Giordano, R. (2010) *The public sector pay gap in Italy*. Bank of Italy Retrieved from https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=IIPF66&paper_id=199

Depalo, D., Giordano, R., and Papapetrou, E. (2013) '*Public-private wage differentials in euro area countries: evidence from quantile decomposition analysis*', Banca d'Italia, Temi di Discussione, No 907, April.

Deschenes, O. (2001) '*Unobserved Ability, Comparative Advantage and the Rising Return to Education in the United State: a Cohort-Based Approach*', Princeton University Industrial Relations Section, Working Paper No. 465, August.

Dex, S. (1985) *The Sexual Division of Work: Conceptual Revolutions in the Social Sciences*. Sussex: Wheatsheaf Books.

Dex, S., Joshi, H., Neuburger, J. and Bukodi, E. (2008) 'Changes in women's paid work', in Elliott, J. and Vaitilingam, R. (eds.) *Now We Are 50: Key Findings from the National Child Development Survey*. London, Centre for Longitudinal Studies, pp.38-49.

Dey, J. and Hill, C. (2007) *Behind the pay gap*. Washington, DC: American Association of University Women Educational Foundation.

Dickens, W. and Katz, L. (1987) '*Interindustry wage differences and industry characteristics*', NBER Working Paper Series no. 2014.

Dickie, M. and Gerking, S. (1989) 'Interregional Wage differentials in the United States: a survey', in Van Dijk, J. (ed.) *Migration and labor market adjustments*. Kluwer Academic Publishers.

Dinardo, J., Fortin, N. and Lemieux, T. (1996) 'Labour market institutions and the distribution of wages, 1973-1992: A semiparametric approach', *Econometrica*, 64 (5), pp. 1001–44.

Disney, R., and Gosling, A. (2008) '*Changing public sector wage differential in UK*', IFS Working Papers, W08/02.

Docringer, P. and Piore, M. (1971) *Internal Labour Markets and Manpower Analysis*. Lexington, Massachusetts: Heath.

Dolado, J., Felgueroso, F. and Jimeno, J. (2003) 'Where do women work? Analysing patterns in occupational segregation by gender', *Annales d'Economie et de Statistique*, pp.293–315.

Dollar, D. and Gatti, R. (1999) '*Gender Inequality, Income, and Growth: Are Good times Good for Women?*', Policy Research Report on Gender and Development Working Paper Series, Working Paper No. 1, Washington, DC: World Bank.

Dolton, P. and Makepeace, G. (1987) 'Marital status, child rearing and earnings differentials in the graduate market', *Economic Journal*, 97, pp. 897-922.

Dougherty, C. (2005) 'Why Are the Returns to Schooling Higher for Women than for Men?', *Journal of Human Resources*, 40(4), pp. 969–988.

Dougherty, C. and Jimenez, E. (1991) 'The specification of earnings functions: tests and implications', *Economics of Education Review*, 10(2), pp. 85-98.

Duan, N., Manning, W. G., Morris, C., and Newhouse, J. (1984) 'Choosing Between the Sample-Selection Model and the Multi-Part Model', *Journal of Business & Economic Statistics*, 2(3), pp. 283- 289.

Duan, N., Manning, W., Morris, C., and Newhouse, J. (1985) 'Comments on Selectivity Bias' in Scheffler, R. and Rossiter, L. (eds.) *Advances in Health Economics and Health Services Research*, 6, pp.19 - 24.

Dutta, P., (2005) '*Accounting for Wage Inequality in India, Poverty Research Unit at Sussex Department of Economics University of Sussex*', PRUS Working Paper no. 29 page.19 https://www.sussex.ac.uk/webteam/gateway/file.php?name=wp29.pdf&site=260

Easterby-Smith, M., Thorpe, R. and Lowe, A. (1991) *Management Research: An Introduction.* London: Sage Publications.

Easterby-Smith, M., Thorpe, R. and Lowe, A. (1999) *Management Research: An Introduction.* London: Sage Publications.

Easterby-Smith, M., Thorpe, R. and Lowe, A. (2002) *Management Research: An Introduction.* 2nd edn. London: Sage Publications.

Easterby-Smith, M., Thorpe, R. and Jackson, P. (2008) *Management Research: Theory and Research*. 3rd edn. London: Sage Publications.

Economist, (2009) 'Greed and Fear, special report: The future of finance', *The Economist*, 22 January 2009.

Edoka, I., (2012) '*Decomposing Differences in Cotinine Distribution between Children and Adolescents from Different Socioeconomic Backgrounds*', Centre for Health Economics, University of York Department of Economics and Related Studies, University of York.

Ehrenberg, R. and Smith, R. (2009) *Modern Labour Economics: Theory and Public Policy*. Pearson/Addison Wesley.

Ehrl, P. (2014) '*A breakdown of residual wage inequality in Germany*', BGPE Discussion Paper No. 150.

Ehsani (2009) 'The Syrian Public Sector, Corruption, Taxation, and Government Services', *Syria Comment*, available from: http://www.joshualandis.com/blog/the-syrian-public-sector-corruption-taxation-and-government-services-by-ehsani/ (accessed on 30/10/2014).

El- Ghonemy, R. (2005) 'Agriculture and Rural Poverty', in *Macroeconomic Policies for Poverty Reduction: the case of Syria*. UNDP United Nation Development Programme, pp. 41-63.

El Laithy, H. and Abu-Ismail, K. (2005) 'poverty in Syria 1996-2004: diagnosis and proper policy considerations' in *Macroeconomic Policies for Poverty Reduction: the case of Syria*. UNDP United Nation Development Programme, pp. 100-115.

El-Araby, A. (2010) 'Comparative Assessment of Higher Education Financing in Six Arab' in Galal, A., and Kanaan, T., (Eds,) *Financing Higher Education in Arab Countries*. ERF Policy Research Report, PRR No. 34, July 2010.

El-Araby, A. (2010) 'Comparative Assessment of Higher Education Financing in Six Arab' in Galal, A., and Kanaan, T., (Eds.) *Financing Higher Education in Arab Countries*, ERF Policy Research Report, PRR No. 34, July 2010 Arab Countries.

Elliott, R. (1990) 'Discrimination in labour markets' in Elliott, R. (Eds) *Labour economics: a comparative text*. Maidenhead, McGraw-Hill.

Elliot, R. (1991) *Labour Economics: A comparative text.* London: McGraw-Hill Book Company.

England, P. (1992) 'Theories of Labour Markets' in England, P. *Comparable Worth: Theories and Evidence.* New York: Aldine De Gruyter. pp. 45-124.

Erdil, E. and Yetkiner, I. (2001) 'A comparative analysis of inter-industry wage differentials: industrialized versus developing countries', *Applied Economics*, 33(13), pp. 1639-1648.

Ermisch, J. and Wright, R. (1993) 'Wage Offers and Full-time and Part-time Employment by British Women', *Journal of Human Resources*, 28(1) Winter.

Essama-Nssah, B. (2012) 'Identification of Sources of Variation in Poverty Outcomes', Policy Research Working Paper 5954, The World Bank Poverty Reduction and Economic Management Network.

Eurofound (2006) 'European foundation for the Improvement of Living and Working Conditions (2006), The Gender Pay Gap', Background Paper, Office for Official Publications of the European Communities, Luxembourg available at http://www.regione.calabria.it/consiglieradiparita/allegati/fonti_ue/gender.pdf (accessed on 23 March 2015).

European Commission (2015) '*Report on equality between women and men 2015'*. European Communities.

Eurostat (2014) 'Employment statistics', *Eurostat Statistics Explained*, Available from: http://ec.europa.eu/eurostat/statistics-explained/index.php/Employment_statistics (Accessed 15 May 2015).

Even, W. and Macpherson, D. (1993) 'The Decline of Private-Sector Unionism and the Gender Wage Gap', *The Journal of Human Resources*, 28(2), pp. 279-296.

Fagerlind, A. and Saha, L. (1997) *Education and national developments*. New Delhi: Reed Educational and Professional Publishing Ltd.

Fernandez, R. (2011) 'Dose Culture Matter?', *Handbook of Social Economics*, 1A, pp.481-510.

Fershtman, C. and Gneezy, U. (2001) 'Discrimination in a segmented society: An experimental approach', *Quarterly Journal of Economics,* 116, pp. 351-377.

Fields, J. and Wolff, E. (1995) 'Interindustry wage differentials and the gender wage gap', *Industrial and Labour Relations Review*, 49(1), pp.105-120.

Fiszbein, A. and Psacharopoulos, G. (1993) 'A cost benefit analysis of educational investment in Venezuela: 1989 update', *Economics of Education Review*, 12(4), pp. 293-298.

Fitzenberger, B. and Wunderlich, G. (2001) '*The changing gender gap across the wage distribution in the U.K*', Discussion Paper No. 01-56. University of Mannheim.

Flanagan, R. (1998) We're communists good human capitalists? The case of the Czech Republic', *Labour Economics*, 5(3), pp. 295-312.

Fogel, W. and Lewin, D. (1974) 'Wage determination in the public sector', *Industrial and Labour Relations Review*, 27(3), pp. 410-431.

Fortin, N. and Huberman, M. (2002) 'Occupational gender segregation and women's wages in Canada: An historical perspective', *Canadian Public Policy/Analyse de Politiques*, pp.11–39.

Fortin, N. and Lemieux, T. (1998) 'Rank Regressions, Wage Distributions and the Gender Gap', *The Journal of Human Resources*, 33(3), pp. 610-643.

Fortin, N., Lemieux, T., and Firpo, S. (2011) '*decomposition method'*. In O Ashenfelter and D. Card (Eds), Handbook of Labor Economics, vol. 4A, Amsterdam: Elsevier Science, pp. 2-102.

Gabriel, P. (2005) 'The effects of differences in year-round, full-time labor market experience on gender wage levels in the United States', *International Review of Applied Economics*, 19(3), pp. 369-377.

Gannon, B. and Nolan, B. (2004) 'Inter-industry wage differentials in Ireland', *The Economic and Social Review*, 35(2), pp. 157-182.

García-Aracil, A. (2007) 'Gender Earnings Gap among Young European Higher Education Graduates', *Higher Education*, 53(4), pp. 431–455.

Garson, D. (2009) '*Multivariate GLM, MANOVA, and MANCOVA'*, Statnotes: Topics in Multivariate Analysis, available at: http://faculty.chass.ncsu.edu/garson/pa765/statnote.htm (accessed: 15 May 2016).

Garson, D. (2012) '*General Linear Models: Univariate GLM, ANOVA, & ANCOVA'*, Statistical Associates Blue Book Series 19, Statistical Associates Publishers. Kindle Edition.

Garson, D. (2015) '*GLM Multivariate, MANOVA, & Canonical Correlation'*, Statistical Associates Blue Book Series 11.

Gebel, M. (2012) '*Transition from education to work in Syria: results of the youth transition survey 2009'*, European Training Foundation working paper, European Training Foundation (ETF), Torino, 60P.

Gibbons, R. and Katz, L. (1992) 'Does unmeasured ability explain inter-industry wage differentials?', *Review of Economic Studies*, 59, pp. 515-535.

Giordano, R., Depalo, D., Pereira, M., Eugene, B., Linehan S., Papapetrou, E., Pe´rez, J., Reiss, L., and Roter, M. (2011) '*The Public Sector Pay Gap in a Selection of Euro Area Countries'*, European Central Bank, Working Paper, No. 1406, December, pp. 1–44.

Glewwe, P. (1996) 'The relevance of standard estimates of rates of return to schooling for education policy: a critical assessment', *Journal of Development Economics*, 51(2), pp. 267-290.

Glewwe, P. (2002) 'Schools and Skills in Developing Countries: Education Policies and Socioeconomic Outcomes', *Journal of Economic Literature* 150(2), pp. 436-82.

Glinskaya, E. and Lokshin, M. (2005) '*Wage differentials between the public and private sectors in India*', World Bank Policy Research Working Paper, No 3574.

Goldberg, M. (1982) 'Discrimination, Nepotism, and Long-Run Wage Differentials', *The Quarterly Journal of Economics*, 97(2), pp. 307-319.

Goldin, C. (1986) '*The earnings gap between male and female workers: a historical perspective',* National Bureau for Economic Research Working Paper No. 1888.

Goldin, C. and Katz, L. (2000) 'Changes in fertility patters', *American Economic Review*, 90, pp. 461-465.

Goldin, C. (1990) *Understanding the Gender Gap*. New York: Oxford University Press.

Gong, X., and Van Soest, A. (2002) 'Wage differentials and mobility in the urban labour market: a panel data analysis for Mexico', *Labour Economics*, 9, pp. 513-529.

Gornick, J. and Jacobs, J. (1998) 'Gender, the Welfare State, and Public Employment: A Comparative Study of Seven Industrialized Countries', *American Sociological Review*, 63(5), pp. 688-710.

Goux, D. and Maurin, E. (1999) 'Persistence of inter-industry wage differentials: a re-examination using matched worker-firm panel data', *Journal of Labor Economics*, 17(3), pp. 492-533.

Graddy, K. and Pistaferri, L. (2000) 'Wage differences by gender: Evidence from recently graduated MBAS', *Oxford Bulletin of Economics and Statistics,* 62, pp. 837-854.

Green, F. and Zhu, Y. (2010) 'Overqualification, job dissatisfaction, and increasing dispersion in the returns to graduate education', *Oxford Economic Papers,* 62(4), pp. 740–763.

Greenhalgh, C. (1980) 'Male-female wage differentials in Great Britain: Is marriage an equal opportunity?', *Economic Journal,* 90(360), pp. 751-775.

Grimshaw, D. and Rubery, J. (2007) *Undervaluing women's work*. Manchester, Equal Opportunities Commission.

Groot, W., Mekkelholt, E. and Oosterbeek, H. (1992) 'Further evidence on the wage curve', *Economic Letters*, 38(3), pp. 355-359.

Groshen, E. (1991) 'The structure of the female/male wage differential: is it who you are, what you do, or where you work?', *Journal of Human Resources*, 26(3), pp. 457-472.

Gunderson, M. (1989) 'Male-female wage differentials and policy responses', *Journal of Economic Literature*, 27, pp. 46-72.

Hair, J., Anderson, R., Tatham, R. and Black, W. (2014) *Multivariate Data Analysis*. 7th edn. Englewood Cliffs, New Jersey: Prentice-Hall.

Haisken-DeNew, J., and Schmidt, C. (1997) 'Interindustry and interregion differentials: mechanics and interpretation', *The Review of Economics and Statistics*, 79(3), pp. 516-521.

Hajj, M. and Panizza, U. (2002) 'Education, Childbearing, and Female Labour Market Participation: Evidence from Lebanon', *Journal of Development and Economic Policies*, 4(2), pp. 43-71.

Hakim, C. (1996) *Key Issues in Women's Work: Female heterogeneity and the polarisation of women's employment*. London, The Athlone Press Ltd.

Hakim, C. (1998) 'Developing a sociology of the twenty-fist century: preference theory', *The British Journal of Sociology*, 49(1), pp. 137-143.

Hakim, C. (2000) *Work-lifestyle Choices in the 21st Century: Preference theory*. Oxford, UK: Oxford University Press.

Hakim, C. (2002) 'Lifestyle preferences as determinants of women's differentiated labour market careers', *Work and Occupations*, 29(4), pp. 428-459.

Hakim, C. (2004) *Key Issues in Women's Work: female diversity and the polarization of women's employment*. 2nd edn. London: GlassHouse Press.

Hakim, C. (2006) 'Women, careers, and work-life preferences', *British Journal of Guidance and Counselling,* 34(3), pp. 279-294.

Hansen, W. (1963) 'Total and Private Rates of Return to Investment in Schooling', *Journal of Political Economy*, 71(2), pp. 128-140.

Harkness, S. (1996) 'The Gender Earnings Gap: Evidence from the UK', *Fiscal Studies*, 17(2), pp. 1-36.

Harkness, S. and Waldfogel, J. (2003) 'The Family Gap in Pay: Evidence from Seven Industrialized Countries', in Polachek, S. (eds.) *Research in Labour Economics* 22, pp. 369-414.

Harrison, B. (1972) *Education, Training, and the Urban Ghetto*. Baltimore: Johns Hopkins University Press.

Hartmann, H. (1976) 'Capitalism, patriarchy, and job segregation by sex', *Signs*, 3, (1), pp. 137-169.

Hartmann, H. (1979) 'The Unhappy Marriage of Marxism and Feminism: Towards a more progressive union', *Capital and Class,* 8 (Summer), pp. 1-33.

Hartmann, H. (1981) 'The family as the locus of gender, class and political struggle: the example of housework', *Signs*, 16, pp. 366-394.

Hartog J., Pereira P. and Vieira J. (1999) '*Inter-industry wage dispersion in Portugal: high but falling*', IZA Discussion Paper 53.

Hartog, J., Pereira, P. and Vieira, J. (2000) 'Inter-Industry Wage Dispersion in Portugal', *Empirica,* 27 (4), pp. 353-64.

Haskel, J. (1999) 'Small firms, contracting-out, computers and wage inequality: Evidence from UK manufacturing', *Economica*, 66, pp. 1–21.

Hausmann, R., Tyson, L. and Zahidi, S., (2011) *The Global Gender Gap Report 2011*. World Economic Forum, Switzerland.

Haveman, H. and Beresford, L. (2012) 'If You're so Smart, Why aren't You the Boss? Explaining the Persistent Vertical Gender Gap in Management', *The ANNALS of the American Academy of Political and Social Science*, 639(1), pp.114-130.

Heckman, J. (1998) 'Detecting discrimination', *Journal of Economic Perspectives,* 12(2), pp. 101-116.

Heckman, J., Layne-Farrar, A. and Todd, P. (1996) 'Human Capital Pricing equations with an Application to Estimating the effect of Schooling Quality on Earning', *Review of Economics and Statistics*, 87, November: 562:610.

Heckman, J. and Rubinstein, Y. (2001) 'The importance of non-cognitive skills: Lessons from the GED testing program', *American Economic Review*, 91,145-149.

Heckman, J. and Li, X. (2004) 'Selection bias, comparative advantage and heterogeneous returns to education: evidence from China in 2000', *Pacific Economic Review*, 9(3), pp. 155-171.

Heckman, J., Lochner, L., and Todd, P. (2005) '*Earnings Function and Rates of Return'*, NBER Working Paper 13780, National Bureau of Economic Research.

Heckman, J., Lance J., and Petra E. (2003) '*Fifty Years of Mincer Earnings Functions'*, Working Paper 9732, Cambridge, MA, NBER.

Heckman, J., Lochner, L., and Todd, P. (2006) 'Earnings Functions, Rates of Return and Treatment Effects: The Mincer Equation and Beyond', in *Hanushek, E., and Welch, F., (Eds) Handbook of the Economics of Education, Volume 1, Elsevier.*

Helwege, J. (1992) 'Sectoral shifts and interindustry wage differentials', *Journal of Labour Economics*, 10(1), pp. 55-84.

Hemmings, P. (1991) 'Regional Earnings Differences in Great Britain: Evidence from the New Earnings Survey', *Regional Studies*, 25(2), pp. 123-133.

Henley, A. and Thomas, D. (2001) 'Public service employment and the public-private wage differential in British regions', *Regional Studies*, 35(3), pp. 229-240.

Horowitz, A. and Schenzler, C. (1999) 'Returns to General, Technical and Vocational Education in Developing Countries: Recent Evidence from Suriname', *Education Economics,* 7(1), pp. 5-19.

Huitfeldt, H. and Kabbani, N. (2007) '*Returns to Education and the Transition from School to Work in Syria'*, Institute of Financial Economics Lecture and Working Paper Series No. 1, 2007, American University of Beirut.

Humphries, J. (1977) 'Class Struggle and the Persistence of the Working Class Family', *Cambridge Journal of Economics,* 1 (3), pp. 241-258.

Hutcheson, G., and Sofroniou, N., (1999) '*The Multivariate Social Scientist: Introductory statistics using generalized linear models'*, Thousand Oaks, CA: Sage Publications.

Hyder, A. (2007) '*Wage differentials, rate of return to education and occupational wage share in the labour market of Pakistan*', PIDE Working Papers, 17.

Hyder, A. and Reilly, B. (2005) '*The public sector pay gap in Pakistan: a quantile regression analysis*', PRUS Working Paper, 33.

IBRD (1995a) '*Priorities and Strategies for Education: A World Bank Sector Review*', World Bank Education and Social Policy Department, Washington, DC.

International Labour Organization (ILO) (2004) *LABORSTA database*. Geneva, Switzerland.

International Trade Union Confederation (2008) *The Global Gender Pay Gap*. Brussels: ITUC.

International Trade Union Confederation (2012) *Frozen in time: Gender Pay Gap Unchanged for 10 Years*. Brussels: ITUC.

Isaza-Castro, J. and Reilly, B. (2011) *Occupational segregation and gender wage differences: evidence from urban Colombia*. Mimeo, University of Sussex, Brighton, U.K.

Islam, I., and Abdel-Fadil, M. (2005) 'Unemployment and Poverty: Challenges Confronting the Syrian Labour Market' in *Macroeconomic Policies for Poverty Reduction: the case of Syria*. UNDP United Nation Development Programme, pp. 116-148.

Jackson, J., and Lindley, J. (1989) 'Measuring the extent of wage discrimination: A statistical test and a caveat', *Applied Economics*, 21: 515–540.

Jamal, H., Toor, I., and Khan, F. (2003) '*Private returns to education: evidence for Pakistan*', Research Report No 50, Pakistan Institute of Development Economics. Retrieved from http://www.academia.edu/9231517/Private_Returns_to_Education_Evidence_for_Pakistan (accessed on 30 March 2014).

Jamali, D., Sidani, Y., and Kobeissi, A. (2008) 'The gender pay gap revisited: insights from a developing country context', *Gender in Management: An International Journal,* 23 (4), pp. 230-246.

Jarrell, S. and Stanley, T. (2004) 'Declining bias and gender wage discrimination? A meta-regression analysis', *Journal of Human Resources*, 39(3), pp. 828–838.

Jenkins, S. (2004) *Gender, Place and the Labour Market*. Hants, England and Burlington, USA: Ashgate.

Johnes, G. and Tanaka, Y. (2008) 'Changes in gender wage discrimination in the 1990s: A tale of three very different economies', *Japan and the World Economy*, 20 (1), pp. 97–113.

Johnson, T. (2008) '*Maternity leave and employment patterns of first-time mothers: 1961-2003*', Household Economic Studies. Washington, DC: U.S. Census Bureau.

Jones, F. (1983) 'On Decomposing the Wage Gap: A Critical Comment on Blinder's Method', *Journal of Human Resources*, 18, pp. 126-130.

Joshi, H., and Davies, H. (2002) 'Women's Incomes over a Synthetic Lifetime', in Ruspini, E. and Dale, A. (Eds.) *The Gender Dimension of Social Change: The contribution of dynamic research to the study of women's life courses*. Bristol: The Policy Press, pp. 111-131.

Joshi, H., and Paci, P. (1998) *Unequal Pay for Women and Men: Evidence from the British Birth Cohort Studies.* Cambridge: The MIT press.

Joshi, H., Paci, P. and Waldfogel, J. (1998) 'What do we know about unequal pay?', in Joshi, H. and Paci, P. (Eds.) *Unequal pay for women and men: evidence from the British Birth Cohort Studies*. Cambridge, MIT Press, pp.1–22.

Juhn, C., Murphy, K., and Pierce, B. (1993) 'Wage inequality and the rise in returns to skill', *Journal of Political Economy*, 101(3), pp. 410-442.

Jurajda, S. (2003) 'Gender wage gap and segregation in enterprises and the public sector in late transition countries', *Journal of Comparative Economics*, 31, pp. 199-222.

Jurges, H. (2002) 'The distribution of the German public-private wage gap', *Labour*, 16(2), pp. 347-381.

Kabbani, N. and Kothari, E. (2005) '*Youth Employment in the MENA Region: A Situational Assessment*', Social Protection Discussion Paper No. 534, the World Bank, Washington, DC.

Kabbani, N. and Tzannatos, Z. (2006) 'Labor and Human Resource Development in Syrian Country Profile', in Aita, S. (Eds.) *Economic Research Forum*. Cairo, Egypt.

Kabbani, N. (2009) '*why young Syrians prefer public sector jobs*', Middle East youth initiative policy outlook no.2.

Kabbani, N. and Al-Habash, L. (2008) '*Raising Awareness of Alternatives to Public Sector*', working paper 387, Economic Research Forum.

Kabbani, N. and Kamel, N. (2007) '*Youth Exclusion in Syria: Social, Economic, and Institutional Dimensions*', The Middle East Youth Initiative Working Paper Number 4, Wolfensohn Center For Development, Dubai School of Government.

Kabbani, N. and Kothari, E. (2005) '*Youth Employment in the MENA Region: A Situational Assessment*', Social Protection discussion paper, NO. 0534, the World Bank.

Kabbani, N. and Salloum, S. (2010) 'Financing Higher Education in Syria' in Galal, A., and Kanaan, T., (Eds,) *Financing Higher Education in Arab Countries*, ERF Policy Research Report, PRR No. 34, July 2010.

Katz, L. and Krueger, A. (1991) 'Changes in the Structure of Wages in the Public and Private Sectors', *Research in Labour Economics*, 12, pp. 137-72.

Katz, L. and Murphy, K. (1992) 'Changes in relative wages, 1963-1987: Supply and demand factors', *Quarterly Journal of Economics,* 107(1), pp. 35-78.

Kelly, E., McGuinness, S., ad O'Connell, P. (2009) '*The public-private sector pay gap in Ireland: what lies beneath?*', ESRI Working Paper, 321.

Kershner, M. (1997) '*Male and Female Wage Differentials Theories and Empirical Results of Labor Market Discrimination*', An Honours paper presented to the Department of Economics.

Khan, F. and Toor, I. (2003) 'Changes in returns to education in Pakistan: 1990-2002', *The Lahore Journal of Economics*, 8, pp. 83-98.

Kingsmill, D. (2003) '*The Kingsmill Review of Women's Pay and Employment',* The Women and Equality Unit.

KIPRA- Kenya Institute for Public Policy Research and Analysis (2013) '*A Comparative Study on Public-Private Sector Wage Differentials in Kenya*', Policy Paper No. 5.

Kolberg, J. (1991) 'The Gender Dimension of the Welfare State', *International Journal of Sociology,* 21, pp. 119-48.

Kreimer, M. (2004) 'Labour Market Segregation and the Gender-Based Division of Labour', *European Journal of Women's Studies*,11(2), pp. 223-246.

Krueger, A. and Summers, L. (1988) 'Efficiency wages and the inter-industry wage structure', *Econometrica*, 56(2), pp. 259-293.

Laing, D. (2011) *Labour Economics: Introduction to Classic and the New Labour Economics*. W. W. Norton & Co.

Lang, K. (1986) 'A language theory of discrimination', *Quarterly Journal of Economics,* 101, pp. 363-382.

Lemieux, T., (2003) *'the "Mincer Equation" Thirty Years after Schooling, Experience and Earnings'*, Working paper no. 62, centre for labor economics, University of California, Berkeley.

Lewis, J. (1984) *Women in England, 1870-1950: Sexual Divisions and Social Change.* New York: Harvester/Wheatsheaf.

Li, Q., De Brauw, A., Rozelle, S., and Zhang, L. (2005) 'Labour market emergence and return to education in rural China', *Review of Agricultural Economics*, 27(3), pp. 418-424.

Light, A. and Ureta, M. (1995) 'Early-career work experience and gender wage differentials', *Journal of Labour Economics*, 13(1), pp. 121-154.

Loury, G. (1998)' Discrimination in the Post-Civil Rights era: Beyond market interactions', *Journal of Economic Perspectives*, 12, pp. 117-126.

Lucifora, C. and Reilly, B. (1990) 'Wage Discrimination and Female Occupational Intensity', *Labour*, 4, pp. 147-168.

Lucifora, C., and Meurs, D. (2004) '*The public sector pay gap in France, Great Britain and Italy'*. IZA Discussion Paper, No 1041.

Lucifora, C., (2001) 'Wage inequality and low pay: the role of labour market institutions', in Gregory, M., Salverda, W. and Bazen, S. (Eds.) *Labour market inequalities*, Oxford University Press.

Machado, J. and Mata, J. (2005) 'Counterfactual decomposition of changes in wage distributions using quantile regression', *Journal of Applied Econometrics*, 20 (4), pp.445–466.

Machin, S. (1996) 'Wage inequality in the UK', *Oxford Review of Economic Policy*, 12(1), pp. 47-64.

Machin, S. (1997) 'The decline of labour market institutions and the rise in wage inequality in Britain', *European Economic Review*, 41, pp. 647–657.

Macpherson, D. and Hirsch, B. (1995) 'Wages and Gender Composition: Why do Women's Jobs Pay Less?', *Journal of Labour Economics*, 13, pp. 426-471.

Madden, D. (1999) '*Towards a Broader Explanation of Male-Female Wage Differences*', Centre for Economic Research. WP99/11, 15.

Manning, A. (2000) ''Movin' on up: Interpreting the earnings-experience profile', *Bulletin of Economic Research*, 52, pp. 261-296.

Manning, A. and Petrongolo, B. (2008) 'The part-time pay penalty for women in Britain'. *The Economic Journal,* 118 (526), pp. F28–F51.

Manning, A. and Robinson, H. (2004) 'Something in the way she moves: A fresh look at an old gap', *Oxford Economic Papers*, 56, pp. 169-188

Manning, A. (2006) 'The Gender Pay Gap. Centre for Economic Performance', *CentrePiece*, 11(1), pp.13-16.

Martins, P. and Pereira, P. (2004) 'Does education reduce wage inequality? Quantile regressions evidence from 16 countries', *Labour Economics*, 11(3), pp. 355-371.

Machin, S. (2003) 'Wage inequality since 1975', in Dickens, R. Gregg, P. and Wadsworth, J. (Eds.) *The Labour Market under new Labour*. Palgrave Macmillan, Basingstoke.

McMahon, W. (1999) *Education and development: measuring the social benefits*. Oxford: Oxford University Press.

McRae, S. (2008) 'Working full-time after motherhood' in Scott, J., Dex, S. and Joshi, H. (Eds.). *Women and Employment: Changing Lives and New Challenges*. Cheltenham: Edward Elgar.

Melly, B. (2005) 'Public-private sector wage differentials in Germany: evidence from quantile regression', *Empirical Economics*, 30(2), pp. 505-520.

Meng, X. (2004) 'Gender earnings gap: the role of firm specific effects', *Labour Economics,* 11, pp. 555-573.

Middle East Online (2011) 'Syria's Industrial Public Sector: Reform is Impossible without Good Governance', available from http://www.middle-east-online.com/english/?id=44404 (accessed on 25/10/2014).

Miles, R. (2002) 'Employment and Unemployment in Jordan: The Importance of the Gender System', *World Development*, 30(3), pp. 413-427.

Miller, P. (1987) 'The Wage Effect of the Occupational Segregation of Women in Britain', *Economie Journal*, 97 Dec.

Mincer, J. and Polachek, S. (1974) 'Family investments in human capital: earnings of women', *The journal of political economy*, 82 (2), pp.76–108.

Mincer, J. (1962) 'On-the-Job Training: Costs, Returns, and Some Implications', *Journal of Political Economy*, 70(5), Part 2, pp. 50-79.

Mincer, J. (1974) *Schooling, Experience and Earnings*. Columbia University Press.

Mincer, J. (1997) 'changing in wage inequality, 1970-1990', *Research in Labor Economics*, 16: 1-18.

Mitchell, M., (2012) *Interpreting and Visualizing Regression Models Using Stata*, Stata Press.

Molho, I. (1992) 'Local Pay Determination', *Journal of Economic Surveys*, 6(2), pp. 155-194.

Moock, P., Patrinos, H., and Venkataraman, M. (1998) '*Education and Earnings in a Transition Economy: The Case of Vietnam*', World Bank Working Paper, World Bank, Washington, DC.

Moroni, G. (2016) 'Explaining divorce gaps in cognitive and noncognitive skills of children', IRNEP Conference 2016, University of York.

Mueser, P. (1989) 'Discrimination', in Eatwell, J., Milgate, M. and Newman, P. (Eds) *Social Economics.* London, The Macmillan Press Ltd.

Mumford, K. and Smith, P. (2005) '*The Gender Earnings Gap in Britain: Including the Workplace*'. IZA Discussion Paper no. 1109.

Mumford, K. and Smith, P. (2007) 'The Gender Earnings Gap in Britain: Including the Workplace', *The Manchester School*, 75(6), pp. 653–672.

Mumford, K. and Smith, P. (2009) 'What determines the part-time and gender earnings gaps in Britain: evidence from the workplace', *Oxford Economic Papers*, 61 (Supplement 1), pp. 56 75.

Murnane, R., Willett, J., and Levy, F. (1995) 'The growing importance of cognitive skills in wage determination', *Review of Economics and Statistics,* 77, pp. 251 – 266.

Nasir, Z. (1998) 'Determinants of personal earnings in Pakistan: findings from the labour force survey 1993-94', *The Pakistan Development Review*, 37(3), pp. 251-274.

Nasir, Z. and Nazli, H. (2000) '*Education and earnings in Pakistan*'. Pakistan Institute of development Economics Research Report no. 177. Retrieved from http://www.pide.org.pk/research/Report177.pdf (accessed on 22 April 2014).

Neumark, D. and McLennan, M. (1995) 'Sex Discrimination and Women's Labour Market Outcomes', *The Journal of Human Resources*, 3 0(4), pp. 713-740.

Neumark, D., Bank, R. and VanNort, K. (1996) 'Sex Discrimination in Restaurant Hiring: an Audit Study', *The Quarterly Journal of Economics*, 111(3), pp. 915-941.

Neumark, D. (1988) 'Employers' discriminatory behaviour and the estimation of wage discrimination', *The Journal of Human Resources*, 23(3), pp. 279-95.

Nicodemo, C. (2009) '*Gender pay gap and quantile regression in European families'*. Institute for the Study of Labor, IZA Discussion Paper No. 3978.

Nielsen, H. and Rosholm, M. (2001) 'The public-private sector wage gap in Zambia in the 1990s: a quantile regression approach', *Empirical Economics*, 26, pp. 169-182.

Noorkoiv, R., Orazem, P., Puur, A. and Vodopivec, M. (1998) 'Employment and Wage Dynamics in the Estonia Transition, 1989-95', *Economics of Transition*, 6(2), pp.481-504.

Nopo, H., (2008) 'Matching as a Tool to Decompose Wage Gaps', Review of Economics & Statistics, 90(2): 290-299.

Nosek B., Banaji M., and Greenwald A. (2002) 'Math = male, me = female, therefore math ≠ me', *Journal of Personality and Social Psychology*, 83(1), pp. 44–59.

O'Higgins, N. (2003) '*Trends in Youth Labour Market in Developing and Transition Countries'*. World Bank Social Protection Discussion Paper No. 0321, Washington, DC.

Oaxaca, R. and Ransom M. (1999) 'Identification in Detailed Wage Decompositions', *The Review of Economics and Statistics*, 81(1), pp. 154-157.

Oaxaca, R. (1973) 'Male-Female Wage Differentials in Urban Labour Markets', *International Economic Review*, 14(3), pp. 693-709.

OECD Organisation for Economic Cooperation and Development (2012) LMF1.5: Gender pay gaps for full-time workers and earnings differentials by educational attainment, OECD Family Database, OECD: Paris [online]. Available at: www.oecd.org/social/family/database (Accessed 05 February 2015).

OECD Organization for Economic Cooperation and Development (1994) *Women and Structural Change: New Perspectives*. Paris, France: OECD.

OECD website, Gender wage gap, [online] https://www.oecd.org/gender/data/genderwagegap.htm (Accessed on 15 March 2015).

Office for National Statistics (2010) '*2010 Annual Survey of Hours and Earnings'*. Office for National Statistics. London.

Oliveira, A. (2001) '*Occupational gender segregation and effect on wages in Brazil'*. XXIV General Population Conference.

O'Neil, J. and Polachek, S. (1993) 'Why the gender gap narrowed in the 1980's', *Journal of Labour Economics*, 11(1), pp. 205-228.

Online courses (2017) Introduction to Generalized Linear Models, in Analysis of Discrete Data, PennState Eberly College of science, [online] Available at: https://onlinecourses.science.psu.edu/stat504/node/216 [Accessed 16 May 2017].

Osburn, J. (2000) 'Interindustry wage differentials: patterns and possible sources', *Monthly Labour Review*, February.

Ovensen, G. and Sletten, P. (2007) '*The Syrian Labour Market Findings from the 2003 Unemployment Survey'*, Fafo-report 2007:02.

Pedersen, P., Schmidt-Sorensen, J., Smith, N., and Westergard-Nielsen, N. (1990) 'Wage Differentials between the Public and Private Sectors', *Journal of Public Economics*, 41, pp.125-45.

Pereira, P. and Martins, P. (2001) 'Returns to Education in Portugal, 1982-1995: High and Rising', in Harmon, C., Walker, I., and Westergaard Nielsen, N. (Eds) *Education and Earnings in Europe: A Cross Country Analysis of Returns to Education*. Edward Elgar, Aldershot and Cheltenham.

Piore, M. (1973) 'Fragment of a "Sociological" Theory of Wages', *The American Economic Review*, 63(2), pp.377-384.

Plasman, R., Rycx, F., and Tojerow, I. (2007) '*Wage differentials in Belgium: the role of worker and employer characteristics*', DULBEA Working Paper, 07-12.RS.

Polachek, S. (2004) '*How the Human Capital Model Explains why the Gender Wage Gap Narrowed*', IZA Discussion Paper 1102, Institute for the Study of Labour, Bonn Germany.

Polachek, S. and Xiang, J. (2014) '*The Gender Pay Gap Across Countries: A Human Capital Approach*', IZA Discussion Paper No. 8603.

Polachek, S. (1975a) 'Potential Biases in Measuring Male-Female Discrimination', *Journal of Human Resources*, 10 (2), pp. 205-29.

Polachek, S. (1975b) 'Differences in Expected Post-School Investment as a Determinant of Market Wage Differentials', *International Economic Review*, 16, pp.451-70.

Ponthieux, S. and Meurs, D. (2005) '*The gender wage gap in Europe: women, men and the public sector*', Direction des Statistiques Dmographiques et Sociales, Document de travail F0502.

Portugal, P. and Centeno, M. (2001) '*Wages of civil servants*', Banco de Portugal, Economic Bulletin, September.

Poterba, J. and Rueben, K. (1994) '*The Distribution of Public Sector Wage Premiums: New Evidence Using Quantile Regression Methods*', Working Paper No. 4734. Cambridge, MA: National Bureau of Economic Research.

Psacharopoulos, G. (1973) *Returns to Education: An International Comparison*. San Francisco, CA, Elseveir-Jossey Bass.

Psacharopoulos, G. (1985) 'Returns to Education: A Further International Update and Implications', *Journal of Human Resources*, 20(4), pp.583-604.

Psacharopoulos, G. (1994a) 'Returns to Investment in Education: A Global Update', *World Development*, 22(9), pp. 1325-l343.

Psacharopoulos, G. and Chu Ng, Y. (1992) '*Earnings and Education in Latin America. Assessing priorities for Schooling Investment*', Working Papers. Technical Department Latin America and the Caribbean Region. The World Bank, Washington D.C.

Psacharopoulos, G. and Chu Ng, Y. (1994) Earnings and Education in Latin America, *Education Economics*, 2(2), pp. 187-207.

Psacharopoulos, G. and Patrinos, H. (2002) '*Returns to Investment in Education: A Further Update*', World Bank Policy Research Paper 2881. Washington, DC: World Bank, September.

Psacharopoulos, G. and Patrinos, H. (2004) 'Returns to Investment in Education: A Further Update', *Education Economics*, 12(2), pp. 111–134.

Psacharopoulos, G. and Velez, C. (1992) 'Schooling, Ability and Earnings in Colombia, 1988'. in *Economic Development and Cultural Change*, 40(3), pp. 629-643.

Pudney, S. and Shields, M. (2000) 'Gender, race, pay and promotion in the British nursing profession: Estimation of a generalised ordered probit model', *Journal of Applied Econometrics,* 15, pp. 367-399.

Puhani, P. (2000) 'The Heckman Correction for Sample Selection and its Critique', *Journal of Economic Surveys*, 14, pp. 53-67.

Rashad, H., Osman, M., and Roudi-Fahimi, F. (2005) *'Marriage in the Arab World'*, Population Reference Bureau, Washington, DC.

Reilly, K. and Zanchi, L. (2003) 'Industry wage differentials: how many, big and significant are they?', *International Journal of Manpower*, 24(4), pp. 367-398.

Reimers, W. (1983) 'Labour market discrimination against Hispanic and black men', *The Review of Economics and Statistics*, 65(4), pp. 570-579.

Riach, P. and Rich, J. (2002) 'Field experiments of discrimination in the market place', *The Economic Journal*, 112, pp. F480–F518.

Robinson, D. (1998) 'Differences in occupational earnings by sex', *International Labour Review*, 137(1), pp 3-31.

Rosen, S. (1989) 'Human Capital', in Eatwell, J., Milgate, M., and Newman, P. (Eds.) *Social Economics*. London: The Macmillan Press Ltd.

Rosenfeld, R. and Kalleberg, A. (1991) 'Gender Inequality in the Labour Market', *Acta Sociologica*, 34, pp. 207-225.

Rosenfeld, R. and Birkelund, G. (1995) 'Women's part-time work: A cross-national comparison', *European Sociological Review*, 11(2), pp.111-134.

Rosenzweig, M. and Morgan, J. (1976) 'Wage Discrimination: A Comment', *Journal of Human Resources*, 11, pp. 3-7.

Rosholm, M. and Smith, N. (1996) *The Danish Gender Wage Gap in the 1980's: A Panel Data Study*. Oxford Economic Papers vol. 48.

Royalty, A. (1998) 'Job-to-Job and Job-to-Non-employment Turnover by Gender and Educational Level', *Journal of Labour Economics*, 16(2) pp. 392-443.

Rubery, J., Smith, M. and Fagan, C. (1999) *Women's Employment in Europe: Trends and prospects*. London: Routledge.

Rutkowski, J. (1994) '*Changes in wage structure and in returns to education during economic transition: The case of Poland'*, Center for International Studies, Princeton University

Rutowski, J. (1996) 'High skills pay-off: the changing wage structure during economic transition in Poland', *Economics of Transition*, 4(1), pp. 89-112.

Rycx, F. and Tojerow, I. (2002) Inter-industry wage differentials and the gender wage gap in Belgium, *Brussels Economic Review*, 45(2), pp. 119-141.

Saunders, M., Lewis, P. and Thornhill, A. (2009) *Research methods for business students,* fifth edition. Pearson Education Limited.

Schultz, T. (2004) 'Evidence of Returns to Schooling in Africa from Household Surveys: Monitoring and Restructuring the Market for Education', *Journal of African Economics*, 13, pp. 95-148.

Schultz, T. (1961) 'Investment in Human Capital', *American Economic Review*, 51(1), pp. 1-17.

Schultz, T. W. (1960) 'Capital Formation by Education', *The Journal of Political Economy*, 68(6), pp. 571-583.

Semyonov, M. and Jones, F. (1999) 'Dimensions of Gender Occupational Differentiation in Segregation and Inequality: A Cross-National Analysis', *Social Indicators Research*, 46, pp. 225-247.

Siltanen, J., Jarman, J. and Blackburn, R. (1995) *Gender Inequality in the Labour Market, Occupational Concentration and Segregation.* Geneva: International Labour Office.

Skyt-Nielsen, H. and Rosholm, M. (2001) 'The Public-Private Sector Wage Gap in Zambia in the 1990s: A Quantile Regression Approach', *Empirical Economics*, 26, pp. 169- 182.

Smith, S. (1977) 'Government Wage Differentials', *Journal of Urban Economics*, 4(3), pp. 248-271.

Sorenson, E. (1990) 'The Crowding Hypothesis and Comparable Worth Issue', *The Journal of Human Resources*, 25(1), pp. 55-89.

Stanley, T. and Jarrell, S. (1998) 'Gender wage discrimination bias? A meta-regression analysis', *Journal of Human Resources*, 33(4), pp. 947–973.

Stanovnik, T. (1997) 'The returns to education in Slovenia', *Economics of Education Review*, 16(4), pp. 443-449.

Strauss, H. and Maisonneuve, C. (2007) '*The wage premium on tertiary education: new estimates for 21 OECD countries*', OECD Economics Department Working Papers No. 589.

Sugihashi, Y. (2003) *Gender Wage Differentials and Discrimination in Britain and Japan*, Manchester: PhD thesis.

Sullivan, D. and Smeeding, T. (1997) 'Educational attainment and earnings inequality in eight nations', *International Journal of Educational Research*, 27(6), pp. 513 – 525.

Tansel, A. (1999) '*Formal versus informal sector choice of wage earners and their wages in Turkey*', Economic Research Forum Working Paper, 9927.

Tansel, A. (2004) '*Public-private employment choice, wage differentials and gender in Turkey*', IZA Discussion Paper, No 1262.

Terrell, K. (1993) 'Public-Private Wage Differentials in Haiti: Do Public Servants Earn a Rent?', *Journal of Development Economics*, 42, pp. 293-314.

Teulings, C. and Hartog, J. (1998) *Corporatism or Competition? Labour Contracts, Institutions and Wage Structures in International Comparison*. Cambridge University Press, Cambridge. 1998.

Thanawala, K. (2002) 'Reflections on Private Market Economy and Social Market Economy', *International Journal of Social Economics*, 29(8), pp. 663-674.

The International Labour Organization (ILO) (2013) '*Global Wage Report 2012/13: Wages and Equitable Growth*'. Geneva. Available at: http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_194843.pdf (accessed on: 5/1/2013).

Thomson, V. (2006) 'How Much of the Remaining Gender Pay Gap is the Result of Discrimination, and How Much is Due to Individual Choices?', *International Journal of Urban Labour and Leisure*, 7(2), pp.1-32.

Tilak, J. (1988) 'Economics of Vocationalization; A Review of the Evidence', *Canadian and International Education*, 17(1), pp. 45-62.

Todaro, M. (1982) *Economic Development in the Third World*. New York: Longman Publishers.

Tolbert, P. and Moen, P. (1998) 'Men's and Women's Definitions of "Good" Jobs Similarities and Differences by Age and Across Time', *Work and Occupations*, 25(2), pp.168-194.

Topel, R. (1994) 'Regional Labor Markets and the determinants of Wage inequality', *American Economic Review-Papers and Procedings*, 84(2), pp. 17-22.

Trostel, P. (2005) 'Nonlinearity in the return to education', *Journal of Applied Economics*, 8(1), pp. 191-202.

Trostel, P., Walker, I. and Woolley, P. (2002) 'Estimates of the economic return to schooling for 28 countries', *Labour Economics*, 9(1), pp. 1-16.

Tsakloglou, P. and Cholezas, I. (2001) 'Private Returns to Education in Greece', in Harmon, C., Walker, I. and Westergaard Nielsen, N. (Eds) *Education and Earnings in Europe: A Cross Country Analysis of Returns to Education*, Edward Elgar, Aldershot and Cheltenham.

Vainiomaki, J. and Laaksonen, S. (1995) 'Inter-industry Wage Differentials in Finland: evidence from longitudinal census data from 1975-85', *Labour Economics*, 2(2), pp. 161-73.

Van der Gaag, J. and Vijverberg, W. (1988) 'A Switching Regression Model for Wage Determinants in the Public and Private Sectors of a Developing Country', *The Review of Economics and Statistics,* 70, pp. 244- 52.

Varga, J. (1995) 'Returns to Education in Hungary', *Acta Oeconomica,* 47 (1-2), pp. 203-215.

Vecernik, J. (1995) 'Changing earnings distribution in the Czech Republic: survey evidence from 1988-1994', *Economics of Transition*, 3(3), pp. 335-371.

Vella, F., (1993) 'Gender Roles, Occupational Choice and Gender Wage Differential'. *Economic Record*, 69(207), pp. 382-392.

Vella, F. (1994) 'Gender Roles and Human Capital Investment: the Relationship between Traditional Attitudes and Female Labour Market Performance', *Economica*, 61(242), pp.191-211.

Waldfogel, J. (1998) 'Understanding the 'Family Gap' in Pay for Women With Children', *Journal of Economic Perspectives*, 12(1), pp. 137-156.

Watts, M. (1998) 'Occupational gender segregation: Index measurement and econometric modelling', *Demography*, 35 (4), pp. 489-496.

Weichselbaumer, D. and Winter-Ebmer, R. (2005) 'A Meta-analysis of International Gender Wage Differentials', *Journal of Economic Surveys*, 19(3), pp. 479-511.

Wenzlow, A., Mullahy, J., Wolfe, B., (2004) 'Understanding Racial Disparities in Health: The Income-Wealth Paradox', Institute for Research on Poverty Discussion Paper no. 1283-04.

Whitehouse, G. (1992) 'Legislation and Labour Market Gender Inequality: An Analysis of OECD Countries', *Work, Employment, and Society*, 6(1), pp. 65-86.

Wood, R., Corcoran, M., and Courant, P. (1993) 'Pay differences among the highly paid: The male-female earnings gap in lawyers' salaries', *Journal of Labour Economics,* 11(3), pp. 417-441.

World Bank (2004) *MENA Development Report: Unlocking the Employment Potential in the Middle East and North Africa*. Washington, D.C.: World Bank.

World Bank (2008) T*he Road Not Traveled: Education Reform in the Middle East and North Africa*. MENA Development Report, World Bank, Washington D.C.

World Development Report (2012) *Gender Equality and Development*. The World Bank, Washington.

Wright, E., Baxter, J., and Birkelund, G. (1995) 'The Gender Gap in Workplace Authority: A Cross-National Study', *American Sociological Review*, 60, pp.407-35.

Wright, R. and Ermisch, J. (1991) 'Gender discrimination in the British labour market: A reassessment', *Economic Journal*, 101, pp. 508-522.

Zanchi, L. (1998) 'Interindustry wage differentials in dummy variable models', *Economic Letters*, 60(3), pp. 297-301.

Appendices

Appendix 1: Labour Force Survey Questionnaire

Questions 1-11- Name, relationship to the head of the household, sex, age, marital status, educational level, educational specialization, did he/she worked for at least one hour in the last week, was he/she searching for a job in the last four weeks, what is the reason for not searching for a job and if he/she has got a suitable job are they ready to start the next month.

Questions for unemployed individuals (12-22): what is the characteristics of the suitable job, do they want to work full or part time, why are you looking for part time job, what is the employment status that suit them, what route have they follow to find a job (family, friends..), for how many months have he/she been seriously looking for a job, is or has he/she been to any training courses, what is the lowest level of salary the individual would accept a job for, did the individual reject any job that was offered to him/hare during their search time, why did they reject it and have they worked before or owned a business.

Questions for unemployed individuals but previously worked (23-33): what was the last job industry, in the last job did they worked for more than 6 months or more than 20 hours weekly, did they had a written contract in the last job. In the last job how many workers were there in the organization, in the last job was he registered in the social security, what was the last occupation, what was his/her employment status, what is the reason for the discontinuity in job again, if the reason for the discontinuity is dismissal have they provide any evidence, did the previous employer follow the legal procedure for the dismissal and did the previous employer pay a compensation in addition to the salary for the dismissal.

Questions for employed individuals about the main job (34-48): what is the occupation, what is the industry, is it all year job, seasonal one or temporary, how many workers work in the same organization, do the individual have a written contract, how many days of the week does the individual work in this job, how many hours a week does the individual work in this job, does the individual wish to work full time, does the individual conceder the current job to be competent with his/her qualification, where is the place of the job, what is the individual employment status in this job, is the individual registered in the social security, why he/she is not registered, what is the individual wage from the main job and does the individual has any secondary job.

Questions for employed individuals about the secondary job (49-52): how many hours did the individual worked in a secondary jobs in the last week, what is the individual occupation

in the secondary job, what is the individual employment status in the secondary job and what is the individual wage from the secondary job.

Question 53- is the individual looking for a second job

Questions for individuals working in the house (domestic responsibilities) (54-55): why has this individual choose to work in the house and if this individual is able to find a job outside would he/she prefer it.

Questions for individuals outside the labour force (56-57): did this individual had a work in the past 12 months, how long did he/she worked for.

Questions for all family members (over 15 years) (58-63): have they lived abroad for at least three months, in what year did they immigrate, in which country did they work, the number of months spent outside the country in the last travel, what was his/her situation before traveling outside the country (student, employed, pensioner …), what was the last job he/she worked in before leaving.

Questions for current immigrants (64-71): is there any member of the family living outside of Syria, what is his/her name, what is their sex, the year of immigration, why did they immigrate, the education level before and after the immigration, what was his/her situation before traveling outside the country (student, employed, pensioner …), what was the last job he/she worked in before immigrating

Questions for the house head (72-73): did the family received any money transfer in the last 12 months from outside the country, the total sum of those transfers.

Appendix 2: Diagnostic Tests

In OLS, linearity and homoscedasticity are presumed, some test statistics additionally assume that the errors are normally distributed or that the sample used is large. Robust methods (e.g. robust regression) is used to reduce the uncertainty about the correct specification. In this research, taking the log of wages helps also in avoiding any multicollinearity problems.

Three diagnostics tests were performed, the first is the Ramsey test, also called the omitted variables test. This test is used to examine if there are any neglected nonlinearities in the model. It checks the null hypothesis that the model has no omitted variables (the functional form is correctly specified). Table (2.1a) shows the results of the Ramsey tests.

	Human+ Job+ Social	Human + job	Human
All sample	$F(3, 1888) = 1.61$ Prob > F = 0.1860	$F(3, 1901) = 0.53$ Prob > F = 0.6603	$F(3, 1916) = 1.00$ Prob > F = 0.3922
Males only	$F(3, 945) = 1.48$ Prob > F = 0.2175	$F(3, 958) = 1.50$ Prob > F = 0.2142	$F(3, 971) = 1.95$ Prob > F = 0.1203
Females only	$F(3, 906) = 0.96$ Prob > F = 0.4113	$F(3, 919) = 0.25$ Prob > F = 0.8631	$F(3, 933) = 0.76$ Prob > F = 0.5156

Table 2.1a: The Ramsey tests.

In all Ramsey RESET tests, at the 1% significance level ($p > .01$), we fail to reject the null hypothesis of correct specification. This suggests no evidence of functional form misspecification. In other words, the functional form is correct.

The second diagnostics test performed is the Heteroskedasticity of Residuals (breusch-Pagan/ Cook-Weisberg test) which investigates the null hypothesis of constant variance. Table (2.2a) shows the results of breusch-Pagan/ Cook-Weisberg tests.

	Human+ Job+ Social	Human + job	Human
All sample	chi2(1) = 0.36 Prob > chi2 = 0.5482	chi2(1) = 0.01 Prob > chi2 = 0.9212	chi2(1) = 1.63 Prob > chi2 = 0.2022
Males only	chi2(1) = 1.24 Prob > chi2 = 0.2658	chi2(1) = 1.83 Prob > chi2 = 0.1759	chi2(1) = 0.47 Prob > chi2 = 0.4932
Females only	chi2(1) = 1.44 Prob > chi2 = 0.2306	chi2(1) = 0.74 Prob > chi2 = 0.3904	chi2(1) = 0.06 Prob > chi2 = 0.8033

Table 2.2a: Heteroskedasticity of Residuals tests.

In all cases, we fail to reject the null hypothesis of homoskedasity at 1% significance level indicating that heteroskedasticity does not appear to exist in all of the previous cases.

Finally, to check for normality, Jarque-Bera normality of residuals test was performed. Table (2.3a) shows the results of this test.

	Human+ Job+ Social	Human + job	Human
All sample	1602 Chi(2) 0 Ho: normality	1446 Chi(2) 0 Ho: normality	1090 Chi(2) 2.e-237 Ho: normality
Males only	1330 Chi(2) 1.e-89 Ho: normality	1345 Chi(2) 8.e-293 Ho: normality	1012 Chi(2) 1.e-220 Ho: normality
Females only	1489 Chi(2) 0 Ho: normality	1221 Chi(2) 7.e-266 Ho: normality	967.4 Chi(2) 9.e-211 Ho: normality

Table 2.3a: Jarque-Bera normality of residuals tests.

The results indicated that the null hypothesis of normality is rejected for all calculated tests. Therefore, to investigate the issue further we checked both Skewness and Kurtosis using IM test (information matrix test). The test results indicated that the problem appears in the Kurtosis for all regressions (for example the results for the whole sample with human, job and social variables indicated a skewness with p-value of 0.2753 and a p-value for Kurtosis of 0.0003). To explore these results, histograms were plotted and they confirmed that the residuals were perfectly symmetric for all regressions (see an example of the above-mentioned regression figure 2.1a).
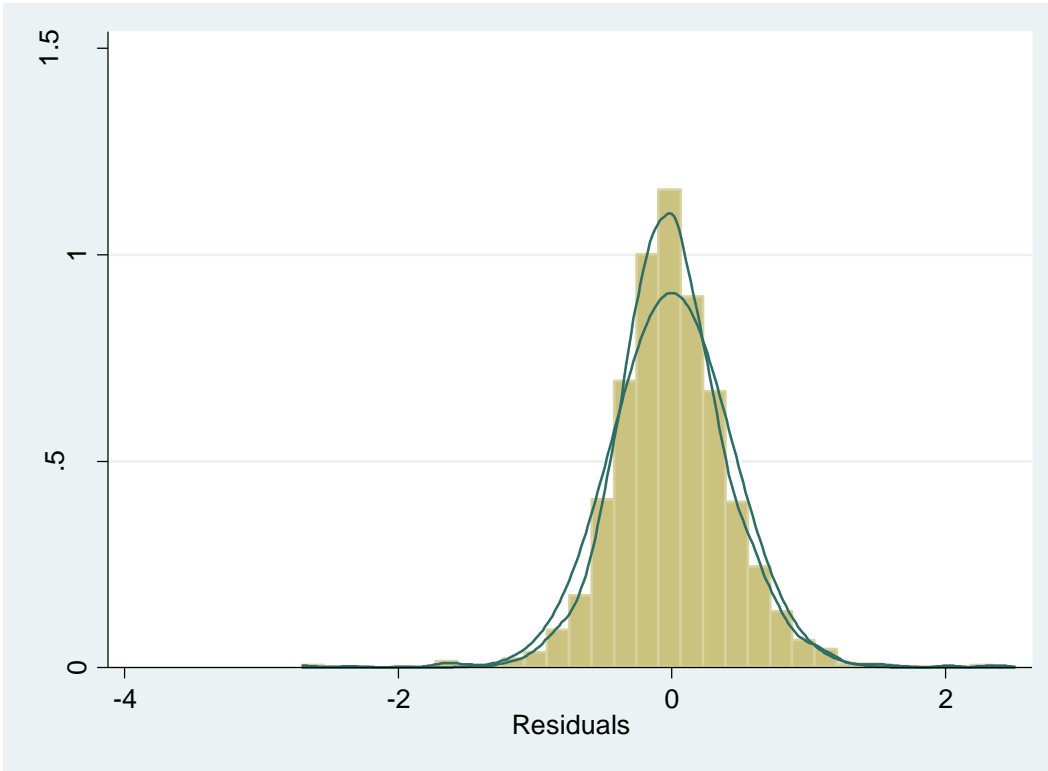
Figure 2.1a: Residual distribution for the whole sample regression with human, job and social variables.

In practice, deviation from normality caused by Kurtosis is not an issue in the analysis given the large sample size of this study.

Appendix 3: Wage equation

Table 3.1a: Wage Equation (log of monthly wages)/Human Capital						
Males (15-64)						
			Number of obs	=		983
			F(8, 974)	=		12.59
			Prob > F	=		0.000
			R-squared	=		0.1165
			Root MSE	=		0.48257
lnW	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Age	0.04612	0.012337	3.74	0.000	0.02191	0.070329
Age square	-0.00059	0.00015	-3.91	0.000	-0.00088	-0.00029
Elementary	0.430906	0.204473	2.11	0.035	0.029647	0.832166
Preparatory	0.582061	0.202873	2.87	0.004	0.183942	0.980179
Secondary	0.669016	0.20309	3.29	0.001	0.270472	1.06756
Intermediate	0.626202	0.204637	3.06	0.002	0.224621	1.027783
University	0.850745	0.205125	4.15	0.000	0.448206	1.253283
Years in the job	0.004948	0.001891	2.62	0.009	0.001236	0.008659
_cons	7.766776	0.314034	24.73	0.000	7.150514	8.383038

Table 3.2a: Wage Equation (log of monthly wages) Human Capital						
Females (15-64)						
			Number of obs			945
			F(8, 936)			38.04
			Prob > F			0.000
			R-squared			0.2024
			Root MSE			0.43496
lnW	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Age	0.045859	0.012653	3.62	0.000	0.021028	0.070689
Age square	-0.0005	0.000166	-3.04	0.002	-0.00083	-0.00018
Elementary	0.306959	0.080059	3.83	0.000	0.149843	0.464074
Preparatory	0.519173	0.076001	6.83	0.000	0.37002	0.668326
Secondary	0.630047	0.08453	7.45	0.000	0.464157	0.795937
Intermediate	0.696606	0.081859	8.51	0.000	0.535957	0.857255
University	0.800834	0.076688	10.44	0.000	0.650334	0.951334
Years in the job	0.005897	0.002217	2.66	0.008	0.001546	0.010249
_cons	7.317856	0.22827	32.06	0.000	6.869876	7.765835

Table 3.3a: Wage Equation (log of monthly wages) Human Capital

All (15-64)

					Number of obs	1928
					F(8, 1919)	31.20
					Prob > F	0.000
					R-squared	0.1238
					Root MSE	0.49183

lnW	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Age	0.035341	0.009058	3.9	0.000	0.017577	0.053104
Age square	-0.0004	0.000112	-3.54	0.000	-0.00062	-0.00018
Elementary	0.402361	0.11904	3.38	0.001	0.168899	0.635823
Preparatory	0.535743	0.117382	4.56	0.000	0.305534	0.765952
Secondary	0.728487	0.118433	6.15	0.000	0.496215	0.960758
Intermediate	0.687046	0.118797	5.78	0.000	0.454061	0.920031
University	0.809209	0.117933	6.86	0.000	0.57792	1.040499
Years in the job	0.005125	0.001503	3.41	0.001	0.002178	0.008072
_cons	7.70326	0.204142	37.73	0.000	7.302896	8.103624

Table 3.4a: Wage Equation (log of monthly wages)/ Human + Job

Males (15-64)

					Number of obs	982
					F(20, 961)	9.55
					Prob > F	0.000
					R-squared	0.1893
					Root MSE	0.46535

lnW	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Age	0.043276	0.011718	3.69	0.000	0.02028	0.066272
Age square	-0.00054	0.000143	-3.81	0.000	-0.00083	-0.00026
Elementary	0.411656	0.218901	1.88	0.060	-0.01792	0.841234
Preparatory	0.542296	0.218072	2.49	0.013	0.114345	0.970248
Secondary	0.598358	0.219951	2.72	0.007	0.166719	1.029997
Intermediate	0.56964	0.220621	2.58	0.010	0.136686	1.002595
University	0.836983	0.221229	3.78	0.000	0.402836	1.271129
Years in the job	0.006425	0.001878	3.42	0.001	0.002739	0.01011
Hours per week	0.005773	0.001726	3.34	0.001	0.002385	0.009161
Administrators & clerks	0.095247	0.119395	0.8	0.425	-0.13906	0.329552
Production workers	0.14639	0.056297	2.6	0.009	0.035911	0.25687
Professional& technicians	0.211236	0.066264	3.19	0.001	0.081199	0.341274
Sales & services	0.196457	0.074925	2.62	0.009	0.049423	0.343491
Private	0.062252	0.045946	1.35	0.176	-0.02792	0.152422
Building & Construction	0.207445	0.070264	2.95	0.003	0.069556	0.345333
Hotel & Restaurant	0.00316	0.078334	0.04	0.968	-0.15057	0.156885
Industrial	0.135711	0.083108	1.63	0.103	-0.02738	0.298805
Insurance	0.361413	0.287229	1.26	0.209	-0.20226	0.925081

	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Transport & comm.	0.198981	0.074846	2.66	0.008	0.052101	0.345861
Service	0.254123	0.066477	3.82	0.000	0.123667	0.384579
_cons	7.389703	0.345189	21.41	0.000	6.712292	8.067115

Table 3.5a: Wage Equation (log of monthly wages)/ Human + job						
Females (15-64)						
				Number of obs		943
				F(20, 922)		21.33
				Prob > F		0.000
				R-squared		0.2714
				Root MSE		0.41846
lnW	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Age	0.035316	0.012702	2.78	0.006	0.010387	0.060244
Age square	-0.00037	0.000166	-2.22	0.026	-0.0007	-4.4E-05
Elementary	0.242072	0.078728	3.07	0.002	0.087566	0.396579
Preparatory	0.423954	0.072957	5.81	0.000	0.280774	0.567134
Secondary	0.541393	0.0846	6.4	0.000	0.375362	0.707423
Intermediate	0.589596	0.080688	7.31	0.000	0.431243	0.747949
University	0.741703	0.074912	9.9	0.000	0.594685	0.888721
Years in the job	0.004297	0.002148	2	0.046	8.21E-05	0.008512
Hours per week	0.005873	0.001319	4.45	0.000	0.003284	0.008462
Administrators & clerks	0.22497	0.083027	2.71	0.007	0.062027	0.387913
Production workers	0.026096	0.050959	0.51	0.609	-0.07391	0.126104
Professional& technicians	0.137798	0.063041	2.19	0.029	0.014078	0.261517
Sales & services	0.094979	0.055298	1.72	0.086	-0.01354	0.203504
Private	-0.12919	0.048324	-2.67	0.008	-0.22402	-0.03436
Building & Construction	0.087165	0.061056	1.43	0.154	-0.03266	0.206989
Hotel & Restaurant	-0.10231	0.061438	-1.67	0.096	-0.22288	0.018267
Industrial	-0.15585	0.06763	-2.3	0.021	-0.28857	-0.02312
Insurance	0.265856	0.088563	3	0.003	0.092046	0.439665
Transport & comm.	0.163523	0.088166	1.85	0.064	-0.00951	0.336553
Service	0.065141	0.05709	1.14	0.254	-0.0469	0.177182
_cons	7.290942	0.220954	33	0.000	6.857312	7.724572

Table 3.6a: Wage Equation (log of monthly wages)/ Human + job

All (15-64)

					Number of obs = 1925	
					F(20, 1904) = 25.64	
					Prob > F = 0.0000	
					R-squared = 0.2192	
					Root MSE = .46583	

lnW	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Age	0.032198	0.00869	3.71	0.000	0.015156	0.04924
Age square	-0.00036	0.000109	-3.33	0.001	-0.00058	-0.00015
Elementary	0.304171	0.119766	2.54	0.011	0.069284	0.539057
Preparatory	0.44146	0.118933	3.71	0.000	0.208206	0.674713
Secondary	0.586449	0.121953	4.81	0.000	0.347273	0.825625
Intermediate	0.55956	0.121086	4.62	0.000	0.322084	0.797035
University	0.782623	0.12038	6.5	0.000	0.546533	1.018713
Years in the job	0.005592	0.001435	3.9	0.000	0.002778	0.008405
Hours per week	0.007169	0.0011	6.52	0.000	0.005012	0.009327
Administrators & clerks	0.133484	0.069266	1.93	0.054	-0.00236	0.269328
Production workers	0.1087	0.038727	2.81	0.005	0.032749	0.184652
Professional& technicians	0.240379	0.045331	5.3	0.000	0.151475	0.329282
Sales & services	0.090782	0.04321	2.1	0.036	0.006037	0.175526
Private	-0.06828	0.035363	-1.93	0.054	-0.13763	0.001078
Building & Construction	0.168833	0.049321	3.42	0.001	0.072103	0.265562
Hotel & Restaurant	-0.07801	0.049657	-1.57	0.116	-0.1754	0.019378
Industrial	-0.03287	0.055063	-0.6	0.551	-0.14086	0.075116
Insurance	0.280331	0.090727	3.09	0.002	0.102395	0.458266
Transport & comm.	0.204966	0.054026	3.79	0.000	0.099009	0.310923
Service	0.166797	0.045375	3.68	0.000	0.077808	0.255786
_cons	7.449925	0.20502	36.34	0.000	7.047837	7.852012

Table 3.7a: Wage Equation (log of monthly wages)/ Human + job+ Social

Males (15-64)

					Number of obs	982
					F(33 948)	9.62
					Prob > F	0.000
					R-squared	0.2535
					Root MSE	0.4496

lnW	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Age	0.025831	0.012795	2.02	0.044	0.000721	0.050941
Age square	-0.00038	0.000149	-2.52	0.012	-0.00067	-8.4E-05
Elementary	0.472384	0.203654	2.32	0.021	0.072718	0.87205
Preparatory	0.591771	0.201106	2.94	0.003	0.197107	0.986434

	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Secondary	0.663919	0.203069	3.27	0.001	0.265402	1.062435
Intermediate	0.623357	0.204661	3.05	0.002	0.221716	1.024998
University	0.822188	0.203071	4.05	0.000	0.423668	1.220708
Years in the job	0.005523	0.001843	3	0.003	0.001906	0.009139
Hours per week	0.006138	0.0017	3.61	0.000	0.002801	0.009474
Administrators & clerks	0.100802	0.123573	0.82	0.415	-0.14171	0.343309
Production workers	0.133542	0.05645	2.37	0.018	0.022762	0.244323
Professional& technicians	0.179863	0.065824	2.73	0.006	0.050686	0.30904
Sales & services	0.162782	0.073457	2.22	0.027	0.018625	0.306939
Private	0.060316	0.04591	1.31	0.189	-0.02979	0.150418
Building & Construction	0.178827	0.072149	2.48	0.013	0.037238	0.320417
Hotel & Restaurant	-0.03659	0.079752	-0.46	0.647	-0.1931	0.119924
Industrial	0.095702	0.086174	1.11	0.267	-0.07341	0.264815
Insurance	0.292975	0.288572	1.02	0.31	-0.27334	0.859288
Transport & comm.	0.178029	0.076869	2.32	0.021	0.027176	0.328881
Service	0.211527	0.070128	3.02	0.003	0.073903	0.349151
Head	0.060546	0.044378	1.36	0.173	-0.02654	0.147636
Single	-0.11702	0.065494	-1.79	0.074	-0.24555	0.01151
Divorced	0.009855	0.073095	0.13	0.893	-0.13359	0.153301
Widow	0.034712	0.102434	0.34	0.735	-0.16631	0.235735
One child	-0.05766	0.055772	-1.03	0.302	-0.16711	0.051795
Two children	0.097806	0.129112	0.76	0.449	-0.15557	0.351185
Family no.<5	0.108587	0.049943	2.17	0.03	0.010576	0.206598
Northern	-0.15466	0.054781	-2.82	0.005	-0.26216	-0.04715
Coastal	-0.10396	0.051112	-2.03	0.042	-0.20427	-0.00366
Middle	-0.31376	0.060837	-5.16	0.000	-0.43315	-0.19437
Southern	-0.32159	0.051631	-6.23	0.000	-0.42292	-0.22027
Eastern	-0.24355	0.051076	-4.77	0.000	-0.34378	-0.14331
Urban	0.053933	0.03825	1.41	0.159	-0.02113	0.128997
_cons	7.800136	0.365774	21.33	0.000	7.082315	8.517956

Table 3.8a: Wage Equation (log of monthly wages)/ Human + job+ Social						
Females (15-64)						
				Number of obs		943
				F(33, 909)		16.21
				Prob > F		0.000
				R-squared		0.3131
				Root MSE		0.4092
lnW	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Age	0.029453	0.014653	2.01	0.045	0.000695	0.058211
Age square	-0.00033	0.000184	-1.78	0.076	-0.00069	3.41E-05
Elementary	0.248809	0.085781	2.9	0.004	0.080457	0.417161
Preparatory	0.433084	0.079926	5.42	0.000	0.276223	0.589945
Secondary	0.52358	0.089664	5.84	0.000	0.347607	0.699552

	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Intermediate	0.59326	0.087103	6.81	0.000	0.422314	0.764206
University	0.716687	0.081124	8.83	0.000	0.557475	0.875899
Years in the job	0.004122	0.002094	1.97	0.049	1.21E-05	0.008232
Hours per week	0.005493	0.001239	4.44	0.000	0.003062	0.007924
Administrators & clerks	0.247449	0.083264	2.97	0.003	0.084037	0.410861
Production workers	0.014932	0.051382	0.29	0.771	-0.08591	0.115773
Professional& technicians	0.104572	0.064435	1.62	0.105	-0.02189	0.23103
Sales & services	0.079544	0.054439	1.46	0.144	-0.0273	0.186386
Private	-0.08723	0.046877	-1.86	0.063	-0.17923	0.004764
Building & Construction	0.12158	0.061866	1.97	0.050	0.000163	0.242997
Hotel & Restaurant	-0.09245	0.059363	-1.56	0.120	-0.20895	0.024057
Industrial	-0.15503	0.068054	-2.28	0.023	-0.2886	-0.02147
Insurance	0.266598	0.08744	3.05	0.002	0.09499	0.438206
Transport & comm.	0.18173	0.085746	2.12	0.034	0.013446	0.350014
Service	0.093933	0.055858	1.68	0.093	-0.01569	0.20356
Head	0.062742	0.063243	0.99	0.321	-0.06138	0.186861
Single	-0.0527	0.059289	-0.89	0.374	-0.16906	0.063662
Divorced	-0.04194	0.064949	-0.65	0.519	-0.1694	0.085533
Widow	0.034075	0.079131	0.43	0.667	-0.12123	0.189375
One child	-0.09285	0.05278	-1.76	0.079	-0.19643	0.01074
Two children	-0.29871	0.091606	-3.26	0.001	-0.47849	-0.11892
Family no.<5	-0.0346	0.037703	-0.92	0.359	-0.10859	0.039397
Northern	-0.18057	0.050672	-3.56	0.000	-0.28002	-0.08113
Coastal	-0.06068	0.045671	-1.33	0.184	-0.15031	0.028954
Middle	-0.17271	0.067898	-2.54	0.011	-0.30597	-0.03946
Southern	-0.23155	0.046379	-4.99	0.000	-0.32257	-0.14052
Eastern	-0.20667	0.044324	-4.66	0.000	-0.29366	-0.11968
Urban	0.062259	0.036162	1.72	0.085	-0.00871	0.133229
_cons	7.610866	0.286923	26.53	0.000	7.047758	8.173974

Table 3.9a: Wage Equation (log of monthly wages)/ Human + job+ Social						
All (15-64)						
				Number of obs		1925
				F(33, 1891)		24.46
				Prob > F		0.000
				R-squared		0.2946
				Root MSE		0.4433
lnW	Coef.	Std. Err.	t	P>t	[95% Conf. interval]	
Age	0.024972	0.009762	2.56	0.011	0.005825	0.044118
Age square	-0.00033	0.000118	-2.83	0.005	-0.00056	-0.0001
Elementary	0.370832	0.124697	2.97	0.003	0.126274	0.615389
Preparatory	0.522749	0.122906	4.25	0.000	0.281704	0.763794
Secondary	0.632338	0.125508	5.04	0.000	0.386191	0.878486
Intermediate	0.62105	0.125282	4.96	0.000	0.375343	0.866756

University	0.784434	0.123516	6.35	0.000	0.542193	1.026675
Years in the job	0.005094	0.001378	3.7	0.000	0.002391	0.007796
Hours per week	0.006702	0.001048	6.39	0.000	0.004647	0.008757
Administrators & clerks	0.186803	0.069172	2.7	0.007	0.051142	0.322464
Production workers	0.091047	0.037993	2.4	0.017	0.016534	0.165559
Professional& technicians	0.193428	0.044858	4.31	0.000	0.105452	0.281404
Sales & services	0.1021	0.042862	2.38	0.017	0.018038	0.186162
Private	-0.03468	0.033962	-1.02	0.307	-0.10129	0.031922
Building & Construction	0.144925	0.049274	2.94	0.003	0.048288	0.241561
Hotel & Restaurant	-0.08478	0.050347	-1.68	0.092	-0.18352	0.013963
Industrial	-0.05833	0.055731	-1.05	0.295	-0.16763	0.050968
Insurance	0.264977	0.093601	2.83	0.005	0.081405	0.448548
Transport & comm.	0.161954	0.054593	2.97	0.003	0.054885	0.269023
Service	0.142411	0.045959	3.1	0.002	0.052276	0.232546
Head	0.246801	0.023939	10.31	0.000	0.199852	0.293751
Single	-0.01651	0.043216	-0.38	0.702	-0.10127	0.068244
Divorced	-0.08205	0.04682	-1.75	0.080	-0.17387	0.009776
Widow	-0.09919	0.049576	-2	0.046	-0.19642	-0.00196
One child	-0.05724	0.039646	-1.44	0.149	-0.13499	0.020513
Two children	-0.04301	0.094111	-0.46	0.648	-0.22758	0.141565
Family no.<5	-0.00474	0.031255	-0.15	0.879	-0.06604	0.056557
Northern	-0.16155	0.039135	-4.13	0.000	-0.2383	-0.0848
Coastal	-0.06946	0.035013	-1.98	0.047	-0.13813	-0.00079
Middle	-0.20994	0.046118	-4.55	0.000	-0.30039	-0.11949
Southern	-0.2682	0.036109	-7.43	0.000	-0.33902	-0.19738
Eastern	-0.20956	0.034991	-5.99	0.000	-0.27819	-0.14094
Urban	0.042526	0.026988	1.58	0.115	-0.0104	0.095456
_cons	7.703182	0.23984	32.12	0.000	7.232803	8.173562

	Human			+Job Characteristics			+Social Characteristics		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
Intercept	7.767***	7.3178***	7.7032***	7.3897***	7.2909***	7.4499***	7.8001***	7.6109***	7.7032***
Age	0.0461***	0.0459***	0.0353***	0.0433***	0.0353***	0.0322***	0.0258**	0.0295**	0.025***
Age square	-0.0006***	-0.0005***	-0.0004***	-0.0005***	-0.0004**	-0.0004***	-0.0004***	-0.0003*	-0.0003***
Elementary	0.4309**	0.307***	0.4024***	0.4117*	0.2421***	0.3042***	0.4724**	0.2488***	0.3708***
Preparatory	0.5821***	0.5192***	0.5357***	0.5423***	0.424***	0.4415***	0.5918***	0.4331***	0.5227***
Secondary	0.669***	0.63***	0.7285***	0.5984***	0.5414***	0.5864***	0.6639***	0.5236***	0.6323***
Intermediate	0.6262***	0.6966***	0.687***	0.5696***	0.5896***	0.5596***	0.6234***	0.5933***	0.621***
University	0.8507***	0.8008***	0.8092***	0.837***	0.7417***	0.7826***	0.8222***	0.7167***	0.7844***
Years in the job	0.0049***	0.0059***	0.0051***	0.0064***	0.0043**	0.0056***	0.0055***	0.0041**	0.0051***
Hours per week				0.0058***	0.0059***	0.0072***	0.0061***	0.0055***	0.0067***
Administrators & clerks				0.0952	0.225***	0.1335**	0.1008	0.2474***	0.1868***
Production workers				0.1464***	0.0261	0.1087***	0.1335***	0.0149	0.091***
Professionals & technicians				0.2112***	0.1378**	0.2404***	0.1799***	0.1046*	0.1934***
Sales & services				0.1965***	0.095*	0.0908**	0.1628**	0.0795	0.1021***
Private				0.0623	-0.1292***	-0.0683**	0.0603	-0.0872*	-0.0347
Building & construction				0.2074***	0.0872	0.1688***	0.1788***	0.1216**	0.1449***
Hotels & restaurants				0.0032	-0.1023*	-0.078	-0.0366	-0.0924	-0.0848*
Industrial				0.1357*	-0.1558**	-0.0329	0.0957	-0.155**	-0.0583
Insurance				0.3614	0.2659***	0.2803***	0.293	0.2666***	0.265***
Transport & communication				0.199***	0.1635*	0.205***	0.178**	0.1817**	0.162***
Service				0.2541***	0.0651	0.1668***	0.2115***	0.0939*	0.1424***
Family head							0.0605	0.0627	0.2468***
Single							-0.117*	-0.0527	-0.0165
Divorced							0.0099	-0.0419	-0.082*
Widow							0.0347	0.0341	-0.0992**
One child <5							-0.0577	-0.0928*	-0.0572
Two children <5							0.0978	-0.2987***	-0.043

Table 3.10a: Summary of Wage Equations of Human + job+ Social (Education Level)

Family number <5								0.1086**	-0.0346	-0.0047
Northern								-0.1547***	-0.1806***	-0.1615***
Coastal								-0.104**	-0.0607	-0.0695**
Middle								-0.3138***	-0.1727***	-0.2099***
Southern								-0.3216***	-0.2315***	-0.2682***
Eastern								-0.2435***	-0.2067***	-0.2096***
Urban								0.0539	0.0623*	0.0425
N	983	945	1928	982	943	1925	982	943	1925
R2	11.65%	20.24%	12.38%	18.93%	27.14%	21.92%	25.35%	31.31%	29.77%

*** Significant at the 0.01 level.

** Significant at the 0.05level.

 * Significant at the 0.1 level.

	Human			+Job Characteristics			+Social Characteristics		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
Intercept	7.904***	7.4017***	7.8136***	7.5249***	7.2427***	7.4122***	8.0775***	7.6713***	7.8527***
Age	0.0419***	0.0406***	0.0327***	0.03814***	0.0314***	0.029***	0.0192*	0.0217	0.0193**
Age square	-0.0005***	-0.0005***	-0.0004***	-0.0005***	-0.0003**	-0.0003***	-0.0003**	-0.0003	-0.0003**
Years of Edu	0.0508***	0.0548***	0.05162***	0.0490***	0.0551***	0.0557***	0.0436***	0.0503***	0.0478***
Years in the job	0.0057***	0.0068***	0.0058***	0.0068***	0.0053***	0.0062***	0.006***	0.0051***	0.0057***
Hours per week				0.0055***	0.0063***	0.0072***	0.0058***	0.0059***	0.0067***
Administrators & clerks				0.09	0.2659***	0.1489**	0.0864	0.2861***	0.1952***
Production workers				0.1441***	0.0421	0.1158***	0.1354***	0.0326	0.1016***
Professionals & technicians				0.2003***	0.1552***	0.2466***	0.1708***	0.1218*	0.2025***
Sales & services				0.1870***	0.105*	0.0865**	0.1553**	0.0916*	0.1043***
Private				0.0591	-0.1142***	-0.0653*	0.0559	-0.0758*	-0.036
Building & construction				0.1878***	0.0578	0.1466***	0.1632**	0.0902	0.1226***
Hotels & restaurants				0.0081	-0.0896	-0.0601	-0.036	-0.0863	-0.0771
Industrial				0.155	-0.1804***	-0.0307	0.1126	-0.1838***	-0.0603
Insurance				0.3663	0.2609***	0.2831***	0.2867	0.2542***	0.2592***
Transport & communication				0.2032***	0.1291	0.1988***	0.1882***	0.1429*	0.1574***
Service				0.2501***	0.0486	0.1649***	0.2125***	0.0686	0.1372***
Family head							0.0558	0.0464	0.2423***
Single							-0.1453**	-0.0814	-0.0455
Divorced							0.0091	-0.0479	-0.0926**
Widow							-0.015	0.0229	-0.1227***
One child <5							-0.0665	-0.1082**	(-0.0723*
Two children <5							0.0934	-0.3191***	-0.0551
Family number <5							0.1166***	-0.0224	0.0043
Northern							-0.1319***	-0.1558***	-0.1417***
Coastal							-0.101**	-0.0406	-0.057*
Middle							-0.3008***	-0.1472**	-0.1887***

							-0.309***	-0.2189***	-0.2514***
Southern									
Eastern							-0.244***	-0.18***	-0.1974***
Urban							0.0539	0.0734**	0.0493*
N	977	933	1910	976	931	1907	976	931	1907
R2	12.02%	19.08%	12.25%	18.89%	26.16%	21.80%	25.51%	30.18%	29.41%

*** Significant at the 0.01 level.

** Significant at the 0.05level.

 * Significant at the 0.1 level.

Appendix 4: Decomposition Tables

Table 4.1a: Human Capital Decomposition										
Male-Female total difference	0.32					Male-Female total difference			0.32	
Explained by male mean (%)	-6.25%					Explained by female mean (%)			-9.38%	
Unexplained (%)	106.25%					Unexplained (%)			109.38%	
Variable	**Xm**	**Xf**	**Bm**	**Bf**	**Xm(βm-βf)**	**βf(Xm-Xf)**	**T**	**Xf(bm-bf)**	**bm(Xm-Xf)**	**T**
Age	40.40291	38.89124	0.04612	0.045859	0.010541	0.069323	0.079864	0.010147	0.069717	0.079864
Age square	1744.906	1602.748	-0.00059	-0.0005	-0.14326	-0.07162	-0.21488	-0.13159	-0.08329	-0.21488
Elementary	0.193359	0.158426	0.430906	0.306959	0.023966	0.010723	0.03469	0.019637	0.015053	0.03469
Preparatory	0.176758	0.25227	0.582061	0.519173	0.011116	-0.0392	-0.02809	0.015865	-0.04395	-0.02809
Secondary	0.279297	0.150353	0.669016	0.630047	0.010884	0.081241	0.092124	0.005859	0.086265	0.092124
Intermediate	0.152344	0.140262	0.626202	0.696606	-0.01073	0.008416	-0.00231	-0.00987	0.007565	-0.00231
University	0.1875	0.289607	0.850745	0.800834	0.009358	-0.08177	-0.07241	0.014454	-0.08687	-0.07241
Years in the job	12.47571	12.14678	0.004948	0.005897	-0.01185	0.00194	-0.00991	-0.01154	0.001627	-0.00991
Con-			7.766776	7.317856						

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Table 4.2a : Human + job Decomposition

Male-Female total difference	0.32					Male-Female total difference			0.32	
Explained by male mean (%)	9.38%					Explained by female mean (%)			6.25%	
Unexplained (%)	90.63%					Unexplained (%)			93.75%	

Variable	Xm	Xf	Bm	Bf	Xm(βm-βf)	βf(Xm-Xf)	T	Xf(bm-bf)	bm(Xm-Xf)	T
Age	40.40291	38.89124	0.043276	0.035316	0.321627	0.053385	0.375013	0.309594	0.065419	0.375013
Age square	1744.906	1602.748	-0.00054	-0.00037	-0.30553	-0.05257	-0.3581	-0.28064	-0.07746	-0.3581
Elementary	0.193359	0.158426	0.411656	0.242072	0.032791	0.008456	0.041247	0.026866	0.014381	0.041247
Preparatory	0.176758	0.25227	0.542296	0.423954	0.020918	-0.03201	-0.0111	0.029854	-0.04095	-0.0111
Secondary	0.279297	0.150353	0.598358	0.541393	0.01591	0.069809	0.08572	0.008565	0.077155	0.08572
Intermediate	0.152344	0.140262	0.56964	0.589596	-0.00304	0.007123	0.004083	-0.0028	0.006882	0.004083
University	0.1875	0.289607	0.836983	0.741703	0.017865	-0.07573	-0.05787	0.027594	-0.08546	-0.05787
Years in the job	12.47571	12.14678	0.006425	0.004297	0.026545	0.001413	0.027958	0.025845	0.002113	0.027958
Hours per week	40.30029	36.4773	0.005773	0.005873	-0.00405	0.022453	0.018407	-0.00366	0.022069	0.018407
Administrators & clerks	0.042718	0.111783	0.095247	0.22497	-0.00554	-0.01554	-0.02108	-0.0145	-0.00658	-0.02108
Production workers	0.483495	0.33434	0.14639	0.026096	0.058162	0.003892	0.062054	0.040219	0.021835	0.062054
Professional& technicians	0.228155	0.080564	0.211236	0.137798	0.016755	0.020338	0.037093	0.005916	0.031177	0.037093
Sales & services	0.108738	0.335347	0.196457	0.094979	0.011034	-0.02152	-0.01049	0.03403	-0.04452	-0.01049
Private	0.772816	0.823766	-0.12919	0.062252	-0.14795	-0.00317	-0.15112	-0.1577	0.006582	-0.15112
Building & Construction	0.173786	0.10574	0.207445	0.087165	0.020903	0.005931	0.026834	0.012718	0.014116	0.026834
Hotel & Restaurant	0.123301	0.289023	0.00316	-0.10231	0.013004	0.016955	0.029959	0.030482	-0.00052	0.029959
Industrial	0.127185	0.202417	0.135711	-0.15585	0.037082	0.011725	0.048806	0.059016	-0.01021	0.048806
Insurance	0.006796	0.03424	0.361413	0.265856	0.000649	-0.0073	-0.00665	0.003272	-0.00992	-0.00665
Transport & comm.	0.124272	0.024169	0.198981	0.163523	0.004406	0.016369	0.020776	0.000857	0.019919	0.020776
Service	0.332039	0.243706	0.254123	0.065141	0.062749	0.005754	0.068503	0.046056	0.022447	0.068503
_cons			7.389703	7.290942						

Table 4.3a: Human + job+ social Decomposition

Male-Female total difference	0.32				Male-Female total difference			0.32		
Explained by male mean (%)	15.68%				Explained by female mean (%)			18.75%		
Unexplained (%)	84.38%				Unexplained (%)			81.25%		

Variable	Xm	Xf	Bm	Bf	Xm(βm-βf)	βf(Xm-Xf)	T	Xf(bm-bf)	bm(Xm-Xf)	T
Age	40.40291	38.89124	0.025831	0.029453	-0.14634	0.044523	-0.10182	-0.14086	0.039048	-0.10182
Age square	1744.906	1602.748	-0.00038	-0.00033	-0.08567	-0.04656	-0.13223	-0.07869	-0.05354	-0.13223
Elementary	0.193359	0.158426	0.472384	0.248809	0.04323	0.008692	0.051922	0.03542	0.016502	0.051922
Preparatory	0.176758	0.25227	0.591771	0.433084	0.028049	-0.0327	-0.00465	0.040032	-0.04469	-0.00465
Secondary	0.279297	0.150353	0.663919	0.52358	0.039196	0.067512	0.106709	0.0211	0.085608	0.106709
Intermediate	0.152344	0.140262	0.623357	0.59326	0.004585	0.007167	0.011752	0.004221	0.007531	0.011752
University	0.1875	0.289607	0.822188	0.716687	0.019781	-0.07318	-0.0534	0.030554	-0.08395	-0.0534
Years in the job	12.47571	12.14678	0.005523	0.004122	0.017476	0.001356	0.018832	0.017015	0.001817	0.018832
Hours per week	40.30029	36.4773	0.006138	0.005493	0.025974	0.021	0.046973	0.02351	0.023464	0.046973
Administrators & clerks	0.042718	0.111783	0.100802	0.247449	-0.00626	-0.01709	-0.02335	-0.01639	-0.00696	-0.02335
Production workers	0.483495	0.33434	0.133542	0.014932	0.057348	0.002227	0.059575	0.039656	0.019918	0.059575
Professional& technicians	0.228155	0.080564	0.179863	0.104572	0.017178	0.015434	0.032612	0.006066	0.026546	0.032612
Sales & services	0.108738	0.335347	0.162782	0.079544	0.009051	-0.01803	-0.00897	0.027914	-0.03689	-0.00897
Private	0.772816	0.823766	-0.08723	0.060316	-0.11403	-0.00307	-0.1171	-0.12154	0.004444	-0.1171
Building & Construction	0.173786	0.10574	0.178827	0.12158	0.009949	0.008273	0.018222	0.006053	0.012169	0.018222
Hotel & Restaurant	0.123301	0.289023	-0.03659	-0.09245	0.006888	0.015321	0.022208	0.016145	0.006063	0.022208
Industrial	0.127185	0.202417	0.095702	-0.15503	0.03189	0.011664	0.043553	0.050753	-0.0072	0.043553
Insurance	0.006796	0.03424	0.292975	0.266598	0.000179	-0.00732	-0.00714	0.000903	-0.00804	-0.00714
Transport & comm.	0.124272	0.024169	0.178029	0.18173	-0.00046	0.018192	0.017732	-8.9E-05	0.017821	0.017732
Service	0.332039	0.243706	0.211527	0.093933	0.039046	0.008297	0.047343	0.028658	0.018685	0.047343
Head	0.716505	0.091642	0.060546	0.062742	-0.00157	0.039205	0.037632	-0.0002	0.037833	0.037632
Single	0.13301	0.090634	-0.11702	-0.0527	-0.00856	-0.00223	-0.01079	-0.00583	-0.00496	-0.01079
Divorced	0.040777	0.067472	0.009855	-0.04194	0.002112	0.001119	0.003231	0.003494	-0.00026	0.003231
Widow	0.01068	0.030212	0.034712	0.034075	6.81E-06	-0.00067	-0.00066	1.93E-05	-0.00068	-0.00066
One child	0.140777	0.126888	-0.05766	-0.09285	0.004954	-0.00129	0.003664	0.004465	-0.0008	0.003664

Two children	0.028155	0.021148	0.097806	-0.29871	0.011164	-0.00209	0.009071	0.008385	0.000685	0.009071
Family no.<5	0.868932	0.87714	0.108587	-0.0346	0.124418	0.000284	0.124702	0.125594	-0.00089	0.124702
Northern	0.152427	0.156093	-0.15466	-0.18057	0.00395	0.000662	0.004612	0.004045	0.000567	0.004612
Coastal	0.224272	0.223565	-0.10396	-0.06068	-0.00971	-4.3E-05	-0.00975	-0.00968	-7.3E-05	-0.00975
Middle	0.091262	0.087613	-0.31376	-0.17271	-0.01287	-0.00063	-0.0135	-0.01236	-0.00114	-0.0135
Southern	0.201942	0.182276	-0.32159	-0.23155	-0.01818	-0.00455	-0.02274	-0.01641	-0.00632	-0.02274
Eastern	0.201942	0.203424	-0.24355	-0.20667	-0.00745	0.000306	-0.00714	-0.0075	0.000361	-0.00714
Urban	0.761165	0.79859	0.053933	0.062259	-0.00634	-0.00233	-0.00867	-0.00665	-0.00202	-0.00867
_cons			7.800136	7.610866						

Appendix 5: Correlations between Gender and Social, Human & Job Characteristics

A chi-square test of independence was performed to examine the relationships between gender, and social, human and job characteristics.

Table 5.1a: Chi-Square Tests: Gender (Independent Variable) and Social, Human and Job Characteristics

Variable	Test	Value	df	Asymp.Sig. (2-sided)
Social Characteristics				
Family Number	Pearson Chi-Square	.31	1	.58
Child Under 5 Years	Pearson Chi-Square	1.65	1	.20
Family Head	Pearson Chi-Square	816.19	1	**.00**
Civil Status	Pearson Chi-Square	22.67	2	**.00**
Region	Pearson Chi-Square	2.45	5	.78
Location	Pearson Chi-Square	4.12	1	**.04**
Human Characteristics				
Years in the Job	Kruskal Wallis Test	0.16	1	.69
Age Group	Kruskal Wallis Test	8.23	1	**.00**
Education Level	Kruskal Wallis Test	7.66	1	**.01**
Years of Education	Kruskal Wallis Test	0.04	1	.84
Job characteristics				
Occupation	Pearson Chi-Square	247.65	4	**.00**
Industry	Pearson Chi-Square	202.51	6	**.00**
Sector	Pearson Chi-Square	8.14	1	**.00**
Hours Per week	Kruskal Wallis Test	26.01	1	**.00**

Under social characteristics, the relation between gender and family head $(\chi^2$ (1, N = 2023) = 816.19, p <.05), civil status (χ^2 (2, N = 2023) = 22.67, p <.05) and location (χ^2 (1, N = 2023) = 4.12, p <.05) were significant. The results in Table 5.1a indicate that under human

characteristics, gender was significantly related to age group $(\chi^2$ (1, N = 2023) = 8.23, p <.05) and education level $(\chi^2$ (1, N = 2023) = 7.66, p <.05). In terms of job characteristics, the results reveal that there was a significant relation between gender and occupation $(\chi^2$ (4, N = 2023) = 247.65, p <.05), industry $(\chi^2$ (6, N = 2023) = 202.51, p <.05), sector $(\chi^2$ (1, N = 2023) = 8.14, p <.05) and hours worked per week $(\chi^2$ (1, N = 2023) = 26.01, p <.05).

Appendix 6: Decomposition of the Main Effect

6.1 Pairwise Comparisons- Main Effects

In order to determine if there were significant differences of means between groups in the main effects, Estimated Marginal Means was carried out in GLM ANOVA in IBM SPSS, 24. The Bonferroni-adjusted t-test (Dunn test) was also used to test pairwise comparisons of the means between groups in the main variables.

The results reported in Table 6.1a reveal that significant differences (M.D=0.28, $P<0.05$) in wages between males and females in the sample, with men reporting higher wages compared to females, showing that men earned significantly higher wages than females. The results further reveal that respondents with no child under 5 years earned significantly higher wages (M.D=0.11, $P<0.05$) than those with children under 5 years. Moreover, those respondents who were family heads earned slightly lower wages than those who were not heads of their households (M.D=0.07, $P<0.05$). The survey participants from the Damascus region earned higher wages than those from other regions: Northern (M.D=0.17, $P<0.05$), Middle (M.D=0.24, $P<0.05$), Southern (M.D=0.29, $P<0.05$), and Eastern (M.D=0.21, $P<0.05$) while the respondents from the Southern and Eastern regions generally reported lower wages compared to other regions. With regard to years in the job, the results indicated that respondents who had been in their job for between 1-5 years had significantly lower wages compared to those with longer service: 6-10 years (M.D=-0.12, $P<0.05$), 11-15 years (M.D=-0.12, $P<0.05$), 16-20 years (M.D=-0.18, $P<0.05$), 20 and above (M.D=-0.16, $P<0.05$).

The results in Table 6.1a indicate that the wages of respondents aged 55-59 years were significantly lower than for other age groups: 25-29 years (M.D=-0.24, $P<0.05$), 30-34 years (M.D=-0.25, $P<0.05$), 40-44 years (M.D=-0.21, $P<0.05$), 45-49 years (M.D=-0.20, $P<0.05$), and 50-54 years (M.D=-0.21, $P<0.05$),

In terms of level of education, the results indicate that respondents with no study had significantly lower wages than those with either secondary (M.D=-0.49, $P<0.05$), intermediate (M.D=-0.50, $P<0.05$), or a university education (M.D=-0.58, $P<0.05$). Respondents with a university education had significantly higher wages than those with only preparatory education (M.D=16, $P<0.05$).

Dependent Variable: Wage

(I) Gender	(J) Gender	Mean Difference (I-J)	Std. Error	Sig.a
Male	Female	.278*	0.032	0.00

(I) Child Under 5 Years	(J) Child Under 5 Years			
No	Yes	.114*	0.036	0.00

(I) Family Head	(J) Family Head	Mean Difference (I-J)	Std. Error	Sig.a
Head	Other	.067*	0.033	0.04

(I) Region	(J) Region	Mean Difference (I-J)	Std. Error	Sig.a
Damascus	Northern	.166*	0.04	0.00
	Middle	.240*	0.05	0.00
	Southern	.290*	0.04	0.00
	Eastern	.209*	0.04	0.00
Northern	Southern	.124*	0.04	0.01
Middle	Coastal	-.161*	0.04	0.00
Coastal	Southern	.211*	0.03	0.00
Coastal	Eastern	.130*	0.03	0.00

(I) Years in the Job	(J) Years in the Job	Mean Difference (I-J)	Std. Error	Sig.a
1-5 Years	6-10 Years	-.116*	0.03	0.01
	11-15 Years	-.116*	0.04	0.02
	16-20 Years	-.177*	0.04	0.00
	20 and above	-.162*	0.04	0.00

(I) Age Group	(J) Age Group	Mean Difference (I-J)	Std. Error	Sig.a
55-59 Years	25-29 Years	-.237*	0.07	0.04
	30-34 Years	-.246*	0.06	0.01
	40-44 Years	-.209*	0.06	0.01
	45-49 Years	-.195*	0.06	0.02
	50-54 Years	-.214*	0.06	0.01

(I) Education Level	(J) Education Level	Mean Difference (I-J)	Std. Error	Sig.a
No study	Secondary	-.488*	0.16	0.04
	Intermediate	-.507*	0.16	0.03
	University	-.577*	0.17	0.01
Elementary	Preparatory	-.131*	0.04	0.01
	Secondary	-.201*	0.04	0.00
	Intermediate	-.220*	0.04	0.00
	University	-.290*	0.06	0.00
University	Preparatory	.159*	0.05	0.02

(I) Years of Education	(J) Years of Education	Mean Difference (I-J)	Std. Error	Sig.a
16 Years and above	4-7 Years	.221*	0.07	0.02
	8-11 Years	.174*	0.05	0.01
	12-15 Years	.127*	0.04	0.03

(I) Occupation	(J) Occupation	Mean Difference (I-J)	Std. Error	Sig.a
Agriculture workers	Professionals & technicians	-.131*	0.05	0.04
	Sales & services	-.127*	0.04	0.03

(I) Industry	(J) Industry	Mean Difference (I-J)	Std. Error	Sig.a
Industrial	Building & construction	-.164*	0.05	0.01
	Transport & communication	-.163*	0.05	0.03
	Insurance	-.333*	0.08	0.00
	Service	-.146*	0.04	0.01
Hotels & restaurants	Building & construction	-.211*	0.05	0.00
	Transport & communication	-.210*	0.05	0.00
	Insurance	-.380*	0.08	0.00
	Service	-.193*	0.04	0.00
Insurance	Agriculture	.311*	0.08	0.00
(I) Sector	**(J) Sector**	**Mean Difference (I-J)**	**Std. Error**	**Sig.a**
Public	Private	.063*	0.03	0.05
(I) Hours Per week	**(J) Hours Per week**	**Mean Difference (I-J)**	**Std. Error**	**Sig.a**
0-20 Hours	21-40 Hours	-.193*	0.04	0.00
	40 Hours and above	-.212*	0.04	0.00

Respondents with an elementary education had significantly lower wages than those with preparatory (M.D=-0.13, P<0.05), secondary (M.D=-0.20, P<0.05), intermediate (M.D=-0.22, P<0.05), and university (M.D=-0.29, P<0.05) levels of education. Respondents with 16 years and above years of education earned significantly higher wages than those with 4-7 years (M.D=0.22, P<0.05), 8-11 years (M.D=0.17, P<0.05), and 12-15 years (M.D=13, P<0.05). The results in Table 6.1a reveal that agricultural workers earned significantly lower wages than professionals & technicians (M.D=-0.3, P<0.05) and those in sales & services (M.D=-0.13, P<0.05). The results further indicate that workers working in industry and in hotels & restaurants earned significantly lower wages than those in building & construction, transport & communication, Insurance and the service industries. The respondents working in the public sector earned slightly higher wages than those in the private sector (M.D=0.06, P<0.05). Finally, respondents working 0-20 hours per week earned significantly less wages than those working 21-40 hours (M.D=-0.19, P<0.05) and 40 hours and above (M.D=-0.21, P<0.05). There were no differences between the groups in terms of family number, location and civil status.

6.2 Pairwise Comparisons- Main Effects - Male

The results in Table 6.2a indicate that male respondents from Damascus earned significantly higher wages than males in the Middle (M.D=0.30, P<0.05), Southern (M.D=0.33, P<0.05) and Eastern (M.D=0.21, P<0.05) regions. Males from the Northern

(M.D=0.19, P<0.05) and Coastal regions (M.D=0.22, P<0.05) earned significantly higher wages than those from the Southern region while those from the Middle region earned less than those from the Coastal region (M.D=-0.20, P<0.05). The results further indicate that males who have been in their job for 1-5 years earned significantly lower wages than those who have been in their employment for 20 and above years (M.D=-0.17, P<0.05). Male respondents aged between 55-59 years earned significantly lower wages than those aged 25 to 54 years. The results further reveal that males who worked in hotels and restaurants earned significantly lower wages than those in building & construction, transport & communication, and the service industries. Men working in the public sector earned significantly higher wages than those in the private sector (M.D=0.12, P<0.05). Finally, male respondents who worked for 0-20 hours per week earned significantly lower wages than those who worked above 40 hours per week. There were no significant differences between the groups in terms of family number, being the family head, having a child under 5 years, occupation, level of education, years of education, location and civil status.

Table 6.2a: Pairwise Comparisons - Main Effects: Male

Dependent Variable: Wage

(I) Region	(J) Region	Mean Difference (I-J)	Std. Error	Sig.a
Damascus	Middle	.300*	0.07	0.00
	Southern	.331*	0.06	0.00
	Eastern	.212*	0.06	0.00
Northern	Southern	.190*	0.05	0.01
Middle	Coastal	-.195*	0.06	0.02
Coastal	Southern	.226*	0.05	0.00

(I) Years in the Job	(J) Years in the Job	Mean Difference (I-J)	Std. Error	Sig.a
1-5 Years	20 and above	-.169*	0.05	0.01

(I) Age Group	(J) Age Group	Mean Difference (I-J)	Std. Error	Sig.a
55-59 Yrs	25-29 Yrs	-.376*	0.09	0.00
	30-34 Yrs	-.311*	0.08	0.01
	50-54 Yrs	-.223*	0.07	0.05

(I) Industry	(J) Industry	Mean Difference (I-J)	Std. Error	Sig.a
Hotels & restaurants	Building & construction	-.232*	0.07	0.02
	Transport & communication	-.252*	0.07	0.01
	Service	-.254*	0.06	0.00

(I) Sector	(J) Sector	Mean Difference (I-J)	Std. Error	Sig.a
Public	Private	.123*	0.04	0.01

(I) Hours Per week	(J) Hours Per week	Mean Difference (I-J)	Std. Error	Sig.a
0-20 Hours	40 Hours and above	-.183*	0.08	0.05

6.3 Pairwise Comparisons- Main Effects-Female

The results in Table 6.3a reveal that females with no children under 5 years earned significantly more wages than those with children under-5 years (M.D=0.16, P<0.05). Female respondents in the Damascus Region earned more than those in the Northern (M.D=0.17, P<0.05), Southern (M.D=0.22, P<0.05) and Eastern (M.D=0.20, P<0.05) regions. Similarly, female respondents in Coastal regions earned more wages than those from the Southern (M.D=0.18, P<0.05) and Eastern regions (M.D=0.16, P<0.05). Women who stayed in their job for 1-5 years earned significantly lower wages than women with 16-20 years in their employment (M.D=0.21, P<0.05). The results in Table 6.3a indicate that females with an elementary education earned significantly lower wages than those with a preparatory, secondary, intermediate and university level of education while those with an intermediate education earned more than those with a preparatory education. Females with 8-11 years of education earned significantly lower wages than those with 16 years and above (M.D=-0.20, P<0.05).

Table 6.3a: Pairwise Comparisons - Main Effects: Female				
Dependent Variable: Wage				
(I) Child Under 5 Years	(J) Child Under 5 Years	Mean Difference (I-J)	Std. Error	Sig.a
No	Yes	.158*	0.05	0.00
(I) Region	(J) Region	Mean Difference (I-J)	Std. Error	Sig.a
Damascus	Northern	.167*	0.05	0.02
	Southern	.220*	0.05	0.00
	Eastern	.198*	0.05	0.00
Coastal	Southern	.184*	0.05	0.00
	Eastern	.162*	0.04	0.00
(I) Years in the Job	(J) Years in the Job	Mean Difference (I-J)	Std. Error	Sig.a
1-5 Years	16-20 Years	-.205*	0.05	0.00
(I) Education Level	(J) Education Level	Mean Difference (I-J)	Std. Error	Sig.a
Elementary	Preparatory	-.163*	0.05	0.03
	Secondary	-.251*	0.06	0.00
	Intermediate	-.335*	0.06	0.00
	University	-.337*	0.07	0.00
Intermediate	Preparatory	.171*	0.05	0.01
(I) Years of Education	(J) Years of Education	Mean Difference (I-J)	Std. Error	Sig.a
8-11 Years	16 Years and above	-.195*	0.07	0.04
(I) Industry	(J) Industry	Mean Difference (I-J)	Std. Error	Sig.a
Industrial	Building & construction	-.263*	0.07	0.00
	Insurance	-.375*	0.09	0.00

	Service	-.214*		0.06	0.01
Hotels & restaurants	Building & construction	-.217*		0.06	0.01
	Insurance	-.328*		0.08	0.00
	Service	-.167*		0.05	0.04
(I) Hours Per week	**(J) Hours Per week**	**Mean Difference (I-J)**	**Std. Error**		**Sig.a**
0-20 Hours	21-40 Hours	-.212*		0.05	0.00
	40 Hours and above	-.190*		0.06	0.00

The results in Table 6.3a indicate that females working in industrial jobs and in the hotel & restaurant industry earned a significantly lower wage than those in building & construction, insurance and the service industries. Finally, females who worked between 0-20 hours had significantly lower wages than those who worked for 21-40 hours (M.D=-0.21, P<0.05) and 40 hours per week (M.D=-0.19, P<0.05). Among female respondents there were no differences in terms of family number, location, sector, age group, occupation, family head and civil status.

It is worth noting that the main effects results for the male and female models revealed that the wages of both male and female wages significantly differed in terms of region, years in the job, hours worked per week and industry. On the other hand, wage differences due to group differences were not reported with regard to location, civil status, family number, family head and occupation variables. For male respondents, wage differences could be seen in the age group and sector variables while, for female respondents, wage differences were discovered for different groups with regard to having a child under 5 years, education level and years of education.