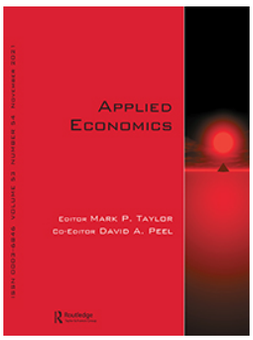

Applied Economics

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/raec20

Earnings function in Lebanon: does religion matter?

Nasri Harb

To cite this article: Nasri Harb (2021): Earnings function in Lebanon: does religion matter?, Applied Economics, DOI: 10.1080/00036846.2021.1966372

To link to this article: https://doi.org/10.1080/00036846.2021.1966372

APPLIED ECONOMICS
https://doi.org/10.1080/00036846.2021.1966372

Routledge
Taylor & Francis Group

Earnings function in Lebanon: does religion matter?

Nasri Harb

Faculty of Management, Finance, and Economics, University of Sciences and Arts in Lebanon (USAL), Beirut, Lebanon

ABSTRACT

This paper aims to study the wage gap among religions in Lebanon using a random sample. The advantage of using Lebanon as a case is due to its historical diversification. This case excludes any impact of culture, language and immigration. The article uses multiple regression analysis, the Oaxaca-Blinder decomposition, and the quantile distribution regressions to study the wage gap. The signs of our estimated coefficients are as expected. The results show a significant wage gap for Sunnis, and Shias compared to Maronites. Furthermore, we find that the place of work has a significant impact on earnings. The religion wage gap vanishes if a Shia worker is working in Beirut or in the Eastern suburb; or if a Sunni is working in the Eastern Suburb. Finally, the paper shows that the gap is larger in the case of males for Sunnis, but not for Shias.

KEYWORDS

Religion; wage gap; unexplained gap; human capital; quantile regression

JEL CLASSIFICATION

J16; J24; J31; J70; Z12.

1. Introduction

A worker's religion can affect his/her earnings in many ways: it impacts his/her traits and attitude and his/her human capital accumulation. It discourages or prohibits working in certain fields and it nurtures the feeling of being monitored by other members of the group, which makes him/her adhere more to the values of the group (Tomes 1999).

Despite many quantitative studies (see, for instance, (Tomes 1999), (McCleary and Barro 2006), (Daoud and Khattab 2020), (Guiso, Sapienza, and Zingales 2003)) on the impact of religion on earning, this topic has drawn little attention in Lebanon. Lebanon is a small Middle Eastern country, inhabiting 18 religions and sects for many years[1]; many of them are not minorities. This paper fills this gap by incorporating the impact of religion on the earnings function in Lebanon.

Unlike many studies in Western countries, the religious diversification in Lebanon is not due to any immigration. The Lebanese religious groups have been living together long before the establishment of the country in 1920. This eliminates any source of selection bias due to factors, such as colour, immigration, language and so on.

The literature on the impact of religion on the earnings function can be classified into three groups:

The first group argues that the impact of religion can be through its effects on the attitudes and traits of the worker. For instance, Tomes 1999 argues that religion can provide a signal of certain rewarding traits related to productivity such as 'honesty, diligence, reliability'. The signal can be negative, as in the Amish people who promote an anti-technology stance that reduces their career choice. McCleary and Barro (2006) conclude that religious belief affects ethics significantly and positively and that believing in the afterlife world has a significant positive impact on growth, while monthly attendance at formal services has a negative impact. Daoud and Khattab (2020) find that female Muslims who normally wear a veil (hijab) may find themselves under discrimination because employers prefer not to send a religious signal (message).[2] Guiso, Sapienza, and Zingales (2003) find that

CONTACT Nasri Harb n.harb@usal.edu.lb Faculty of Management, Finance, and Economics, University of Sciences and Arts in Lebanon (USAL), Ghobeiry, Beirut, Lebanon

[1]Indeed, Pope Jean Paul II, when speaking about Lebanon, stated that '*rich, centuries-old tradition of collaboration between Christians and Muslims in that country*' (Paul 1994).

[2]Even if Muslims (Sunnis or Shias) are not a minority in Lebanon, a female Muslim may find herself (or at least, believes that she is) being discriminated against. See, for instance, (Khalaf 2020) and also (Lewis and Redd 2020).

Protestants, and Hindus – unlike Jews and Muslims – prefer incentives to equality. Moreover, Protestants, Catholics and Hindus, unlike Muslims, prefer private ownership.

The second group refers to the religion impact in enhancing human capital accumulation. Landes (2015) associates the underdevelopment of Spain in the 16th and 17th centuries to the rejection of skilled people by the Catholic church. As a result, many of them fled the country. Lehrer (1999) shows evidence that in the US, the means of schooling years is highest (significantly) amongst Jews, and lowest amongst Fundamentalist Protestants. Catholic and mainline Protestants are in the middle of the distribution. Mukhopadhyay (2011) concludes that Muslims and 'Other religion' immigrants have lower educational attainment than those immigrants not affiliated with any religion. In a study of 143 countries, Feldmann (2016) finds that Hinduism and Judaism (Islam) have positive (negative) effects on educational attainment, while Christianity and Buddhism have no significant effect. On the opposite, Maitra (2003) shows that Muslims in Bangladesh have higher educational attainment than non-Muslims. Hackett et al. (2016) find that – around the world – Jews are the most educated, while Muslims and Hindus are the least. On the other hand, Brenner and Kiefer (1981) and Lehrer (1999) propose that when a certain group of people have experienced a physical capital confiscation in the past or have been forced to emigrate in the past (for instance Jews, Armenians, Palestinian refugees, and Greek Cypriot refugees), they consider the portability of an asset into consideration when deciding to make a new investment.

The third group suggests that religion affects both dimensions: attitudes and human capital accumulation. Steen (2005) proposes that religion can have an impact on traits, such as honesty and diligence, the role of women, family decisions, and size. Iannaccone (1998) suggests that the effect of religion can be multidimensional: moral values, education, marital status, crime rate, etc. He noted that the studies on religion and economics may interpret the religious behaviour from an economic point of view, study the economic consequences of religion, or invoke religious text to promote or denounce economic policies.

With these wide economic effects of religions, Lebanon comes as a perfect case study with its rich religious diversification. This has strongly affected the daily local political life in the country. Despite other studies on the gender wage gap in Lebanon ((Dah and Fakih 2016), (Harb and Rouhana 2020)), no similar study on the religious wage gap has been conducted in Lebanon. This paper falls further into the third group. It analyzes the role of religion in the earnings function in Lebanon in the private sector[3] while controlling for human capital, and other factors, such as the working place and working category. It uses multiple regression analysis and two decomposition methods for the interpretation of the wage gap: The Oaxaca (1973)–Blinder (1973) decomposition, and Chernozhukov, Fernandez-Val, and Melly's (2013) quantile distribution regression to interpret the wage gap between the different religious groups. Its findings indicate that the religion wage gap is strongly affected by the working place. The returns to human capital components differ by a worker's religion. Furthermore, the human capital and the control variables do not explain earnings to the same extent in different religions. Further investigation into the factors associated with religions is recommended. Understanding the earning structure allows the authorities to take proper measures to enhance earnings.

The following section reviews the literature on the racial and religion wage gaps. The third section discusses the religions and the labour market in MENA countries. The fourth section discusses the data and the methodology. The quantitative analysis and the main results are presented in the fifth section. The last section concludes with future research directions and policy recommendations.

[3]The public sector in Lebanon is strongly corrupt. On top of political connections, regional connections and bribery can play a role in public service. Such factors are beyond the scope of this paper.

Literature review

The literature on the labour market discrimination related to race and religion can be divided into two types: the first focuses on the participation rate and the probability of employment, while the second focuses on the wage gap.

In the first group, it was concluded that religion and race have a significant impact on employability. For instance, Blackaby et al.'s (2002) results show that the employment probability of Black and Pakistani groups is lower than that of other groups. Daoud and Khattab (2020) find that Muslim women in the UK are less likely to participate in the labour force compared to other groups. This observation is persistent across generations. This result contradicts (Clark and Drinkwater 2009) who find that between 1991 and 2001, the employment probability for minorities in England and Wales has improved. The employment probability of Muslims is the worst, though. They conclude that the marginal effect of education is generally higher for ethnic minorities than for white Britons.

Our work concerns the second type; that is, the wage gap. This topic has been studied especially in the UK due to the large religious diversification. For instance, Longhi, Nicoletti, and Platt (2013) use the re-centred influence function of Firpo, Fortin, and Lemieux (2009) and the Oaxaca-Blinder decomposition and conclude that the largest wage gap among ethnicities in the UK is found among Pakistani Muslims, followed by Indian Muslims. Despite a decline in this wage gap in the second generation of immigrants, a large part of it cannot be explained. Blackaby et al. (2002) use Machado-Mata decomposition and find significant wage discrimination against black and Indian males when compared to white males.

In the US, Steen (1996) and Steen (2004) find that Jews followed by Catholics have higher earnings than Protestants. The returns to education and experience can explain a part of this higher earning, but not all of it. Furthermore, Steen (2005) finds that Catholic women earn more than Protestant women. Goldsmith, Hamilton, and Darity (2006) compare the wages of black Americans to white Americans using multiple regression analysis. They conclude that there is significant discrimination against medium- and dark-skinned black Americans. Bitzan (2009) finds a significant difference in the returns to a school degree between black and white men in the US. Black men receive lower returns than white men on low degrees, but higher returns than white men on higher degrees. He uses Oaxaca-Blinder decomposition.

Levanon and Yaron (2007) use Oaxaca-Blinder method to decompose the wage gap between male Jews and males of minority religions in Israel. They find that the wage gap is reduced when they control for the occupation and for the job location. Furthermore, they noted that the gap is higher at top positions.

Ñopo, Saavedra, and Torero (2007) study the earnings function in Peru and include a race indicator in a Mincer type equation. They find that the racial intensity is significant. That is, the whiter the employee, the higher is his wage. Religion effect turns out to be non-significant.

The results of Atal, Ñopo, and Winder (2009) show that the ethnic wage gap is larger than the gender wage gap. A large part of the wage gap is due to education and to the scarcity of minorities in good-paid positions.

Bernardelli, Kortt, and Michellon (2020) conclude that in Brazil, Traditional Protestants have higher earnings compared to Catholics, while Pentecostals have lower earnings. Different arguments are brought to explain this finding: it reflects the historical identification of Traditional Protestantism as belonging to the middle and upper classes of Brazil, while Pentecostalism has been historically spread among the poor and the less educated people. The Oaxaca-Blinder decomposition shows that even after controlling for education and other human capital variables, there still exists a significant unexplained wage gap.

The above review shows large evidence of the impact of religions and sects on earnings. In cases of immigrants, the wage gap among religions persisted even in the second generation.

In many cases, the religion wage gap persisted even after controlling for human capital, job location, and positions.

Labour market and religions in MENA countries

Labour market research in Lebanon and other MENA countries is abundant and had covered many sides. To cite a few, some of this research has focused on mismatched skills as well as the unemployment rate ((Fakih and Ghazalian 2015), (Stampini and verdier-Chouchane 2011), (Dibeh, Fakih, and Marrouch 2019), (Chaaban 2010), (Hijazi et al 2010)). Other articles focus on youth unemployment and job creation ((Dibeh, Fakih, and Marrouch 2018), (Chaaban 2013), (Haouas, Sayre, and Yagoubi 2012), (Angel-Urdinola and Leon-Solano 2013), (ESCWA 2012). Other research has focused on the gender wage gap ((Dah and Fakih 2016), (Tansel, Keskin, and Ozdemir 2020), (Biltagy 2018), (Tekgüç, Eryar, and Cindoğlu 2017), (Alloush et al. 2013), (Harb and Rouhana 2020). A fourth group has studied the impact of religion on female labour participation ((Chaaban 2013), (Bayanpourtehrani and Sylwester 2012), (O'Neil and Bilgin 2013)). Other articles approached religion from a socio-economic perspective ((Al Ariss 2010), (Jawad 2009), (El Khoury and Panizza 2005)).

As evident from the above, economic studies of religions in MENA countries have primarily focused on female labour participation and social welfare. The role of religions in earnings and wages has never been studied in MENA countries despite the existence of large religious groups.

Based on the above review, the advantage of choosing Lebanon as a research case is based on three reasons. First, the Lebanese case allows elimination of any immigration-based bias (such as language, or culture as in the UK), or political-based bias as in Israel. Second, the religious diversification in Lebanon is based on both, religion and sectarianism. The case of Brazil (Bernardelli, Kortt, and Michellon 2020), for instance, is based on different Christian sects, while in Lebanon, the diversification is wider as shall be seen below. Third, this article initiates a new line of research in MENA countries as it integrates religions effect in estimating a Mincerian-type earnings function.

Data and methodology

We benefit from the data of Harb and Rouhana (2020), which consists of 2,282 observations in total. It was randomly collected in March 2019, just before the set of crises that hit Lebanon later that year. The data covers Lebanese employees who earn salaries (no self-employed) in the greater Beirut area. Public sector employment is based on nepotism and on a balanced political distribution amongst different religions and is therefore excluded from the analysis. We are left with a subset of 1,879 observations.

National censuses in Lebanon are rarely performed for political reasons that are beyond the scope of this paper.[4] Therefore, no other similar comprehensive data are available to compare or benchmark our sample with. The data are analysed in the results section.

Across all our multiple OLS regressions, the standard errors of the estimates were obtained by using the bootstrap option to avoid over-rejection of the null hypothesis that may arise from heteroskedastic disturbances (as suggested by (Wooldridge 2020)). Indeed, when we applied the Breusch-Pagan test of heteroskedasticity, the null of a constant variance was rejected. Furthermore, the wild bootstrap is used to test the significance of some key variables. Indeed, Davidson and Flachaire (2008) show that the wild bootstrap reduces the error in the p-value substantially.

Then, the Oaxaca (1973)-Blinder (1973) (OB, hereafter) decomposition is used to split the wage gap between Maronites and other religions into an explained (by the characteristics) part and an unexplained part (that cannot be explained by the observed variables). The Maronites group is chosen as the reference group because of its highest average earnings in general and across percentiles as we shall see in the following section (Table 1). The OB decomposition is based on the following: Assume that the wage equation of each religion is specified as follows:

[4]Indeed, (Faour 2007) states that Lebanon is the only country in the United Nations that has not conducted a national census since WWII.

Table 1. Total of 1879 observations.

	Maronites	Sunnis	Shias	Minorities
Obs #	496	501	480	402
Percentage	26%	27%	26%	21%
age	35.93	38.78	37.72	34.75
gender	0.54	0.40	0.42	0.47
single	0.54	0.30	0.34	0.52
educ	14.83	13.67	14.24	14.61
exp	13.16	15.07	13.66	11.80
uni1	0.06	0.06	0.09	0.06
lange	0.85	0.77	0.76	0.87
langf	0.88	0.55	0.45	0.76
pol	2.04	1.79	1.78	2.04
Annual wage($)	16,093.97	14,615.71	15,220.69	16,208.91
man	0.09	0.14	0.05	0.12
cons	0.03	0.05	0.06	0.02
comm	0.19	0.23	0.17	0.23
tour	0.08	0.13	0.14	0.12
fin	0.13	0.09	0.11	0.12
aca	0.16	0.14	0.21	0.09
WCateg1	0.10	0.09	0.14	0.09
WCateg2	0.45	0.59	0.43	0.48
WCateg3	0.45	0.32	0.44	0.43
WEast	0.54	0.09	0.14	0.40
WBeirut	0.41	0.81	0.47	0.55
WSouth	0.05	0.10	0.39	0.05

$$Y_i^m = \sum_{i=1}^{n} \beta_i^m X_i^m + \varepsilon_i^m \quad (1)$$

$$Y_i^r = \sum_{i=1}^{n} \beta_i^r X_i^r + \varepsilon_i^r \quad (2)$$

where Y_i^m is the log of the annual wage of member (i) of the Maronites group (m), Y_i^r is the log of the annual wage of member (i) of religion group (r). r represents the three remaining religious groups: Sunnis, Shias, and Minorities. X_i^m $\left(X_i^r\right)$ stands for a vector of observable variables representing human capital characteristics and other control variables that will be discussed later for member (i) of the group m (r), β_i^m $\left(\beta_i^r\right)$ is a vector of the parameters corresponding to group m (r) and is to be estimated and ε_i^m $\left(\varepsilon_i^r\right)$ shows the error terms.

It should be noted that the coefficients (β) in (1) and (2) cannot be treated as elasticities since the endogenous variable Y is in log, but the exogenous variables are not. Typically, (β) is commonly called 'semi-elasticity'. It provides an estimate of the expected percentage change of the endogenous variable upon an increase of the exogenous variable X by one unit (Barreto and Howland 2006). As observed in the seminal paper of Mincer (1958), wages do increase exponentially (not linearly) with training. That is, the larger the amount of training, the larger is its expected return. Hence, the common use of this semi-log form in Mincer-type models (see (Longhi, Nicoletti, and Platt 2013), (Blackaby et al. 2002), (Goldsmith, Hamilton, and Darity 2006), (Harb and Rouhana 2020), (Barreto and Howland 2006) to mention a few).

The OB methodology decomposes the earnings between Maronites and each of the remaining groups at the mean value of each. The gap is defined as follows:

$$\bar{Y}^m - \bar{Y}^r$$

where the bars indicate the means of the log of earnings of each group. OB shows that the gap between both means can be written as follows:

$$\bar{Y}^m - \bar{Y}^r = \beta^m\left(\bar{X}^m - \bar{X}^r\right) + (\beta^m - \beta^r)\bar{X}^r \quad (3)$$

Equation (3) splits the wage gap into two terms: the first right-hand term represents the part of the wage gap that is explained by the difference in characteristics or endowments (such as education and experience), while the second right-hand term represents the unexplained or structural part of the gap.

Machado and Mata (2005) criticize the OB decomposition because it considers the wage gap only at the means without considering the gap across the wage distribution. For this reason, we use the methodology of Chernozhukov, Fernandez-Val, and Melly (2013) which can be explained as follows:

Assume that the conditional distribution functions $F_{Y_m|X_m}(y|x)$ and $F_{Y_r|X_r}(y|x)$ of the log of wages for the group m and the group r respectively with characteristics x. If $F_{Y<m|m>}$ and $F_{Y<r|r>}$ represent the observed distribution function of groups m and r respectively, then $F_{Y<m|r>}$ is the distribution function of the log of wages of group r in case they are rewarded similar to the group m $F_{Y_0|X_0}$:

$$F_{Y<m|r>}(y) := \int_{\chi_r} F_{Y_m|X_m}(y|x)dF_{X_m}(x)$$

The above distribution is counterfactual because it is based on integrating the distribution of the wages of the group m group with the characteristics of the group $r(\chi_r)$.

If Q is the quantile distribution of the function F, then we can write the decomposition of the wage gap across quantiles as follows:

$$Q_{(r|r)}(\tau) - Q_{Y(m|m)}(\tau) = \left(Q_{Y(m|m)}(\tau) - Q_{Y(m|r)}(\tau)\right) + \left(Q_{Y(m|r)}(\tau) - Q_{Y(m|m)}(\tau)\right)$$

In this equation, the first term to the right hand represents the structural effect that is due to the difference in coefficients, while the second term shows the effects of the characteristics on the conditional distribution of the log of wages. 'τ' is an indicator for the τ^{th} quantile. Chernozhukov, Fernandez-Val, and Melly (2013) show that their estimator is consistent and is normally distributed. They also show how to estimate a covariance matrix to obtain the standard errors – to build confidence intervals – using the bootstrap approach.

2. Results

Data description

The characteristics of our sample are displayed in Table 1. The sample is divided into four main religious groups (or sects): (1) Christian Maronites (or Maronites), (2) Muslim Sunnis (or Sunnis), (3) Muslim Shias (or Shias), and (4) Minorities. The last group, Minorities, consists of other Christian groups (Greek Orthodox, Greek Catholics, Syriacs, Armenians, ...), and a large minority of a Druze group. The weight of each of the four groups in the sample is around 25%. There are some published rough estimates of the religious distribution in Lebanon which are not far from our sample. For instance, the United States Department of State (2019) estimates that 31.9% of the Lebanese population are Sunni, 31% are Shia, and 32.4% are Christian.

Table A1 in the appendix shows how each of our variables is measured.[5] Human capital is measured by the years of education, the quality of university education, foreign languages proficiency, and years of experience.

The mean age of our observations ranges between 35 and 39 years. Females are most represented in the Maronite and Minorities groups. This reflects a larger Christian female participation rate than Muslims (similar results were also obtained by Clark and Drinkwater (2009) and Lindley (2002) for Muslims in Britain). This can be due to a cultural effect where many Muslims traditional families prefer non-working housewives. Muslims, either Sunnis or Shias, are less likely than Christian to be single. It can be due to Islamic culture that encourages early marriage. Education and experience average is similar amongst the four groups. Harb and Rouhana (2020) argue that the high level of education amongst the Lebanese workers is not surprising mainly because education is highly valued by the Lebanese society and because educational institutions are largely available and affordable. However, Shias have the highest rate of university quality education (*uni1*). This observation can be explained by the argument of Brenner and Kiefer (1981). That is, when people are at greater risk of confiscating their property, they invest more in their human capital. A large part of Shias in Lebanon fled their properties in the southern part of the country (which had witnessed decades of uncertainty and unstable conditions) to the greater Beirut area. This risky situation may have pushed them to invest in higher education more than other people in Lebanon. On the other hand, Maronites and Minorities speak better English and French than Muslims. Historically, Christians were more educated by missionaries and affected by the Western culture (Esseily 2017). However, our sample shows that the discrepancy among the four groups in the proficiency in English is smaller than the discrepancy in French. Furthermore, the numbers show that, except in the case of Maronites, English is better spoken than French. This finding is not surprising in the globa-

[5]Further information about these variables can be obtained from the authors upon request.

lization era. On average, the political connections are moderate. They average between 1.78 and 2.04, over a scale of five. The annual wage varies between close to US$14,600 and US$16,208.[6] The minorities and the Maronites earn the highest wages on average. Sunnis earn the least.

The data also show the distribution of the observations among the different working sectors. Most of the workers are in the commercial, tourism, and academic sectors.

We follow the ILO Classification of Occupation (ILO 2020) to organize the job categories. However, in order to reduce the number of working categories (because of our limited sample), we regroup them three categories: Working Category 1 (WCateg1) consists of elementary jobs and operators, Working Category 2 (WCateg2) consists of craft, skilled, sales, clerical, and technical jobs, while Working Category 3 (WCateg3) consists of managers and professionals. The high concentration in the second and third categories can be explained by three factors: (1) the Lebanese society tends to be highly educated as seen above, (2) the Lebanese labour law allows local firms to hire foreign low-skilled workers for low classified jobs, and (3) the strong competition of the unskilled Syrian labour force, which needs no working permit in Lebanon. Syrian and foreign workers are excluded from the study, which focuses only on Lebanese workers.

The last three rows of Table 1 classify working places into three locations:

(1) WEast refers to the Eastern Suburb of Beirut (inhabited mainly by Maronites).
(2) WBeirut refers to the city of Beirut. Beirut, the capital of Lebanon, encompasses all religions but with different proportions. However, the majority of Sunnis in the greater Beirut area live in Beirut itself.[7]
(3) WSouth indicates that the working place is the Southern Suburb. The Southern Suburb of Beirut (SS) is inhabited mainly by Shias.

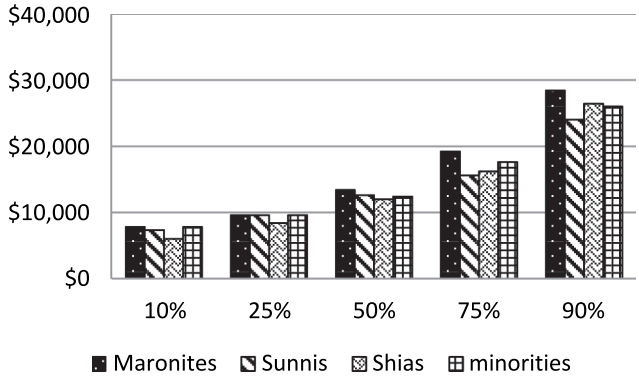

Figure 1. Wage distribution per percentiles.

Table 1 shows, for instance, that 54% of Maronites work in the Eastern suburb, while 41% of them work in Beirut and the remaining 5% of them work in the Southern Suburb.

Figure 1 shows the distribution of earnings amongst our four religious groups across five different percentiles and justifies the importance of religion in determining a worker's earnings. Several observations arise from this distribution. First, Maronites' earnings are the highest across all percentiles. Sunnis and Shias receive the lowest earnings. The Minorities group (dominated by non-Maronite Christians) comes second – in general – after the Maronites. Second, the gap is narrow at low quantiles but is larger at higher ones indicating a glass ceiling phenomenon. And third, at low quantiles, Shias' earnings are the lowest. At higher quantiles, Sunnis' earnings are the lowest, which suggests that the glass ceiling effect is more present in the case of Sunnis.

Basic regression models

Are these earnings gaps due to differences in characteristics and attitude, or due to the difference in accumulated human capital? To investigate this question, our analysis begins by running a series of OLS multiple regressions of a Mincerian-type model using the whole sample (which consists of the private sector workers).

[6]The data was collected before the Lebanese currency crisis. At that time, the Lebanese Pound (LBP) was pegged to the US dollar and the exchange rate was allowed to float between a narrow range [LBP1500, LBP1515].
[7]Unfortunately, no detailed official statistics are available for comparison.

Table 2. OLS multiple regressions, dependent variable is the Ln of annual wage, basic models.

Model	(1) ln_a_wage	(2) ln_a_wage	(3) ln_a_wage	(4) ln_a_wage	(5) (Beirut) ln_a_wage	(6) (East) ln_a_wage
gender	−0.139***	−0.155***	−0.133***	−0.148***	−0.076***	−0.222***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
single	−0.087***	−0.089***	−0.090***	−0.093***	−0.040	−0.164***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.25)	(0.00)
educ	−0.014	−0.024*	−0.022	−0.030**	−0.040**	−0.040
	(0.36)	(0.08)	(0.15)	(0.02)	(0.04)	(0.37)
educ2	0.003***+++	0.003***+++	0.003***+++	0.003***+++	0.003***+++	0.003*++
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)
uni1	0.451***+++	0.407***+++	0.439***+++	0.391***+++	0.430***+++	0.351***+++
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
lange2	0.076***	0.049*	0.069***	0.043*	0.077***	0.010
	(0.00)	(0.05)	(0.00)	(0.08)	(0.00)	(0.86)
langf2	0.067***	0.052**	0.060***	0.045*	0.018	0.137**
	(0.00)	(0.02)	(0.01)	(0.05)	(0.44)	(0.01)
exp	0.034***	0.034***	0.032***	0.032***	0.033***	0.039***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
exp2	−0.000***	−0.000***	−0.000***	−0.000***	−0.000**	−0.001***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
pol	0.038***	0.033***	0.039***	0.034***	0.031**	0.018
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.36)
sunni	−0.069***+++	−0.075***+++	−0.074**+++	−0.078***+++	−0.071**++	0.055[a]
	(0.01)	(0.00)	(0.01)	(0.00)	(0.03)	(0.43)
shia	−0.135***+++	−0.145***+++	−0.088***+++	−0.096***+++	−0.038[a]	−0.026[a]
	(0.00)	(0.00)	(0.01)	(0.00)	(0.28)	(0.70)
minorities	0.006	0.001	0.002	−0.002	0.037	−0.024
	(0.83)	(0.97)	(0.94)	(0.92)	(0.29)	(0.51)
WCateg2		0.161***		0.143***+	0.110***++	0.186***
		(0.00)		(0.00)	(0.00)	(0.00)
WCateg3		0.333***		0.325***+	0.301***+++	0.364***
		(0.00)		(0.00)	(0.00)	(0.00)
WEast			−0.034	−0.033		
			(0.11)	(0.19)		
WSouth			−0.182***	−0.188***+		
			(0.00)	(0.00)		
_cons	8.662***	8.706***	8.760***	8.805***	8.789***	8.887***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
N	1856	1856	1856	1856	1042	534
adj. R-sq	0.47	0.49	0.48	0.51	0.54	0.43
RESET (p-val)	0.74	0.41	0.94	0.44	0.96	0.71
B-P (p-val)	0.00	0.00	0.00	0.00	0.00	0.00

*, **, *** significant at 90%, 95%, 99% respectively using bootstrap
+, ++, +++ significant at 90%, 95%, 99% respectively using wild bootstrap
[a]not significant using wild bootstrap

The results are shown in Table 2. In all regressions, the natural log of the annual wage is the dependent variable.

Regression (1) shows the simplest model. The gender negative and significant sign reflects the gender wage gap in favour of male workers. The gender wage gap in Lebanon was discussed widely in Harb and Rouhana (2020). Being single also has a negative effect on earnings. 'Single' status is associated with younger age and a short experience (in our sample, 85% of those below 30 are single) which results in a negative effect.

Education (*educ*) and its square (*educ2*) reflect the impact of education on earnings. The squared term is included to allow for nonlinearity in the returns to education. That is, it permits to have different returns at different levels of education. The positive and significant sign of *educ2* demonstrates that the returns to education increase with the level of education, which is similar to the results of Chiswick (1988). That is, the return to an additional year of education is equal to $0.6x\%$ (where x is the total number of years of education).

Uni1 has a positive, large, and significant effect. A worker with a degree from a tier-one university has 45% higher earnings compared to another worker with education from another higher education institution. Proficiency in English and in French boosts earnings by around 7% on average.

The squared experience term allows for a decrease in the returns to experience as a person ages. The parameters of the years of experience are significant and show a non-linear relationship. That is, the positive effect of experience decreases as the worker ages. Also, the political connection has a positive and significant impact on earnings.

The last three regressors of model (1) are dummies for each religion category, with the Maronites group being the reference group. Sunnis (Shias) earn 6.9% (13.5%) lower wages than Maronites, while the wages of the Minorities are not significantly different from Maronites. The last few rows show that the RESET test does not reject the null of 'no omitted variables'.

Previous research has shown that the working category and the working location can significantly explain a part of the earnings ((Atal, Ñopo, and Winder 2009), (Levanon and Yaron 2007), (Grodsky and Pager 2001), (Steen 2004)). Furthermore, our data shows (Figures 2 and Figures 3) how the working category and the working location are related to the annual earnings

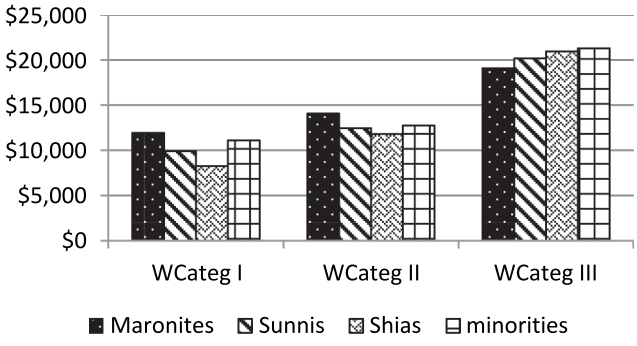

Figure 2. Wage distribution per working category.

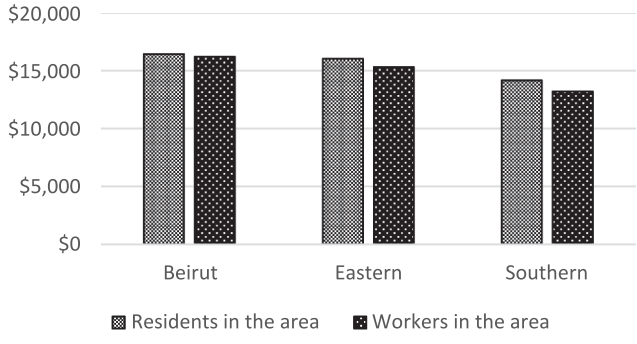

Figure 3. Wage distribution per work and residence location.

across all religious groups. Therefore, we incorporate both variables into models (2) and (3), respectively.

Model (2) shows almost no change in the wage gap of the three religious groups compared to Maronites. WCateg2 and WCateg3 premiums compared to WCateg1 are positive and significant as expected (16.1% and 33.3%, respectively,). We note a reduction in the impact of language proficiency because a part of this effect has been captured by the working categories.

When we control for the working place in Model (3), the Shia wage gap decreases to 8.8% and becomes closer to the Sunni wage gap. The coefficient of WSouth is negative and significant, indicating that working in the Southern Suburb reduces earnings by 18% compared to working in Beirut. This is consistent with the results of Levanon and Yaron (2007) who considered the effect of working place (in top positions only though). They conclude that the unexplained gap between Christians and Jews in Haifa decreases from around 14% to 6% when the working place is controlled for. Figure 3 shows that the Southern Suburb is the poorest among our three regions, either in terms of its residents' earnings or in terms of its workers' earnings. Furthermore, Figure 4 shows that around 40% of Shias in our sample work in the Southern Suburb. This explains why a large part of the Shia wage gap in regression (1) has been partially eliminated when the effect of working in a poor place has been taken into account.

Model (4) is comprehensive. It includes both the working category and the working location dummies. The Sunni and Shia wage gaps are

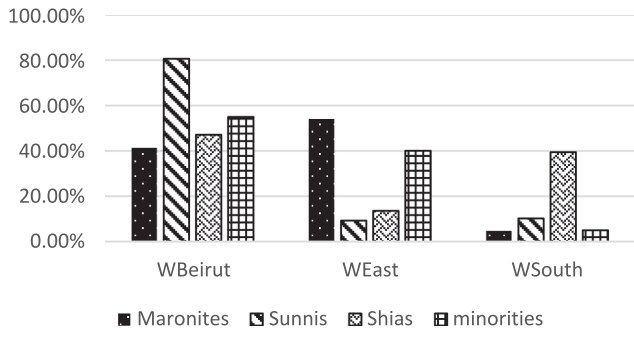

Figure 4. Working location distribution per religious group.

still persistent and significant. Specifically, if a Sunni (a Shia) worker and a Maronite worker have similar characteristics and work in the same location and hold a similar position, it is expected that the Sunni (Shia) worker would receive 7.8% (9.6%) lower earnings. Hence, if a Sunni and a Maronite both have the same human capital and similar characteristics, and if both work around their home place (Beirut city and Eastern Suburb, respectively,), the Sunni worker would receive 11.1% lower earnings than the Maronite worker (working in the Eastern Suburb has no significant impact on earnings compared to Beirut).

The impact is deeper in the case of a Shia worker. That is, if a Shia worker and a Maronite worker both have similar characteristics, and if both work around their home place (the Southern and the Eastern Suburb, respectively), the Shia worker would receive 28.4% lower earnings: (−9.6%) the effect of being a Shia, and (−18.8%) for working in the Southern suburb.[8]

But what if we consider only those who work in the city of Beirut itself? Model (5) considers this case and it eliminates therefore about 40% of the observations. We note that the French language becomes non-significant. It is an indication that French is not a required asset in the city.

The most striking result of Model (5) though is the non-significance of the Shia wage gap compared to the persistent Sunni wage gap (7.1%). The advantage of this model is that it eliminates the effect of working in a poor area (Southern Suburb). But, if working in poor areas justifies the Shia wage gap (or at least a part of it), what explains the persistent Sunni wage gap? Is it due to a certain Sunni workers' characteristic?

The data shows that the majority of Sunnis (404 out of 501 observations, or 80%) are included in Model (5) (compared to 226 out of 480 of Shia, or 47%). The persistence of the Sunni wage gap may be due to working in poor areas as well. That is, there are some poor enclaves in Beirut city itself. Whether a significant part of Sunnis is working in these enclaves can have a negative economic outcome which can materialize as a significant wage gap. This negative effect of enclaves has been obtained previously by Clark and Drinkwater (2009) and Blackaby et al. (2002). Unfortunately, the data do not provide further details about these enclaves within the reported regions. However, to ensure the validity of this hypothesis, we run a sixth regression (Model 6) that considers only all those who are working in the Eastern Suburb (despite a drawback related to the small number of Sunni and Shia workers included in this regression: 46 and 65, respectively). This eliminates the hypothesized enclave effect.[9] The results show that both religion wage gaps (Sunni and Shia) become non-significant. Therefore, the included working location (largely) is not sufficient to explain the whole gap between the followers of different religions. A further detailed working location indicator is required, an indicator of the average income, for instance. Furthermore, models (5) and (6) raise a selection bias concern. That is, those Shia workers who work in Beirut or in the Eastern Suburb and those Sunni and Shia workers who work in the Eastern Suburb may have some non-accounted-for factors (traits or characteristics) that help them to obtain well-paid positions in the Eastern suburb firms. As a result, their earnings are not significantly different from Maronite . We have searched our available data for factors that can be accounted for (especially the working sector). But this has led to no conclusion. In the literature of Person-Organization fit, Person-team fit, and the Person-Environment, personal traits and characteristics have significant effect on employers' recruitment decisions (see for instance (Driskell, Hogan, and Salas 1987), (Kristof 1996), (Koene, Boone, and Soeters 1997), (Kristof-Brown 2000), (Meyer et al. 2010)). For example, Koene, Boone, and Soeters (1997) (in (Van Vianen 2000)) find evidence that socialization practices and social interactions affect the hiring decision. Also, the results of Kristof-Brown (2000) show that personality traits (curious, creative, easy going, straightforward, friendly, like challenge …) affect the

[8]It is important to note here that we have tried to add other available variables in our regressions such as the working field, highest degree, and weekly hours without any significant difference in the results.

[9]One may argue that there could be some poor enclaves in the Eastern Suburb. However, it is unlikely that a Sunni worker will accept to work in a remote place unless the job there is well paid.

compatibility with the team and play therefore an important role in the recruitment process. Therefore, this paper suggests the inclusion of personal traits and characteristics in any related future work.

Models (1–6) show that the detailed working location can play an important role in explaining the wage gap. It shows that the religion wage gap can be eliminated when we include the working environment. But it also raises the question about the existence of certain characteristics that allow certain workers to work in richer places. This can be in the agenda of future research with a wider and more detailed set of data.

Furthermore, the above analysis assumed similar returns to human capital across our four groups. The next section will abandon this hypothesis and analyse each group separately.

Religious groups' regressions

In order to further investigate the cause of the wage gap that appears in Figure 1, we run a set of four regressions, one for each religious group, using the comprehensive Model (4). This approach has been used by Steen (1996) and Bitzan (2009). The results are presented in Table 3. Of course, one drawback of this analysis is the smaller sample size in each regression. The estimates show a large discrepancy in the estimated coefficients across the four groups. The gender wage gap is lowest in the Sunnis (4.6%, and not significant) and is largest in the Maronites case (21.6%).

The returns to 1 year of education vary considerably across religions. It runs from a low of $(0.4 \times x)$ %, (x being the number of years of education) in the case of Maronites to a high of $(1 \times x)$ % in the case of Minorities.

Table 3. OLS multiple regressions, dependent variable is the Ln of annual wage, by religion.

	Maronites (1)	Sunnis (2)	Shias (3)	Minorities (4)
	ln_a_wage	ln_a_wage	ln_a_wage	ln_a_wage
gender	−0.216***	−0.046	−0.139***	−0.195***
	(0.00)	(0.10)	(0.00)	(0.00)
single	−0.074	−0.127***	−0.086*	−0.108**
	(0.12)	(0.00)	(0.08)	(0.02)
educ	−0.031	−0.019	−0.017	−0.082***
	(0.33)	(0.63)	(0.41)	(0.00)
educ2	0.002**++	0.002+	0.003***+++	0.005***+++
	(0.05)	(0.11)	(0.00)	(0.00)
uni1	0.289***+++	0.448***+++	0.520***+++	0.245**++
	(0.01)	(0.00)	(0.00)	(0.02)
lange2	0.112**	−0.009	0.004	0.087
	(0.04)	(0.81)	(0.93)	(0.18)
langf2	0.131**	0.028	0.007	0.041
	(0.03)	(0.41)	(0.86)	(0.38)
exp	0.032***	0.027***	0.034***	0.033***
	(0.00)	(0.00)	(0.00)	(0.00)
exp2	−0.000**	−0.000	−0.000**	−0.000**
	(0.02)	(0.17)	(0.04)	(0.04)
pol	0.008	0.052**	0.047**	0.029
	(0.66)	(0.02)	(0.02)	(0.19)
WCateg2	0.160**++	0.174***+++	0.129***++	0.148*+
	(0.01)	(0.00)	(0.00)	(0.07)
WCateg3	0.338***+++	0.309***+++	0.319***+++	0.400***+++
	(0.00)	(0.00)	(0.00)	(0.00)
WEast	−0.038	0.066	−0.029	−0.078+
	(0.30)	(0.35)	(0.66)	(0.11)
WSouth	−0.084	−0.088	−0.264***+++	−0.161
	(0.43)	(0.17)	(0.00)	(0.15)
_cons	8.864***	8.640***	8.608***	9.131***
	(0.00)	(0.00)	(0.00)	(0.00)
N	489	497	473	397
adj. R-sq	0.36	0.57	0.61	0.44
RESET (p-val)	0.25	0.22	0.47	0.06
B-P (p-val)	0.00	0.00	0.00	0.00

*, **, *** significant at 90%, 95%, 99% respectively using bootstrap
+, ++, +++ significant at 90%, 95%, 99% respectively using wild bootstrap

The quality of university education (*uni1*) returns differs among the four groups. They run from a low of 24% in the case of minorities to a high of 52% in the case of Shias.

The discrepancy in the estimated coefficients of education (years and quality of education) supports the hypothesis that returns to human capital vary by religion. Similar results were obtained in the economic literature. For instance, Bitzan (2009) finds that in the US, the return to a year of education is much lower for blacks (1.26%) than for whites (3.7%). (Steen 2005) finds that women's return per year of education varies between 6% and 10% depending on race and ethnicity. Also, Levanon and Yaron (2007) obtain very different returns to education for their four groups: Jews with 13–15 years of education receive a premium of 33%, while Muslims, Christians, and Druze receive 15%, 19%, and 37%, respectively. Furthermore, Blackaby et al. (2002) conclude that returns to a year of education in the UK vary from 0.3% (for a worker with Indian origins) to 4.2% (for a white worker). Earlier, Tomes (1983) finds that the returns to education vary widely between Jews, Protestants, and Catholics in Canada. One possible explanation of the discrepancy in the returns to years of education and the quality of education can be the type of degree as we shall discuss below.

The political connection is only significant in the case of both Muslim groups. This raises a natural question: why would the political connection affect a Muslim's wage (in the private sector) but not a Christian's wage? One potential justification is related to the impacts of political practice related to religions: That is, many good jobs (especially in the public sector, but can be generalized to many private sector institutions) are distributed equally between Muslims and Christians.[10] But since, as seen above, Muslims outnumber Christians, it is expected that Muslims compete more for a good job. Therefore, those who have better connections can obtain a better job.

On the other hand, holding a position in WCateg2 and WCateg3 would pay off more compared to the basic level of work for all four groups. The payoff of the working category is close across the four groups.

Again, the working location has a negative effect only when the place of work is the Southern Suburb (WSouth). This negative effect is not significant in the case of Maronites, Sunnis, and minorities. This can be due to the small sampling effect. Indeed, only a few Maronites, Sunnis, and Minorities work in the Southern Suburb.

The discrepancy amongst the estimated coefficients in Table 3 can be interpreted in different ways: It can be related, for instance, to the type of education as obtained by Levanos and Pouliakas (2011) and Lemieux (2014). That is, studying applied sciences, theoretical sciences, business studies, or humanities may have different returns. Furthermore, the quality of education in the secondary (or even primary) schools can play an important role. Indeed, public schools in Lebanon provide a lower quality of education than private schools (Kawar and Tzannatos 2013). Therefore, with the above possible factors that may explain the discrepancy of returns to human capital, one cannot simply conclude that such divergence of coefficients is religion-based. Unfortunately, our data do not include such details to validate such a hypothesis.

Another line of research (as indicated in the introduction) claims that different religions can have different returns to human capital. What supports this possibility can be seen in the adjusted R^2 in Table 3 which runs from a low of 0.36 (Maronites) to a high of 0.61 (Shias). That means the human capital, the working, and the social conditions, as used in our case, do not explain the earnings of each religious group similarly.

[10]This is known in Lebanon by the rule of 'six and six multiplied', which means literarily that for every six jobs assigned for Muslims; six others should be assigned to Christians.

Table 4. Oaxaca-blinder decomposition (all religions vs. Maronites).

	(a) Sunnis			(b) Shias			(c) Minorities		
overall	Coef.	P-Val	Ratios	Coef.	P-Val	Ratios	Coef.	P-Val	Ratios
Maronites	9.55	0		9.55	0		9.55	0	
group_2	9.46	0		9.41	0		9.52	0	
raw	0.09	0.00	100%	0.14	0	1.00	0.03	0.41	100%
explained	0.02	0.48	0.21	0.05	0.10	0.40	0.02	0.40	0.68
unexplained	0.07	0.01	0.79	0.08	0.01	0.60	0.01	0.74	0.32

Oaxaca- Blinder decomposition

Since our model is unable to fully explain the wage gaps between the religions, we split these gaps – in what follows – into an explained and an unexplained part at the means first (Oaxaca-Blinder Decomposition) and then at different quantiles (Decomposition by quantiles) as indicated above. The goal is to investigate the homogeneity of the wage gap across the earnings distribution. All the analysis is based on the comprehensive Model (4).

Table 4 shows the results of the OB decomposition. In each panel, we show the decomposition of the wage gap at means for each group compared to Maronites. The gap is divided into two parts: the part of the gap that is explained by the human capital and other control variables, while the unexplained part is the part that cannot be explained by our model.

The wage gap of Sunnis at means is equal to 9% and is significant; most of it (70%) cannot be explained by the model. Moreover, this

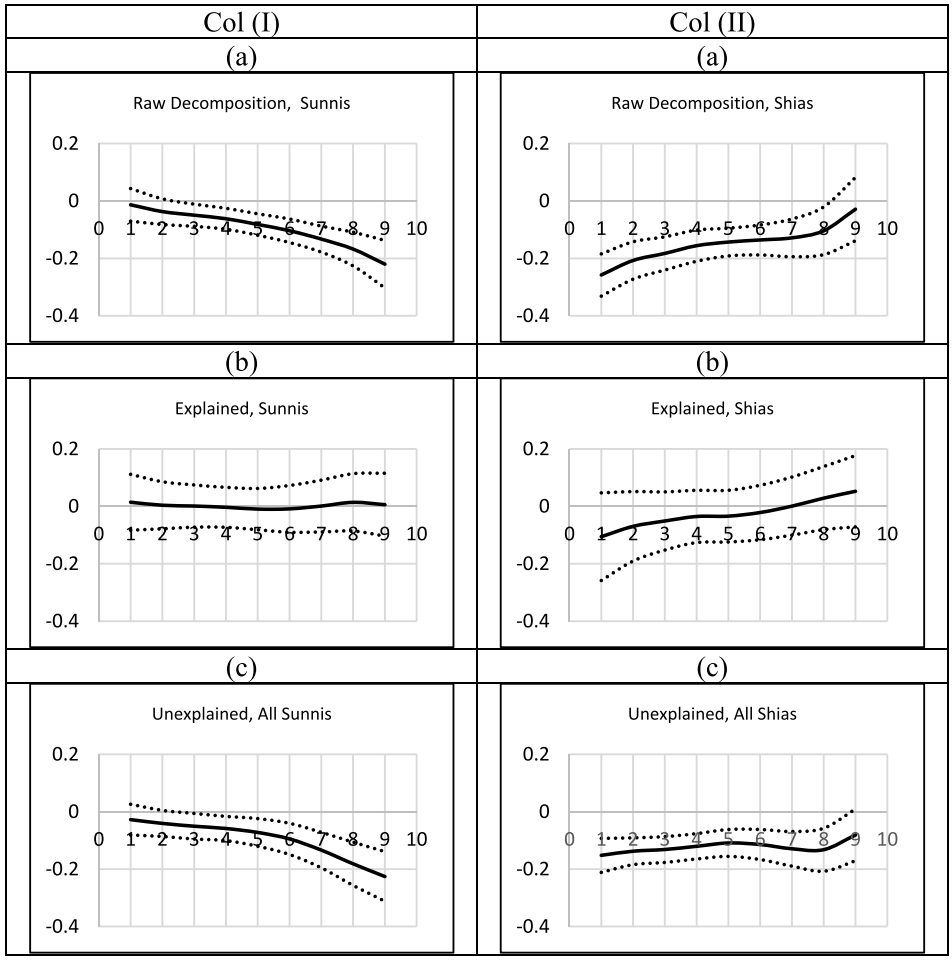

Figure 5. The decomposition of the wage gap between (I) Maronites and Sunnis, and (II) between Maronites and Shias.

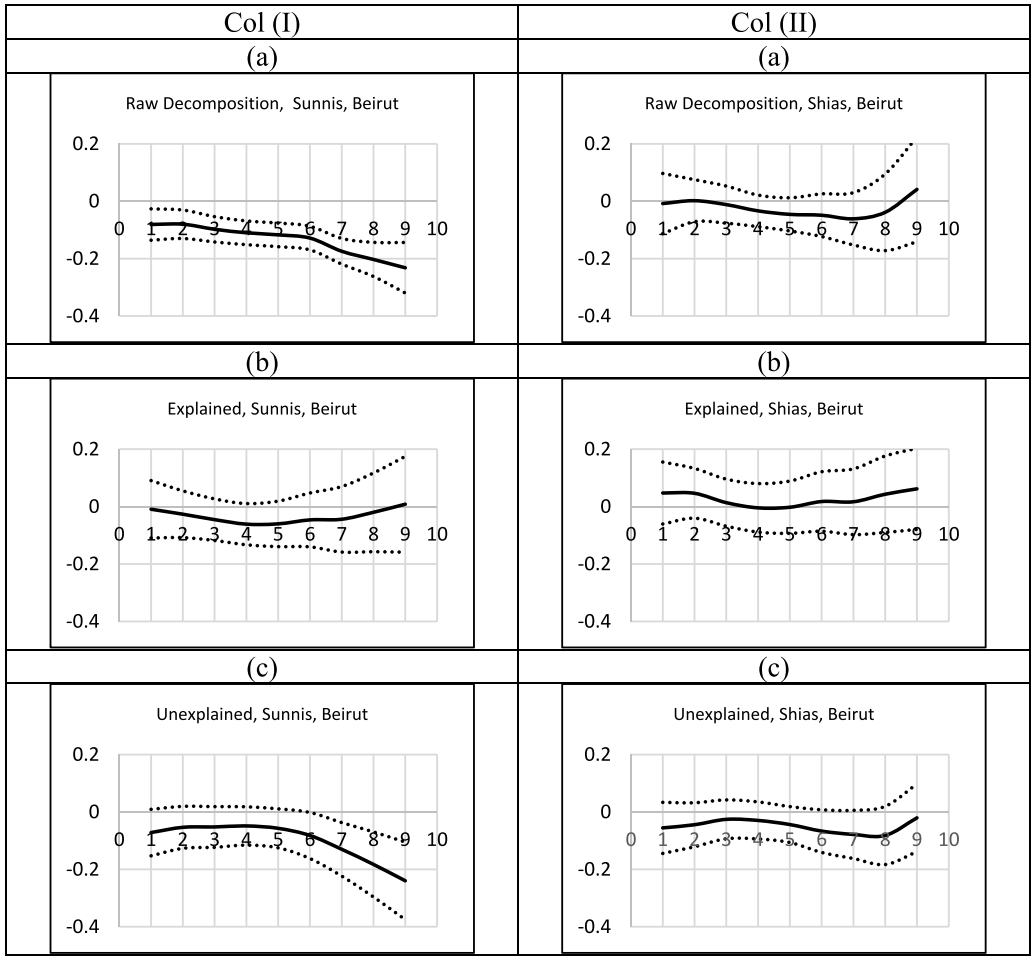

Figure 6. The decomposition of the wage gap between (I) Maronites and Sunnis, and between (II) Maronites and Shias (Beirut Only).

unexplained gap is significant at 5%. Therefore, the OB decomposition shows that an average Sunni worker will have a 9% lower wage than the average Maronite worker.

The wage gap of Shias at means is larger and is estimated at 14% and is significant, 60% of which cannot be explained by our model. Of course, the unexplained part in the Shia case is lower than that of Sunni because a significant part of the total gap was due to the working place as seen in Model (4). These numbers indicate that an average Shia worker will earn 14% less than an average Maronite worker. Finally, the wage gap between Maronites and Minorities is equal to 3% but is insignificant.

The above results indicate that the wage gap between the religious groups is significant. Figure 1 however shows that the wage gap is not similar across the different quantiles. This is the main critic of Machado and Mata (2005) to the OB decomposition, which hides the shape of the wage gaps across the earnings' distribution. The next section discusses the decomposition by quantiles.

Decomposition by quantiles

Figure 5 displays the counterfactual decomposition results across quantiles using the methodology of (Chernozhukov, Fernandez-Val, and Melly 2013). It shows the Sunni (Col I) and the Shia (Col II) wage gaps compared to Maronites and their decomposition across nine quantiles. In each column, panel (a) shows (in per cent, with respect to the reference group) the raw wage gap across quantiles, panel (b) shows the explained part of the wage gap, and panel (c) shows the unexplained part. The dotted lines show the intervals of confidence.

In Col (I), panel (a), the Sunni wage gap is significant across all quantiles, except the lower ones. Interestingly, while the explained part is not

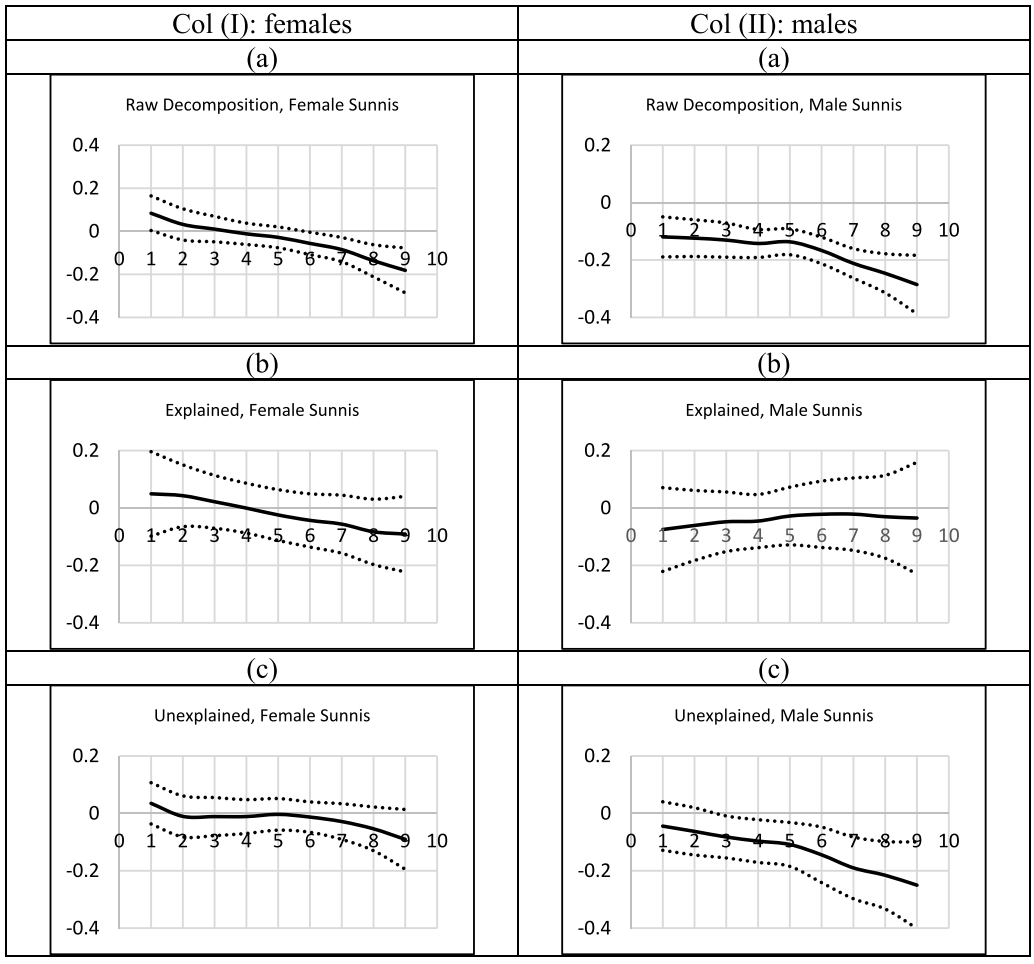

Figure 7. The decomposition of the wage gap by gender between Maronites and Sunnis.

significant, the unexplained part of the gap is significant in almost all quantiles. It is moderate at low quantiles, becomes larger at higher quantiles, and reaches about 20% indicating the existence of a glass ceiling effect for Sunnis. Sunnis at higher quantiles may have some traits or characteristics not included in our model that prevent them from obtaining higher earnings.

The Shia wage gap shows a totally reverse picture. That is, while the Sunni wage gap increases at upper quantiles, the Shia wage gap (column II, panel a) decreases at upper quantiles and eventually becomes non-significant. On the other hand, panel (c) shows that the wage gap between Shias and Maronites is mainly driven by the unexplained part (panel c). Of course, the glass ceiling effect is absent in the case of Shias.

This difference in the shape of the wage gap has also been obtained by (Levanon and Yaron 2007) who find that the wage gap decreases for Muslims and Christians, but increases for Druzes. Once they control for the occupation, the gap is significantly reduced. In our case, the occupation and the working location have already been included in our analysis. We have tried to include other variables such as academic degrees and parental education in

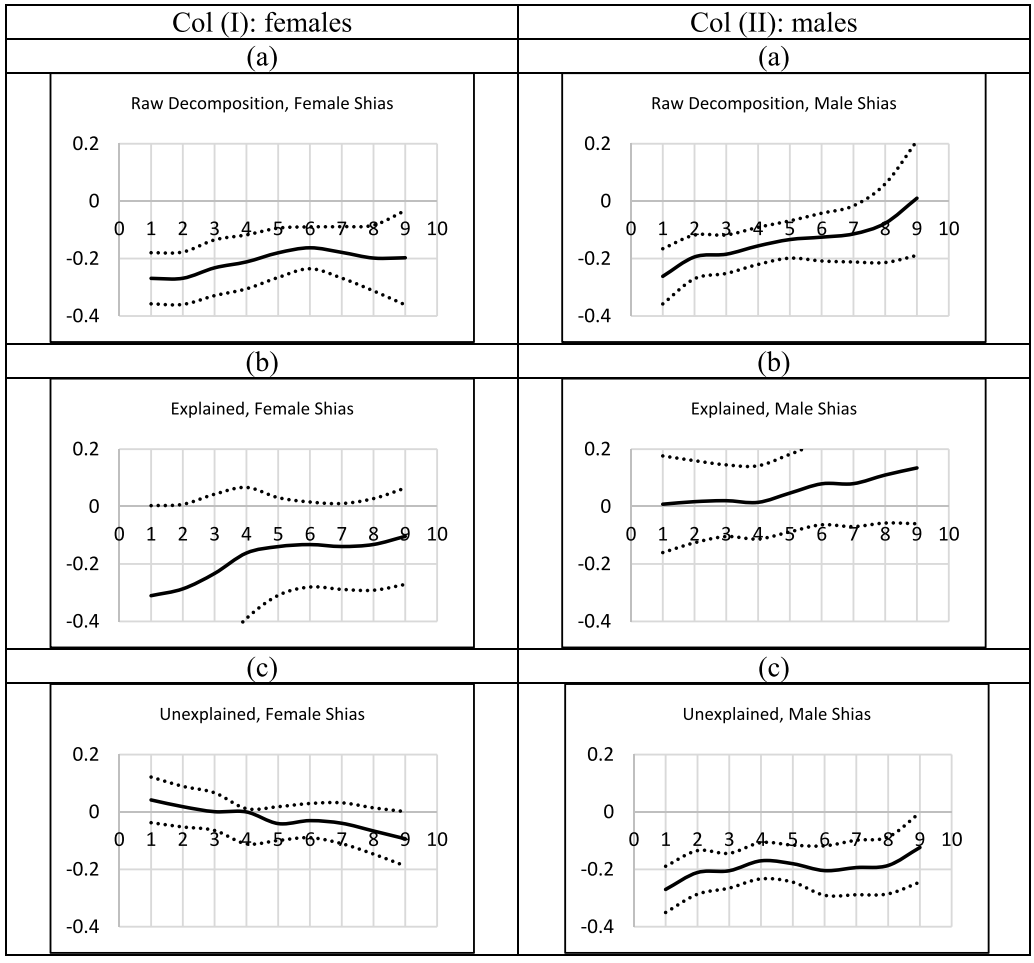

Figure 8. The decomposition of the wage gap by gender between Maronites and Shias.

trying to explain the difference in the wage gap behaviour. The shape of the gaps has not changed, though.

Finally, we run a quantile regression using Beirut city data only (Figure 6). The results demonstrate that, again, Sunni workers are at a disadvantage even in their homeplace compared to Maronites. That is, the wage gap is significant in all quantiles. The unexplained part is significant only in the upper quantiles. This suggests that the unaccounted-for factors have their main effects at the upper earnings level, which causes the ceiling effect. As stated above, the enclaves may have an effect here and prevent the highest-earning Sunni workers from obtaining higher wages.

In the case of Shias, the raw wage gap, the explained and unexplained parts of the gap are not significant at all quantiles as it appears in Table 3.

Decomposition by quantiles and by gender

Finally, we present the religion wage gap by gender. Is the wage gap similar for females and males? As discussed below, the gap may differ between both genders.

The results of the decomposition of the religion wage gap by gender between Maronites and Sunnis are presented in Figure 7, and the decomposition between Maronites and Shias is presented in Figure 8. Col (I) in both figures shows the quantile

decomposition of the females' wage gap, while column (II) shows the quantile decomposition of the males' wage gap. Obviously, the negative wage gap of Sunni workers is mainly driven by the negative gap among males. This is similar to the results of (Levanon and Yaron 2007) and (Atal, Ñopo, and Winder 2009)) who found that the religion (or ethnic) wage gap is larger for males than for females. The reverse is true for Shia workers though, where the gap is larger for females. One may suggest that the type of jobs held by females can explain this phenomenon. Nevertheless, when repeated the exercise of Figures 7 and Figures 8 by considering the working sector (results are not presented), no major change was noticed.

The above suggests that further details on human capital and/or job characteristics (the new technology sector, for instance, can have a significant effect on earnings (Atal, Ñopo, and Winder 2009)) are needed. One extension is to consider whether the occupation falls in the formal or informal sector. This can explain the gap at lower scales since informal jobs are more associated with low earnings (see, for instance, (Duraisamy and Duraisamy 2016)). The field of higher education may provide a better insight at the upper earnings scale.

3. Conclusion and recommendations

This article investigates the religion wage gap in Lebanon. It analyses a random sample of employees in the greater Beirut area. The explanatory variables include the employee's human capital, type of job, and job location. The findings in this paper are as follows: (1) religion has a significant effect on the employee's earnings. Sunni and Shia workers obtain lower earnings than Maronite workers, (2) our data show that one reason that may explain this gap is working in a poor area such as the Southern Suburb of Beirut and other poor enclaves, (3) the returns to human capital is not similar across religious groups, (4) Sunni workers' wages show a glass ceiling effects, and (5) the wage gap of Sunni males is larger than Sunni females. The reverse is true for Shias.

With only education, experience, language knowledge, and working place as control variables, the above research is far from complete. Other factors can be taken into consideration and may explain the gap. The formal-informal sector effect can provide further insight into the analysis of the wage gap as proposed by ((Tansel and Acar 2016) and (Bargain and Kwenda 2014)). Furthermore, and as suggested above by (Levanos and Pouliakas 2011) and (Lemieux 2014), the field of education can explain a certain part of the gap. The effect of poor enclaves as found by (Blackaby et al. 2002) and (Clark and Drinkwater 2007) can also provide further insight into the analysis of the gap.

The results of this article confirm that the quality of education pays off substantially which calls for a reform in the Lebanese education sector. The results also call for encouraging investment (either public or private) in poorer areas (the Southern Suburb). Higher capital per capita increases workers' productivity and wages accordingly. Finally, but most importantly, the outcomes call for a nationwide census to feed further research at the national level, not just Beirut. After all, if certain characteristics or beliefs are found to cause Maronites to earn more, wouldn't it be possible that those characteristics or beliefs be embraced by other workers to increase their earnings? Higher earnings eliminate poverty and, hence, reduce the brain drain, which Lebanon has been suffering from, especially in the upper quantiles.

Acknowledgments

I would like to add the following acknowledgement paragraph:The author appreciates the comments of Paul Makdissi and three anonymous referees. The gratitude is extended to the University of Arts and Sciences in Lebanon (USAL) for its continuous support. Special thanks go to Ali Dirani and Tony Rouhana for their help, and to Fadwa Murdaa, Zeinab Hamade, and Dima Hakim for helping in English Editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

References

Al Ariss, A. 2010. "Religious Diversity in Lebanon: Lessons from a Small Country to the Global World." In *Managing Cultural Diversity in Asia*, edited by J. Syed and M. F. Ozbilgin, 56–72, Edward Elgar, Cheltenham, UK.

Alloush, M., C. Chartouni, R. Gatti, and J. Silva. 2013. "Informality and Exclusion: Evidence from Matched Employer-employee Data for Lebanon and Syria." *IZA Journal of Labor Policy* 2 (1): 1–18. doi:10.1186/2193-9004-2-18.

Angel-Urdinola, D. F., and R. A. Leon-Solano. 2013. "A Reform Agenda for Improving the Delivery of ALMPs in the MENA Region." *IZA Journal of Labor Policy* 2 (1): 1–25. doi:10.1186/2193-9004-2-13.

Atal, J. P., H. Ñopo, and N. Winder. 2009. "New century, old disparities: gender and ethnic wage gaps in Latin America." *IDB WORKING PAPER SERIES*(IDB-WP-109).

Bargain, O., and P. Kwenda. 2014. "The Informal Sector Wage Gap: New Evidence Using Quantile Estimations on Panel Data." *Economic Development and Cultural Change* 63 (1): 117–153. doi:10.1086/677908.

Barreto, H., and F. M. Howland. 2006. *Introductory Econometrics Using Monte Carlo Simulation with Microsoft Excel*. New York: Cambridge University Press.

Bayanpourtehrani, G., and K. Sylwester. 2012. "Female Labour Force Participation and Religion: A Cross-country Analysis." *Bulletin of Economic Research* 65 (2): 107–133. doi:10.1111/j.1467-8586.2012.00443.x.

Bernardelli, L. V., M. A. Kortt, and E. Michellon. 2020. "Religious Affiliation and Earnings: Evidence From." *Review of Social Economy* 78 (2): 234–255. doi:10.1080/00346764.2019.1602281.

Biltagy, M. 2018. "Gender Wage Disparities in Egypt: Evidence from ELMPS 2006 and 2012." *The Quarterly Review of Economics and Finance* 14: 14–23.

Bitzan, J. D. 2009. "Do Sheepskin Effects Help Explain Racial Earnings Differences?" *Economics of Education Review* 28 (6): 759–766. doi:10.1016/j.econedurev.2008.10.003.

Blackaby, D. H., D. G. Leslie, P. D. Murphy, and N. C. O'Leary. 2002. "White/Ethnic Minority Earnings and Employment Differentials in Britain: Evidence from the LFS." *Oxford Economic Papers* 54 (2): 270–297. doi:10.1093/oep/54.2.270.

Blinder, A. 1973. "Wage Discrimination: Reduced Form and Structural Estimates." *Journal of Human Resources* 8 (4): 436–455. doi:10.2307/144855.

Brenner, R., and N. M. Kiefer. 1981. "The Economics of Diaspora: Discrimination and Occupational Structure." *Economic Development and Cultural Change* 29 (3): 517–534. doi:10.1086/451269.

Chaaban, J. 2010. "Job Creation in the Arab economies: navigating through difficult waters." *UNDP Research Paper Series*.

Chaaban, J. 2013. "Expanding youth opportunities in the Arab region." *UNDP Research Paper Series*.

Chernozhukov, V., I. Fernandez-Val, and B. Melly. 2013. "Inference on Counterfactual Distributions." *Econometrica* 81 (6): 2205–2268.

Chiswick, B. R. 1988. "Differences in Education and Earnings across Racial and Ethnic Groups: Tastes, Discrimination, and Investments in Child Quality." *The Quarterly Journal of Economics* 103 (3): 571–597. doi:10.2307/1885546.

Clark, K., and S. Drinkwater. 2007. "Segregation Preferences and Labour Market Outcomes." *Economics Letters* 94 (2): 278–283. doi:10.1016/j.econlet.2006.07.001.

Clark, K., and S. Drinkwater. 2009. "Dynamics and Diversity: Ethnic Employment Differences in England and Wales, 1991-2001." *Research in Labor Economics* 29: 299–333.

Dah, A., and A. Fakih. 2016. "Decomposing Gender Wage Differentials Using Quantile Regression: Evidence from the Lebanese Banking Sector." *International Advanced Economic Research* 22 (2): 171–185. doi:10.1007/s11294-016-9574-z.

Daoud, Y., and N. Khattab. 2020. "Women, Labour Market Outcomes and Religion: Evidence from the British Labour Market." *Review of Social Economy*. doi:10.1080/00346764.2020.1739321.

Davidson, R., and E. Flachaire. 2008. "The Wild Bootstrap, Tamed at Last." *Journal of Econometrics* 146 (1): 162–169. doi:10.1016/j.jeconom.2008.08.003.

Dibeh, G., A. Fakih, and W. Marrouch. 2018. "Decision to Emigrate Amongst the Youth in Lebanon." *International Migration* 56 (1): 5–22. doi:10.1111/imig.12347.

Dibeh, G., A. Fakih, and W. Marrouch. 2019. "Employment and Skill Mismatch among Youth in Lebanon." *International Journal of Manpower* 40 (8): 1438–1457. doi:10.1108/IJM-02-2018-0073.

Driskell, J. E., R. Hogan, and E. Salas. 1987. "Personality and Group Performance." In *Review of Personality and Social Psychology*, edited by C. Hendrick, 91–112. Vol. 9

Duraisamy, M., and P. Duraisamy. 2016. "Gender Wage Gap across the Wage Distribution in Different Segments of the Indian Labour Market, 1983–2012: Exploring the Glass Ceiling or Sticky Floor Phenomenon." *Applied Economics* 48 (43): 4098–4111. doi:10.1080/00036846.2016.1150955.

El Khoury, M., and U. Panizza. 2005. "Social Mobility and Religion: Evidence from Lebanon." In *Research in the Social Scientific Study of Religion*, edited by R. L. Piedmont, 16. Loyola College, Maryland, USA, Loyola College, Maryland, USA.

ESCWA. 2012. *Economic Policy in the ESCWA Region and Its Impact on Employment*. United Nations, New York.

Esseily, F. 2017. "A Sociolinguistic Profile of English in Lebanon." *World Englishes* 36 (4): 684–704. doi:10.1111/weng.12262.

Fakih, A., and P. L. Ghazalian. 2015. "What Factors Influence Firm Perceptions of Labour Market Constraints to Growth in the MENA Region?" *International Journal of Manpower* 36 (8): 1181–1206. doi:10.1108/IJM-02-2014-0050.

Faour, M. A. 2007. "Religion, Demography, and Politics in Lebanon." *Middle Eastern Studies* 43 (6): 909–921. doi:10.1080/00263200701568279.

Feldmann, H. 2016. "Which Religions Still Affect Schooling? A Study of 143 Countries." *Comparative Sociology* 15 (4): 439–484. doi:10.1163/15691330-12341394.

Firpo, S., N. M. Fortin, and T. Lemieux. 2009. "Unconditional Quantile Regressions." *Econometrica* 77 (3): 953–973.

Goldsmith, A. H., D. Hamilton, and J. W. Darity. 2006. "Shades of Discrimination: Skin Tone and Wages." *American Economic Review* 96 (2): 242–245. doi:10.1257/000282806777212152.

Grodsky, E., and D. Pager. 2001. "The Structure of Disadvantage: Individual and Occupational Determinants of the Black-White Wage Gap." *American Sociological Review* 66 (4): 542–567. doi:10.2307/3088922.

Guiso, L., P. Sapienza, and L. Zingales. 2003. "People's Opium? Religion and Economic Attitudes." *Journal of Monetary Economics* 50 (1): 225–282. doi:10.1016/S0304-3932(02)00202-7.

Hackett, C., D. McClendon, M. Potančoková, and M. Stonawski. 2016. *Religion and Education Around the World*.

Haouas, I., E. Sayre, and M. Yagoubi. 2012. "Youth Unemployment in Tunisia: Characteristics and Policy Responses." *Topics in Middle Eastern and African Economies* 14: 395–415.

Harb, N., and T. Rouhana. 2020. "Earnings and Gender Wage Gap in Lebanon: The Role of the Human and Social Capital." *Applied Economics* 52 (44): 4834–4849. doi:10.1080/00036846.2020.1745750.

Hijazi, R., T. R. Zoubeidi, I. Abdalla, M. Al-Waqfi, and N. Harb. 2010. "Labour Policy and Determinants of Employment and Wages in a Developing Economy with Labour Shortage." *Labour: Review of Labour Economics and Industrial Relations* 24 (2): 163–177. doi:10.1111/j.1467-9914.2010.00474.x.

Iannaccone, L. R. 1998. "Introduction to the Economics of Religion." *Journal of Economic Literature, Vol XXXVI*, no. 3: 1465–1496.

ILO. 2020. "International labor organization." ISCO. https://www.ilo.org/public/english/bureau/stat/isco/isco08/index.htm

Jawad, R. 2009. *Social Welfare and Religion in the Middle East: A Lebanese Perspective*. Bristol: Policy Press.

Kawar, M., and Z. Tzannatos. 2013. "Youth employment in Lebanon: skilled and jobless." *LCPS Policy Paper*.

Khalaf, R. 2020. "Hijabis are often denied jobs in Lebanon and it's not OK." https://stepfeed.com/hijabis-are-often-denied-jobs-in-lebanon-and-it-s-not-ok–6912

.

Koene, B., C. Boone, and J. M. Soeters. 1997. "Organizational Factors Influencing Homogeneity and Heterogeneity of Organizational Cultures." Cultural Complexity in Organizations, *Sage Publications, Inc, London, UK,* 271–293.

Kristof, A. L. 1996. "Person-Organization Fit: An Integrative Review of Its Conceptualizations, Measurements, and Implications." *Personnel Psychology* 49: 1–49. doi:10.1111/j.1744-6570.1996.tb01790.x.

Kristof-Brown, A. L. 2000. "Perceived Applicant Fit: Distinguishing between Recruiters' of Person-Job and Person-Organization Fit." *Personnel Psychology* 53 (3): 643–671. doi:10.1111/j.1744-6570.2000.tb00217.x.

Landes, D. S. 2015. *Wealth and Poverty of Nations*. UK: Hachette.

Lehrer, E. L. 1999. "Religion as a Determinant of Educational Attainment: An Economic Perspective." *Social Science Research* 28 (4): 358–379. doi:10.1006/ssre.1998.0642.

Lemieux, T. 2014. "Occupations, Fields of Study and Returns to Education." *Canadian Journal of Economics* 47 (4): 1047–1077. doi:10.1111/caje.12116.

Levanon, G., and R. Yaron. 2007. "Decomposing Wage Gap between Ethnic Group: The Case of Israel." *Southern Economic Journal* 73 (4): 1066–1087. doi:10.1002/j.2325-8012.2007.tb00818.x.

Levanos, I., and K. Pouliakas. 2011. "Wage Returns to University Disciplines in Greece: Are Greek Higher Education Degrees Trojan Horses?" *Education Economics* 19 (4): 411–445. doi:10.1080/09645290903546363.

Lewis, E., and B. Redd. 2020. "LAU and Mount Lebanon hospital break ties following a controversy over alleged discrimination." *L'Orient Today*. https://today.lorientlejour.com/article/1237291/lau-and-mount-lebanon-hospital-break-ties-following-a-controversy-over-alleged-discrimination-against-veiled-nursing-students.html

Lindley, J. 2002. "Race or Religion? The Impact of Religion on the Employment and Earnings of Britain's Ethnic Communities." *Journal of Ethnic and Migration Studies* 28 (3): 427–442. doi:10.1080/13691830220146536.

Longhi, S., C. Nicoletti, and L. Platt. 2013. "Explained and Unexplained Wage Gaps across the Main Ethno-religious Groups in Great Britain." *Oxford Economic Papers* 65 (2): 471–493. doi:10.1093/oep/gps025.

Machado, J. A., and J. Mata. 2005. "Counterfactual Decomposition of Changes in Wages Distribution Using Quantile Regresssion." *Journal of Applied Econometrics* 20 (4): 445–465. doi:10.1002/jae.788.

Maitra, P. 2003. "Schooling and Educational Attainment: Evidence from Bangladesh." *Education Economics* 11 (2): 129–153. doi:10.1080/09645290210131665.

McCleary, R. M., and R. J. Barro. 2006. "Religion and Economy." *Journal of Economic Perspectives* 20 (2): 49–72. doi:10.1257/jep.20.2.49.

Meyer, J. P., T. D. Hecht, H. Gill, and L. Toplonytsk. 2010. "Person–Organization (Culture) Fit and Employee Commitment under Conditions of Organizational Change: A Longitudinal Study." *Journal of Vocational Behavior* 76 (3): 458–473. doi:10.1016/j.jvb.2010.01.001.

Mincer, J. 1958. "Investment in Human Capital and Personal Income Distribution." *Journal of Political Economy* 66 (4): 281–302. doi:10.1086/258055.

Mukhopadhyay, S. 2011. "Religion, Religiosity and Educational Attainment of Immigrants to the USA." *Review of Economics of the Household* 9 (4): 539–553. doi:10.1007/s11150-010-9088-z.

Ñopo, H., J. Saavedra, and M. Torero. 2007. "Ethnicity and Earnings in a Mixed-Race Labor Market." *Economic Development and Cultural Change* 55 (4): 709–734. doi:10.1086/516762.

O'Neil, M. L., and M. H. Bilgin. 2013. "Religion as a Factor Influencing Turkish Women's Decision to Work." *Journal of International Women's Studies* 14 (3): 163–173.

Oaxaca, R. L. 1973. "Male-female Wage Differentials in Urban Labor Markets." *International Economic Review* 61: 5–21.

Paul, P. J., II. 1994. *John Paul Ii*. http://www.vatican.va/content/john-paul-ii/en/speeches/1994/october/documents/hf_jp-ii_spe_19941001_ambasciatore-libano.html

Stampini, M., and A. verdier-Chouchane. 2011. "Labour Market Dynamics in Tunisia: The Issue of Youth Unemployment." *African Development Bank Working Paper* 123.

Steen, T. P. 1996. "Religion and Earnings: Evidence from the NLS Youth Cohort." *International Journal of Social Economics* 23 (1): 47–58. doi:10.1108/03068299610108872.

Steen, T. P. 2004. "The Relationship between Religion and Earnings: Recent Evidence from the NLS Youth." *International Journal of Social Economics* 31 (5/6): 572–581. doi:10.1108/03068290410529399.

Steen, T. P. 2005. "Is There an Earnings Premium for Catholic Women? Evidence from the NLS Youth Cohort." *Faith & Economics* 45 (Spring): 21–39.

Tansel, A., and E. O. Acar. 2016. "The formal/informal employment earnings gap: evidence from Turkey." Inequality after the 20th Century: Papers from the Sixth ECINEQ Meeting, Université du Luxembourg Campus, Kirchberg, Luxembourg. Emerald Group Publishing Limited.

Tansel, A., H. I. Keskin, and Z. A. Ozdemir. 2020. "Public-private Sector Wage Gap by Gender in Egypt: Evidence from Quantile Regression on Panel Data, 1998–2018." *World Development* 135: 105060. doi:10.1016/j.worlddev.2020.105060.

Tekgüç, H., D. Eryar, and D. Cindoğlu. 2017. "Women's Tertiary Education Masks the Gender Wage Gap in Turkey." *Journal of Labor Research* 38 (3): 360–386. doi:10.1007/s12122-017-9243-x.

Tomes, N. 1983. "Religion and the Rate of Return on Human Capital: Evidence from Canada." *Canadian Journal of Economics* 16 (1): 122–138. doi:10.2307/134981.

Tomes, N. 1999. "Human Capital and Culture: Analyses of Variations in Labor Performance." *American Economic Review* 75 (2): 245–250.

United States Department of State. 2019. *2019 Report on International Religious Freedom: Lebanon, United States Department of State, Office of International Religious Freedom*.

Van Vianen, A. E. 2000. "Person-Organization Fit: The Match between Newcomers' and Recruiters' Preferences for Organizational Culture." *Personnel Psychology* 53 (1): 113–149. doi:10.1111/j.1744-6570.2000.tb00196.x.

Wooldridge, J. M. 2020. *Introductory Econometrics, A Modern Approach*. Boston: Cengage.

Table A1. Variables' measurement

Variable	Description
(1) **Age**	In years
(1) **Gender**	= 1 if female, = 0 for male
(1) **Single**	= 1 if single, = 0 otherwise
(1) **EDUC**	Number of years of education
(1) **UNI1**	UNI1 = 1 if the individual has earned university education from a tier-one university, = 0 otherwise. We classify the three top universities in Lebanon, the Western European universities, and the North American universities as tier-one universities.
(1) **EXP**	The number of years of experience since graduation
(1) **LangE**	LangE is a dummy variable. It is = 1 if the individual classifies himself/herself as very good or good in English, = 0 other wise.
(1) **LangF**	LangF is a dummy variable. It is = 1 if the individual classifies himself/herself as very good or good in French, = 0 other wise.
(1) **pol**	Is a scale variable running from 1 to 5 indicating the strength of the connection to a politician, (1= very weak connection, 5 = very strong connection)
(1) **WCateg1**	= 1 if the individual holds an elementary or operator position, = 0 otherwise.
(1) **WCateg2**	= 1 if the individual holds a craft, sales, clerical, or technical position, = 0 otherwise.
(1) **WCateg3**	= 1 if the individual holds a professional or managerial position, = 0 otherwise.
(1) **WEast**	= 1 if the individual works in the Easter Suburb of Beirut, = 0 otherwise.
(1) **WBeirut**	= 1 if the individual works in the city of Beirut, = 0 otherwise.
(1) **WSouth**	= 1 if the individual works in the Southern Suburb of Beirut, = 0 otherwise.