

On Decomposing the Changes in Wage Inequality in Palestine over Time

Hatem JEMMALI¹, Rabeh MORRAR², Fernando RIOS-AVILA³

Rachel Dweikat

Abstract

This paper examines the changes in wage inequality over the period 2009-2016 in Palestine's labor market. The wage inequality, assessed by the Gini coefficient, bottom and upper quintiles and middle inter-quintiles, is found to be in increasing trend over years. Using an inter-temporal decomposition approach, we decompose the changes in wage inequality into a composition effect explained by changes in demographic and labor market characteristics, and a wage structure effect attributable to unequal returns to those characteristics. We find evidence that the composition effect explained by changes in industry composition, region and refugee status dominates the wage structure effect in explaining the rise of wage inequality over the first two years. Instead, the results indicate that the wage structural effect of age and discrimination against female workers have a significant and positive contribution to the increase of the Gini coefficient and upper quintile over the remaining years of the period.

Keywords: Gini coefficient, Wage inequality, KOB decomposition, Palestine

JEL Classifications: D63, I31, J31

1. Introduction

The impact of inequality on economic efficiency and standards of living around the world is an issue of increasing concern to politicians, economists and the global community. There is a growing consensus that current levels of inequality worldwide are not only morally unacceptable, but also economically and politically corrosive (Deaton, 2013; UNCTAD, 2013, 2014; Stiglitz, 2012). A wide range of studies in the literature have demonstrated how inequality hinders growth and development efforts and slows the poverty reduction process (see Ravallion, 1997, 2007; Voitchovsky, 2008). In Palestine, which is not an exception, inequality has been shown to have an impact on multiple dimensions of society including income, education, health, and other components of wellbeing. Thus, it is vital for policy and decision makers to have a comprehensive understanding of the structure of inequality and its evolution over time.

¹Higher Institute of Accountancy and Administration of Enterprises, University of Manouba, Tunisia. Email: hatemjemmali79@gmail.com, Tel: +216 97 753 648.

²An-Najah National University, Nablus, Palestine. Email: rabehmorrar@gmail.com

³Levy Economics Institute of Bard College, Annandale-on-Hudson, New York, USA. Email: friosavi@levy.org

The available evidence suggests that inequality in labor market earnings plays a prominent role in determining the evolution of inequality worldwide. Several studies show that changes in earnings inequality are a main determinant of changes in income inequality in developing countries.⁴ Some of these studies found that that labor income accounts for around 80 percent of total household incomes. We assume that this relationship holds in the Palestinian context, as wages are the predominant component of total household incomes. It's well-known that Palestine experienced a remarkable decline in consumption inequality during the last decade, where the value of the Gini coefficient fell to 34.0 percent in 2017 compared to 40.3 percent in 2011 (PCBS, 2018). But when looking at the changes of labor income inequality assessed by the Gini index and the wage share held by the top 20%, we find an increasing trend over the same period of time.⁵

This study aims to investigate which factors are driving this increase in labor income inequality in Palestine during the period 2009-2016 using a generalization of the Kitagawa-Oaxaca-Blinder decomposition proposed by [Firpo, Fortin, and Lemieux \(2009,2018\)](#) on wages/salaries and a panel of Labor Force Surveys conducted by the Palestinian Central Bureau of Statistics (PCBS) for the years 2009–2016. It may introduces some relevant policy implications for the policymakers by revealing how economic and social factors, individual worker characteristics as well as labor market characteristics might contribute to the observed wage inequality in Palestine. It's worth noting in this regard that we are not aware of any previous study focusing on Palestine or other countries in the region using this inter-temporal decomposition approach to analyze changes in wage inequality over time.

The remainder of the paper is structured as follows: Section 2 briefly presents an overview on the Palestinian labor market and the trend of wage inequality over the last decade . Section 3 introduces the data and methodology used in the paper. Section 4 summarizes the main regression and decomposition results, and Section 5 presents the conclusions and provides some policy implications.

2. A look at wage inequality in Palestine

It's widely recognized in Palestine and elsewhere that wages, defined as labor income, represent one of the most important sources of household income. Accordingly, any change in the labor

⁴ For further evidence regarding the Latin American context, see [Azevedo, Inchauste, and Sanfelice \(2013\)](#) and [Gasparini and Lustig \(2011\)](#).

⁵ According to our own calculations based on a panel of Labor Force Surveys conducted by the Palestinian Central Bureau of Statistics (PCBS) for the years 2009–2016.

income distribution has a direct effect on income inequality across the population. We present a brief overview of the dynamics of Palestinian labor market in order to provide context to the following empirical analysis on labor income inequality.

It's known that the Palestinian economy is characterized by unique challenges and structural features, in part due to the fact that it has been an economy under occupation since the beginning of the Israeli occupation in 1967. The real economy is tangibly shaped by the occupation, as is reflected by the severe recessions that occurred in Palestine following conflicts with Israel in 2000-2002, 2005-2006 and 2013-2014, and the persistently high unemployment rates that have plagued the labor market since 2000 when the Government of Israel tightened closure and movement restriction policies following the outbreak of the Second Intifada. In 2016, employment rates in the West Bank and Gaza still had not recovered to levels pre-Second Intifada and Israel's tightened occupation policies (ILO, 2018).

Several labor market distortions arise from Israel's occupation, in particular from policies related to employment in Israel. Certain imbalances between the Palestinian and Israeli labor markets put Palestinian workers at a disadvantage; the average wage is four times higher in Israel, Israel's labor force participation rate is significantly higher, and unemployment rates in Israel are low (about 4.5 percent in 2016). Palestinian workers remain highly dependent on Israel's labor market due to its higher returns, low domestic employment opportunities, dependencies codified by the 1994 Paris Protocol, and travel restrictions on workers that limit labor opportunities in outside countries. Higher remuneration and employment in Israel has distorted the return on education for Palestinians, as young workers drop out of educational institutions to work in Israel and the settlements, resulting in a cohort of uneducated, low-skilled Palestinian workers receiving high wages in Israel compared to higher skilled, educated Palestinians working domestically (ILO, 2018).

There are a number of Israeli labor policies that apply to Palestinian workers. The work permit system grants Palestinians permission to work in Israel conditional on a set of personal status criteria and security clearance requirements. During the early 2000s, Palestinian workers were required to be married with children and more than 35 years old. Requirements change frequently according to Israel's priorities, and access to the labor market can cease completely during conflict periods. As of 2014, the requirements stipulated that workers be married and aged 24 years or older. The permit system also restricts Palestinians to certain low-skill sectors, specifically the construction sector (Agbahey et al., 2020).

Yet, with more than 117,600 Palestinians estimated to be employed in Israel in 2016, up from 87,000 in 2012, only about 62 percent of workers are permitted (ETF, 2014; PCBS 2016). Similarly, as of 2007, Israeli employers were required to follow Israel's labor laws in the West Bank; however, issues remain regarding workers' rights and the application of minimum wage for Palestinian workers (ILO, 2018).

Workers from Gaza, 40 percent of whom used to work in Israel, were effectively barred from Israel as a result of the 2006 blockade. The blockade led to a major deterioration in socioeconomic conditions, including in particular, youth employment. For example, nearly all employed youth (94 percent) have informal jobs and are working either without a contract (68 percent of workers) or with a limited duration contract (13 percent) (ILO, 2014). The closure of the economy in Gaza has led to a substantial increase in informality in the Gaza's private sector overall, in addition to its deleterious effects on the labor market through high unemployment and low wages.

In the West Bank and the Gaza Strip, a number of factors are stifling wage growth, including weak bargaining power for workers, low output and competitiveness in productive sectors, and a high supply of unemployed individuals. Also putting downward pressure on wages and employment is the shift in the Palestinian economy away from sectors that drive economic growth. The manufacturing sectors share of GDP dropped from 21.3 percent in 1994 to 13.9 percent in 2016 and agriculture's share declined from 12 percent to 2.9 percent over the same period. The effect on wages is pronounced: In the West Bank, real wages consistently declined since 2004 before beginning to grow in 2015. In the Gaza Strip, real wages have shrunk substantially since 2008 (ILO, 2018).

A set of policies and institutions apply to the Palestinian labor market. Among these is the minimum wage policy instituted in 2012 by the Palestinian National Authority. The minimum wage was set at 1,450 ILS per month, 65 ILS per day, and 8.5 ILS per hour and came into effect at the beginning of 2013 (ETF⁶, 2014). Yet, about 126,500 workers still earn less than the minimum wage due to compliance and enforcement issues. There is also a set of unions representing Palestinian laborers' rights. Across the Palestinian Territories there are three primary labor unions, the largest of which is the Palestinian General Federation of Trade Unions, which represents about 350,000 workers (310,000 men and 40,000 women). Trade union membership in 2015 applied to about 236,000 workers (190,000 men and 46,000 women).

⁶ European Training Foundation

As of 2016, only 18.8 percent of workers were union members (25.7 percent of women and 17.5 percent of men). Disaggregated by region, membership rates are markedly higher in the Gaza Strip than in the West Bank (ILO, 2018).

The population of the Palestinian Territories is growing rapidly due to a fertility rate in 2013 of 4.1 live births/woman, a rate twice as high as the most economically advanced countries in the region (UNFPA, 2016). Yet as the population continues to expand, the labor market remains unable to absorb a sufficient number of new entrants. At the same time, the labor market is incompatible with the composition of the Palestinian population. Labor force participation of youth is low, with a high share of students comprising the working-age population. Albotmeh and Irsheid (2013) found that men and women remained out of the labor force to pursue education in the aftermath of the Second Intifada.

The female participation rate in Palestine is one of the lowest globally at 19.3 percent in 2016, although it grew from 17.4 percent in 2012 (Kock et al., 2012; ILO, 2018). There are multiple obstacles to participation in the labor force for females. On the supply side, women increasingly work as unpaid family members, and are four times more likely than men to hold this position, due to the weak care economy in Palestine and traditional gender divisions of labor. On the demand side, women face the challenges of high overall unemployment, a lack of affirmative policies for the hiring of women, and negative societal attitudes towards employing women. Despite being highly educated, the unemployment rate of female graduates from university is double the unemployment rate for male graduates. This suggests both a scarcity of positions in high-skilled fields as well as a preference for hiring men for these positions over women (ILO, 2018). Educated women increasingly tend to work in government positions, however the growth of public employment was capped under the Palestinian Reform and Development Plan 2008-10 and its successor for the years 2011-2013 at a yearly increase of just 3,000 jobs (Kock et al., 2012). Furthermore, women do not earn wages at a level on par with men. On average, women only earn 73 percent of men's daily wage (ILO, 2018). In this regard, Morrar and Rios-Avila (2021) who focused on the discrimination against refugees in the Palestinian labor market found that the gender pay gap in the country is entirely in favor of men for both refugee and non-refugee workers.

Under the aforementioned circumstances, which have profoundly impacted the Palestinian labor market, inequality among wage earners is found to have increased across time, particularly in the last three years (Figure 1). Most of this trend results from an increase in the concentration of wage earnings at the top end of the real monthly wage distribution (Figures 1a, 1b and 1c).

Between 2009 and 2013, the wage Gini coefficient for salaried workers remained stagnant around 32 percent. Starting in 2014, the inequality measure began to increase sharply to reach its highest level in 2016 (36.5 percent). This period of widening wage inequality coincided simultaneously with a sharp reduction in the share of the low- and medium- wage earners (the bottom 20% and the middle 20%-80%, respectively) and a concomitant increase in the share of the highest wage earners (the top 20%)

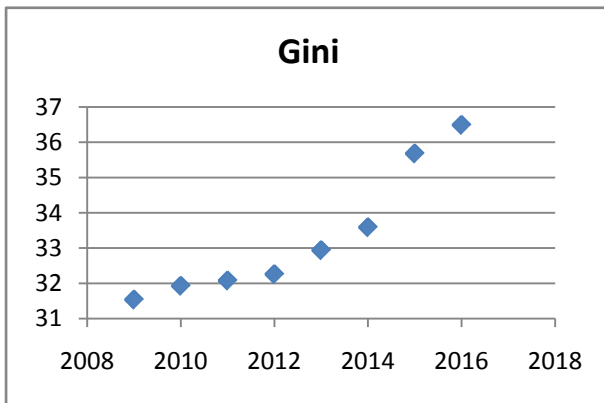


Figure 1a: Evolution of wage Gini coefficient

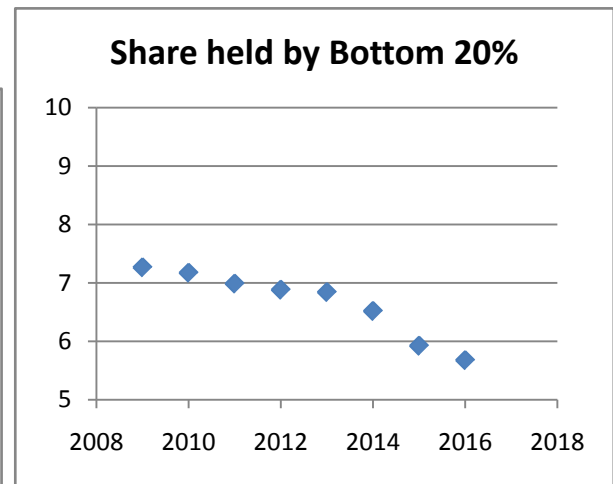


Figure 1b: Evolution of bottom quintile

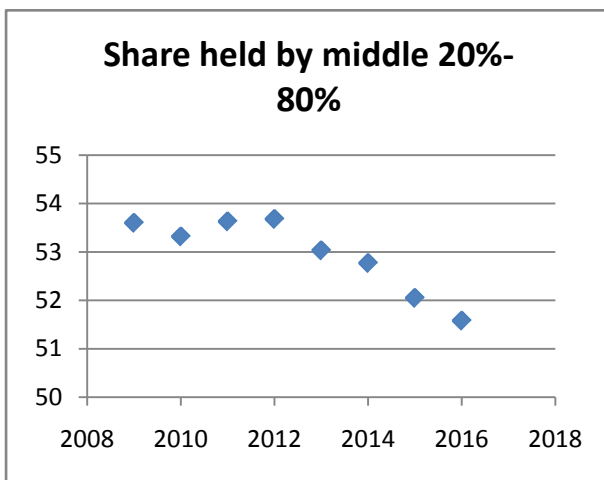


Figure 1c: Evolution of middle inter-quintiles

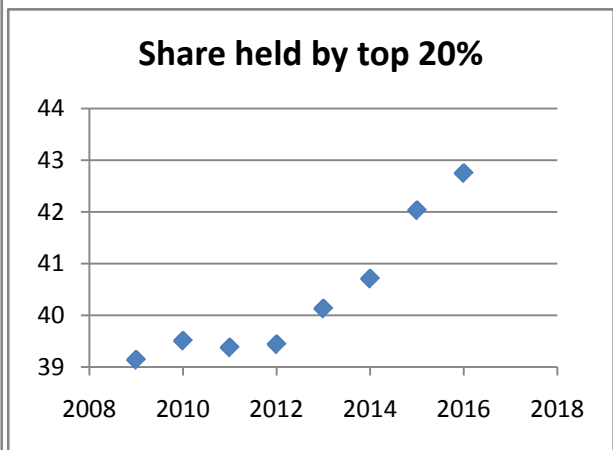


Figure 1d: Evolution of upper quintile

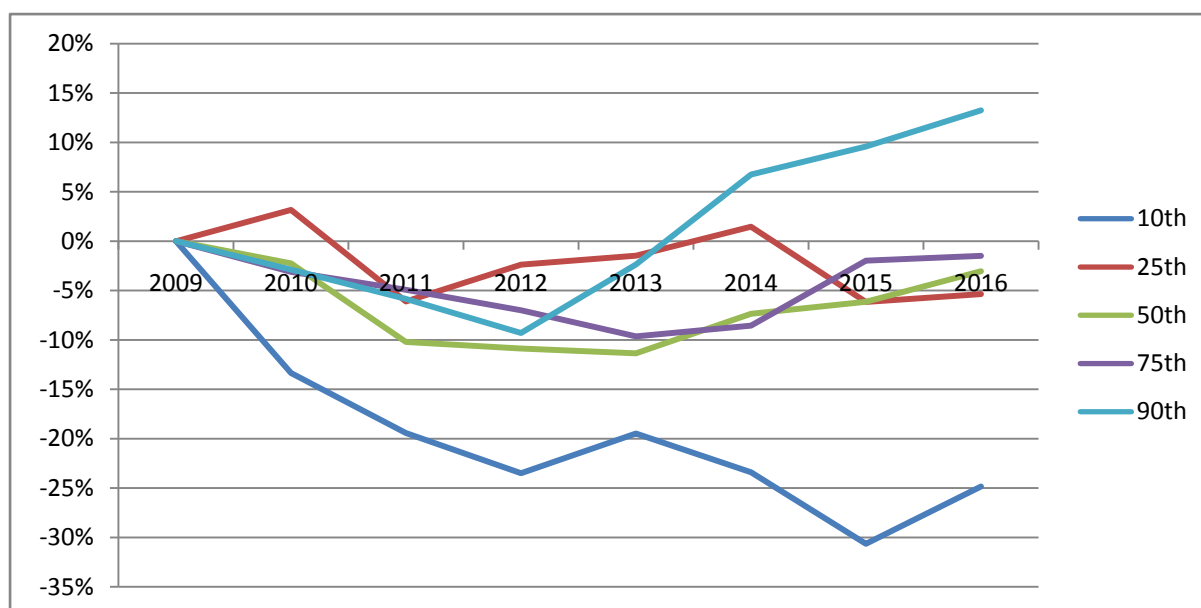


Figure 2: Evolution of some wage percentiles between 2009 and 2016

Furthermore, examining the evolution of some wage percentiles may reveals key changes in the structure of wage inequality over the considered period (Figure 2). First, real monthly wages at the bottom of the distribution (10th percentile) declined sharply in 2016 by 25 percent to below the 2009 level, while wages in the middle of the distribution (25th, 50th, and 75th percentiles) decreased only marginally across the second period (2014-2016). Second, the only wage percentile that show positive growth is the upper one (90th percentile) during the last three years of the period, which reaches 13 percent in 2016 below the initial year level. We look thereafter to explain empirically the causes of such changes in the wage inequality measures over the considered period.

3. Data and Methodology

3.1. Data and summary statistics

The paper uses the publicly available and nationally representative Palestinian Labor Force Survey (PLFS) collected annually by the Palestinian Central Bureau of Statistics (PCBS) for the years 2009 through 2016. While the sample design and the survey structure have been modified over the years, potentially leading to some inconsistencies in year-by-year comparisons, the information is sufficiently comparable and representative to make inferences at the national level. The different rounds of the survey provide holistic information on the size and structure of the Palestinian labor force (population aged 15 years and above) and the components of employment, unemployment and time-related underemployment.

For comparability across years, and sample representativity reasons, the considered sample for all years is restricted to adults ages 15 through 75 who received a salary or wages in exchange for their primary jobs. Despite the volatility of the rural labor market, the significant share of rural wage earners in the workforce (about 20 percent) warranted the inclusion of workers from both urban and rural areas in the sample. Following the practice of other labor market studies, we exclude self-employed, employers, and family workers from the sample, recognizing that including these groups may introduce selectivity bias issues (Heckman, 1979; Heckman et al., 2006). In addition, wages measured as monthly labor earnings from primary jobs, inclusive of all wage supplements, is adjusted for inflation using 2009 as the base year. The dependent variable in the regression and decomposition analysis is the log of real monthly wages, while the independent variables included consisting of both demographic and job-related variables. In order to improve the sample size for the empirical analysis, four two-year groups are considered (2009-2010, 2011-2012, ..., 2015-2016).

Table 1: Summary Statistics by year

	2009	2010	2011	2012	2013	2014	2015	2016
Age Group								
15-24	18.50%	17.80%	19.20%	19.20%	18.30%	19.00%	20.00%	20.10%
25-34	38.20%	37.70%	37.00%	37.00%	37.30%	35.90%	34.50%	33.90%
35-44	26.30%	26.90%	26.20%	26.30%	26.40%	26.40%	25.90%	25.80%
45-54	13.30%	13.80%	13.70%	13.90%	14.00%	14.50%	14.90%	15.40%
55-74	3.67%	3.88%	3.85%	3.62%	3.93%	4.24%	4.70%	4.84%
Sex (=Women)	18.10%	16.70%	16.60%	16.00%	15.70%	16.20%	16.20%	15.90%
Education Attainment								
primary	18.60%	19.20%	19.50%	19.20%	18.30%	17.00%	17.10%	17.00%
secondary	54.80%	53.80%	53.50%	54.50%	55.20%	56.20%	56.80%	56.40%
tertiary	26.60%	27.00%	27.00%	26.30%	26.60%	26.80%	26.10%	26.60%
Marital Status								
never married	27.60%	25.40%	29.80%	29.50%	26.70%	28.40%	31.70%	32.10%
ever married	72.40%	74.60%	70.20%	70.50%	73.30%	71.60%	68.30%	67.90%
Refugee Status								
Is Refugee=0	59.40%	31.80%	62.90%	59.60%	59.80%	60.50%	59.30%	59.10%
Is Refugee=1	40.60%	68.20%	37.10%	40.40%	40.20%	39.50%	40.70%	40.90%
Industry								
agriculture hunting & fishing mining quarrying & manufacturing	3.98%	4.27%	4.14%	4.21%	4.46%	4.07%	4.38%	4.22%
construction	11.40%	10.40%	11.60%	11.80%	11.90%	12.00%	12.40%	12.60%
commerce hotels & restaurants	13.60%	15.30%	16.40%	16.70%	18.30%	17.90%	18.10%	19.10%
transportation storage & communication	11.10%	11.90%	12.80%	13.00%	13.20%	13.70%	13.50%	14.00%
services & other branches	4.22%	4.78%	4.51%	4.93%	4.23%	3.61%	3.90%	4.05%
	55.70%	53.30%	50.60%	49.30%	47.90%	48.60%	47.60%	46.00%

Occupation								
High-skilled non-manual	39.20%	37.00%	36.50%	40.50%	40.20%	39.90%	39.40%	39.20%
Low-skilled non-manual	17.70%	16.90%	16.80%	13.90%	12.60%	14.20%	13.20%	12.70%
Skilled manual	22.60%	22.10%	22.60%	23.80%	25.20%	24.90%	25.50%	25.70%
Unskilled	20.50%	24.00%	24.10%	21.80%	22.10%	20.90%	21.90%	22.40%
Affiliated with a worker/vocational union								
	22.50%	19.80%	16.00%	33.80%	36.80%	36.10%	30.00%	22.20%
Vertical Mismatch								
Overeducated	13.10%	15.70%	15.90%	14.50%	15.60%	15.00%	15.90%	16.50%
Undereducated	39.10%	36.30%	36.30%	38.20%	36.70%	37.40%	36.30%	35.60%
Matching qualifications	47.80%	48.00%	47.80%	47.30%	47.80%	47.60%	47.80%	48.00%
Has a Contract								
	8.28%	6.83%	6.44%	5.42%	6.20%	6.74%	7.47%	7.20%
Region								
West Bank	68.70%	68.10%	66.60%	65.20%	66.20%	68.50%	65.90%	64.80%
Gaza strip	31.30%	31.90%	33.40%	34.80%	33.80%	31.50%	34.10%	35.20%
Urban/Rural								
Urban	69.60%	71.90%	72.60%	72.40%	71.50%	70.10%	70.70%	70.90%
Rural	19.70%	18.50%	17.70%	17.90%	19.30%	20.50%	19.80%	19.70%
Camp	10.70%	9.68%	9.67%	9.69%	9.19%	9.35%	9.51%	9.41%
Observations	18312	18958	20539	19391	19030	18168	18080	16944

Table 2: Summary Statistics by year group

	2009- 2010	2011- 2012	2013- 2014	2015- 2016
Age Group				
15-24	18.2%	19.2%	18.6%	20.1%
25-34	37.9%	37.0%	36.6%	34.2%
35-44	26.6%	26.2%	26.4%	25.8%
45-54	13.5%	13.8%	14.2%	15.1%
55-74	3.8%	3.7%	4.1%	4.8%
Sex (=Women)	17.4%	16.3%	15.9%	16.1%
Education Attainment				
Primary	18.9%	19.4%	17.6%	17.0%
Secondary	54.3%	54.0%	55.7%	56.6%
Tertiary	26.8%	26.7%	26.7%	26.4%
Marital Status				
never married	26.5%	29.6%	27.5%	31.9%
ever married	73.5%	70.4%	72.5%	68.1%
Refugee Status				
Is Refugee=0	45.5%	61.3%	60.2%	59.2%
Is Refugee=1	54.5%	38.7%	39.8%	40.8%
Industry				
agriculture hunting & fishing	4.1%	4.2%	4.3%	4.3%
mining quarrying & manufacturing	10.9%	11.7%	11.9%	12.5%
Construction	14.5%	16.6%	18.1%	18.6%
commerce hotels & restaurants	11.5%	12.9%	13.5%	13.8%
transportation storage & communication	4.5%	4.7%	3.9%	4.0%

services & other branches	54.5%	50.0%	48.3%	46.8%
Occupation				
High-skilled non-manual	38.1%	38.4%	40.0%	39.3%
Low-skilled non-manual	17.3%	15.4%	13.4%	12.9%
Skilled manual	22.4%	23.2%	25.1%	25.6%
Unskilled	22.3%	22.9%	21.5%	22.2%
Affiliated with a worker/vocational union	21.1%	24.6%	36.5%	26.2%
Vertical Mismatch				
Overeducated	14.4%	15.2%	15.3%	16.2%
Undereducated	37.7%	37.2%	37.0%	35.9%
Matching qualifications	47.9%	47.5%	47.7%	47.9%
Has a Contract	7.6%	6.0%	6.5%	7.3%
Region				
West Bank	68.4%	65.9%	67.3%	65.4%
Gaza strip	31.6%	34.1%	32.7%	34.6%
Urban/Rural	0.0%	0.0%	0.0%	0.0%
urban	70.7%	72.5%	70.8%	70.8%
rural	19.1%	17.8%	19.9%	19.7%
camp	10.2%	9.7%	9.3%	9.5%
Observations	37270	39930	37198	35024

Tables 1 and 2 above provides detailed summary statistics of a set of demographic and labor market characteristics that include age, gender, refugee status, education, industry, occupation, and region of residence across years and year groups. These statistics suggest that the Palestinian labor force has experienced compositional changes in terms of demographic characteristics. First, a decrease in the percentage of women in the workforce from 18.10 percent to 15.90 percent is revealed in Table 1, reflecting a contraction in female labor force participation during the considered period. Second, the labor force age structure shifted during the period due to increase in the percentage of both young and old workers in the labor market at the same time that the participation of workers aged between 24 and 44 decreased. In addition, the percentage of refugees in the workforce is relatively constant over the period (around 41 percent) except for the two years 2010 and 2011, when the percentage sharply increases and decreases drastically perhaps due to the Arab Spring.

The statistics further show a decrease in the share of workers who have attained only primary level education (18.60 percent to 17 percent) and an increase in the share of workers who received secondary education (54.80 percent to 56.40 percent), while the share of the highest educated workers remained stable over the period (around 27 percent). It is worth mentioning in this regard that the summary statistics reveal a clear increase of the share of overeducated workers in Palestinian labor market ranging from 13.10 percent to 16.50 percent while the

percentage of high skilled non manual workers remain stable, around 40% over the considered period. The statistics also suggest two notable changes to industry composition over the period. The percentage of workers in the agriculture, mining and construction industries increased significantly during the considered period, with the employment share of the construction sector expanding by about 5 percentage points in 2016 compared to 2009. In contrast, the percentage of workers in service industry decreased from 55.70 percent to 46 percent.

3.2. Methodology

Recentered Influence Function (RIF) regression, introduced by [Firpo, Fortin and Lemieux \(2009\)](#) for the analysis of unconditional quantiles, can be used to analyze how small changes in the distribution of characteristics may affect any unconditional distributional statistic of interest. Furthermore, the extension to decomposition analysis proposed by [Firpo, Fortin and Lemieux \(2018\)](#) can be used to analyze changes in wage distribution over time. We implement these procedures to analyze changes in the Gini coefficient and provide results across quintiles and selected inter-quintiles. While the first inequality statistic provides an overview of the change in earning concentration across time, the bottom and upper quintile, and middle inter-quintiles provide a better and more detailed picture of changes in inequality along the wage distribution.

Using data from the Palestinian Labor Force Surveys for the years 2009 through 2016⁷, we aim to analyze observed trends in wage levels and distribution among salary workers in Palestine. In this regard, a generalization of the Kitagawa-Oaxaca-Blinder decomposition approach ([Kitagawa, 1955](#); [Blinder 1973](#); [Oaxaca 1973](#)), proposed by [Firpo, Fortin, and Lemieux \(2018\)](#) will be used to analyze how changes in socio-economic and demographic factors across time may explain the changes observed in wage distribution over the considered period. The method, which allows us to extend the decomposition analysis to statistics other than the mean, comprises two main steps put forward by [Canavire-Bacarreza and Rios-Avila \(2017\)](#) and [Rios-Avila \(2020\)](#) : The first one involves building an appropriate counterfactual distribution with which the wage distribution can be compared across the considered years⁸, abstracting from changes in individual and market characteristics. The second step uses the constructed counterfactual wage distributions in order to obtain a decomposition of the inequality changes of any statistic of interest (i.e., q , the unconditional

⁷ It's noteworthy that while the sample design and size and the survey structure has changed over the different years, the information could still be used to make inferences at the national level.

⁸ Years could be grouped in a set of main trends for instance: 2009-2010 and 2011-2012 ...

quantile) into portions explained by measured differences in individual and work features (called the “*composition effect*”) and by differences in the coefficients or “returns” on observables (called the “*wage structure effect*”) as shown below.

More specifically, consider the case with two periods, $t = 0, 1$, a linear approximation for the conditional expectation of the RIF is constructed as follows, using all data for a given period:

$$E(RIF(w_i, F_t; q)|X, t) = X' \gamma_t$$

Where F_t denotes the unconditional distribution of wages w_i at time t . The set of parameters can then be estimated as:

$$\hat{\gamma}_t = \left(\sum_{i \in t} X_i' X_i \right)^{-1} \sum_{i \in t} X_i' \widehat{RIF}(w_i, F_t; q) \text{ for } t = 0, 1$$

For the estimation of the counterfactual, we have

$$E(RIF(w_i, F_c; q)|X, c) = X' \gamma_c$$

Where the counterfactual unconditional distribution F_c can be approximated using a re-weighted approach such that the counterfactual coefficients γ_c can be defined as:

$$\widehat{F}_c \sim \int f_0(w_i|X_i) \widehat{\omega}_c(X_i) f_0(x) dx$$

$$\hat{\gamma}_c = \left(\sum \widehat{\omega}_c(X_i) \times X_i' X_i \right)^{-1} \sum \widehat{\omega}_c(X_i) X_i' \widehat{RIF}(w_i, F_c; q)$$

Where \widehat{F}_c is the approximation for the counterfactual distribution, $f_t(w_i|X_i)$, is the conditional distribution of wages in period t , and $f_t(x)$ is the distribution of characteristics in period t . $\widehat{\omega}_c(X_i)$ is the inverse probability weight estimated in the first step for the identification of counterfactual distributions, and $\hat{\gamma}_c$ are the coefficients associated with that counterfactual distribution. For our analysis, we choose $\widehat{\omega}_c(X_i)$ such that counterfactual distribution approximates what the wage distribution in period 0 would have looked like, if the population had the same characteristics distribution as in period 1. The detailed decomposition of the above two effects could be obtained as follows:

$$\Delta S_q = \bar{X}'_1 \hat{\gamma}_1 - \bar{X}'_c \hat{\gamma}_c \text{ (wage structure effect) and}$$

$$\Delta X_q = (\bar{X}_c \hat{\gamma}_c - \bar{X}_0 \hat{\gamma}_0) \text{ (composition effect)}$$

Where \bar{X}'_k indicates the average characteristics at period 0 or 1, or for the counterfactual distribution.

4. Results

As mentioned above, the RIF regression and RIF decomposition, commonly used analytical tools in the empirical inequality literature, can be used to analyze any statistic that describes changes in wage distribution. Given the interest of this paper in investigating the trend of wage inequality in the Palestinian labor market over the considered period, we implemented the procedure to analyze what factors explain the changes in the Gini coefficient and three quintile share ratios (bottom 20%, middle 20%-80%, and top 20%). The first statistic provides an overview of the change in wage concentration across time, while the quintiles share ratios give a more detailed picture of changes in inequality along the wage distribution.

4.1. Unconditional Quantile Regressions

In order to highlight the importance of a set of covariates, shown in Table 1, in explaining the changes in both the Gini index and the three quintile share ratios, we conduct RIF regressions with and without controls across the years 2010 to 2016. The first year, 2009, is chosen as the base year.⁹ The results of these regressions with different inequality measures are shown in Table 3. The estimated coefficients in each year can then be used to test if observed differences in inequality over the considered period change significantly when controlling for other factors.

Table 3: Summary Statistics by year

	GINI		Share held by Bottom 20%		Share held by middle 20%-80%		Share held by top 20%	
	w/o Controls	w/ Controls	w/o Controls	w/ Controls	w/o Controls	w/ Controls	w/o Controls	w/ Controls
2010	0.385 (0.304)	0.642** (0.298)	-0.094 (0.097)	-0.207** (0.092)	-0.278 (0.221)	-0.399* (0.222)	0.372 (0.258)	0.606** (0.257)
2011	0.531* (0.282)	-0.314 (0.270)	-0.279*** (0.094)	0.092 (0.088)	0.033 (0.204)	0.070 (0.201)	0.246 (0.238)	-0.162 (0.232)
2012	0.717** (0.289)	-0.217 (0.280)	-0.385*** (0.094)	0.005 (0.089)	0.080 (0.210)	0.159 (0.209)	0.306 (0.245)	-0.164 (0.241)
2013	1.395*** (0.299)	0.378 (0.293)	-0.426*** (0.091)	-0.060 (0.087)	-0.567** (0.222)	-0.377* (0.222)	0.992*** (0.258)	0.437* (0.256)
2014	2.045*** (0.295)	1.204*** (0.284)	-0.750*** (0.092)	-0.492*** (0.087)	-0.826*** (0.215)	-0.599*** (0.213)	1.576*** (0.250)	1.091*** (0.246)
2015	4.138*** (0.330)	2.680*** (0.320)	-1.343*** (0.095)	-0.827*** (0.089)	-1.551*** (0.250)	-1.230*** (0.248)	2.895*** (0.288)	2.058*** (0.283)
2016	4.950*** (0.310)	3.249*** (0.297)	-1.589*** (0.094)	-0.935*** (0.088)	-2.019*** (0.236)	-1.757*** (0.231)	3.608*** (0.273)	2.692*** (0.265)

Standard errors in parentheses

Note: * $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$

Coefficients are the differences in the indicators with respect to the baseline year (2009)

⁹ Regression without controls provides the distributional statistic itself.

The estimation results shown in this table reveal a significant increase of the Gini coefficient during the last three years of the period compared to the base year. Considering no other covariate except year, the Gini coefficient is found to increase about 5 points between 2009 and 2016. Such a sizeable increase could be explained by the significant decline of both the bottom and middle quintile share ratios (almost -1.6 and -2 points, respectively) and the concomitant rise of the share held by the top 20%, which increases 3.6 points for the same year.

Looking at the same period (2014-2016), the results show that some of the observed changes in the inequality statistics are explained by the changes in the characteristics after including them in the models. Comparing the estimated parameters of regressions with and without covariates provides some evidence regarding the role of the covariates in reducing the rise of inequality, mainly during the second period. For instance in 2016, the first two columns of table 3 show that the increase of the Gini coefficient is reduced by almost a third when taking into account the set of aforementioned covariates. Similarly for the others inequality measures regressions, including these covariates appear to contribute in reducing both the decrease of welfare share held by the bottom and middle classes and the rise of the share held by the upper class.

Regarding the first period (2010-2013), Table 3 presents ambiguous results. In 2010, the Gini coefficient and the share held by the top 20% increased by about 0.6 points compared to the base year when considering the set of covariates and this change is statistically significant (add test statistic). Without covariates, the estimated coefficients are found to be insignificant. While for 2011 and 2012, only regressions without covariates on the Gini coefficient and first quintile share ratios provide significant parameters. Similarly, in 2013, including the covariates does not contribute significantly in explaining the rise of wage inequality as measured by the Gini coefficient.

To better understand the changes in the wage structure in Palestine during the considered period, Table 4 presents the RIF regressions for the selected inequality statistics for each of the four two-year groups. The estimated coefficients of the regressions suggest how the trends of returns on different characteristics have changed overtime. Overall, the regression coefficients for some of the explanatory variables (age, gender, some industrial and occupational variables ...) remain significant with the same sign over the period, mainly for the regression on the Gini coefficient.

Table 4: RIF Regressions on selected inequality statistics

	Gini				Share held by Bottom 20%				Share held by middle 20%-80%				Share held by top 20%			
	2009-2010	2011-2012	2013-2014	2015-2016	2009-2010	2011-2012	2013-2014	2015-2016	2009-2010	2011-2012	2013-2014	2015-2016	2009-2010	2011-2012	2013-2014	2015-2016
Age Group (base 15-24)																
25-34	-2.750*** (0.459)	-3.447*** (0.380)	-3.215*** (0.420)	-1.670*** (0.464)	1.192*** (0.178)	1.230*** (0.167)	1.233*** (0.161)	0.822*** (0.157)	-0.201 (0.307)	0.791*** (0.254)	0.349 (0.290)	-0.613* (0.342)	-0.990*** (0.359)	-2.021*** (0.289)	-1.583*** (0.334)	-0.209 (0.391)
35-44	-1.156** (0.529)	-1.225*** (0.457)	-2.286*** (0.485)	-2.137*** (0.615)	0.632*** (0.193)	0.321* (0.179)	0.498*** (0.174)	0.915*** (0.180)	-0.129 (0.365)	1.524*** (0.325)	1.528*** (0.349)	0.639 (0.479)	-0.503 (0.426)	-1.845*** (0.369)	-2.026*** (0.401)	-1.554*** (0.544)
45-54	0.592 (0.598)	1.305** (0.540)	0.899 (0.585)	-0.880 (0.647)	0.395* (0.203)	-0.205 (0.188)	-0.334* (0.186)	0.454** (0.187)	-1.454*** (0.428)	0.133 (0.397)	0.280 (0.441)	0.564 (0.511)	1.059** (0.500)	0.0720 (0.454)	0.0535 (0.506)	-1.017* (0.581)
55-74	8.076*** (1.494)	6.027*** (1.057)	3.207*** (0.987)	1.367 (1.039)	-1.134*** (0.309)	-0.891*** (0.261)	-0.888*** (0.254)	-0.0755 (0.238)	-6.196*** (1.154)	-3.388*** (0.817)	-0.800 (0.780)	-0.213 (0.853)	7.330*** (1.332)	4.280*** (0.944)	1.687* (0.911)	0.289 (0.972)
female	3.104*** (0.470)	4.892*** (0.410)	5.324*** (0.445)	6.504*** (0.529)	-2.367*** (0.155)	-3.035*** (0.147)	-2.978*** (0.145)	-3.145*** (0.148)	0.857*** (0.328)	0.257 (0.283)	0.768** (0.322)	-0.250 (0.398)	1.510*** (0.387)	2.778*** (0.332)	2.210*** (0.376)	3.395*** (0.457)
Education Attainment (baseline Primary)																
secondary	-2.227*** (0.551)	-1.807*** (0.472)	-4.209*** (0.527)	-2.887*** (0.607)	0.552** (0.218)	0.495** (0.210)	0.734*** (0.195)	0.554*** (0.212)	1.237*** (0.375)	1.357*** (0.311)	2.864*** (0.378)	2.327*** (0.457)	-1.789*** (0.427)	-1.852*** (0.351)	-3.597*** (0.424)	-2.880*** (0.510)
tertiary	-3.803*** (0.944)	-2.512*** (0.828)	-6.169*** (0.868)	-5.041*** (1.105)	0.797** (0.386)	0.365 (0.376)	0.566* (0.339)	0.636* (0.382)	2.850*** (0.660)	3.805*** (0.553)	5.694*** (0.608)	5.509*** (0.827)	-3.646*** (0.728)	-4.170*** (0.617)	-6.260*** (0.677)	-6.144*** (0.926)
Single	4.510*** (0.418)	4.530*** (0.358)	2.559*** (0.379)	2.272*** (0.460)	-1.299*** (0.149)	-1.483*** (0.139)	-0.594*** (0.135)	-0.503*** (0.138)	-1.754*** (0.292)	-1.734*** (0.254)	-1.186*** (0.275)	-1.495*** (0.359)	3.052*** (0.340)	3.218*** (0.289)	1.780*** (0.316)	1.997*** (0.407)
Is a Refugee	-0.329 (0.330)	-1.585*** (0.289)	-2.429*** (0.299)	-2.669*** (0.360)	0.321*** (0.097)	0.711*** (0.103)	1.054*** (0.098)	1.085*** (0.104)	-0.287 (0.247)	0.103 (0.211)	0.565** (0.228)	0.738*** (0.284)	-0.0337 (0.286)	-0.814*** (0.240)	-1.619*** (0.259)	-1.824*** (0.321)
Industry (baseline Services)																
agriculture hunting & fishing	11.90***	13.25***	13.19***	12.56***	-5.919***	-5.417***	-5.211***	-4.442***	0.349	-2.197***	-2.495***	-3.303***	5.570***	7.614***	7.706***	7.745***

	(0.640)	(0.588)	(0.618)	(0.682)	(0.300)	(0.288)	(0.290)	(0.257)	(0.395)	(0.376)	(0.398)	(0.516)	(0.471)	(0.426)	(0.460)	(0.583)
mining quarrying & manufacturing	3.071***	5.720***	3.223***	2.572***	-2.259***	-2.300***	-1.264***	-1.383***	2.297***	-0.595	0.264	1.440***	-0.0375	2.894***	1.000**	-0.0575
	(0.578)	(0.517)	(0.551)	(0.620)	(0.204)	(0.189)	(0.183)	(0.185)	(0.413)	(0.372)	(0.411)	(0.485)	(0.477)	(0.423)	(0.468)	(0.548)
construction	3.836***	8.158***	11.90***	14.92***	-1.964***	-2.603***	-3.114***	-3.803***	0.950**	-1.864***	-6.127***	-7.257***	1.014**	4.468***	9.240***	11.06***
	(0.562)	(0.543)	(0.544)	(0.685)	(0.154)	(0.159)	(0.156)	(0.161)	(0.442)	(0.422)	(0.432)	(0.565)	(0.501)	(0.477)	(0.493)	(0.637)
commerce hotels & restaurants	9.717***	12.86***	11.16***	12.65***	-5.043***	-5.348***	-4.091***	-4.567***	1.566***	-1.129***	-2.427***	-2.586***	3.477***	6.477***	6.518***	7.153***
	(0.507)	(0.426)	(0.468)	(0.511)	(0.188)	(0.182)	(0.177)	(0.184)	(0.356)	(0.288)	(0.338)	(0.377)	(0.412)	(0.329)	(0.387)	(0.425)
transportation storage & communication	8.270***	10.24***	8.292***	12.30***	-2.895***	-3.905***	-3.429***	-5.022***	-2.613***	-1.961***	-0.833	-1.883***	5.509***	5.866***	4.262***	6.904***
	(0.823)	(0.684)	(0.735)	(0.940)	(0.256)	(0.232)	(0.254)	(0.281)	(0.598)	(0.501)	(0.534)	(0.715)	(0.702)	(0.578)	(0.610)	(0.821)
Occupation(Baseline Highskill non manual)																
Low-skilled non-manual	3.332***	3.247***	4.034***	5.308***	0.761***	-0.369**	-0.885***	-1.150***	-6.293***	-3.670***	-2.149***	-3.141***	5.531***	4.039***	3.033***	4.291***
	(0.532)	(0.383)	(0.396)	(0.486)	(0.169)	(0.159)	(0.160)	(0.186)	(0.384)	(0.262)	(0.278)	(0.342)	(0.441)	(0.295)	(0.311)	(0.386)
Skilled manual	6.778***	7.918***	7.903***	9.646***	-1.345***	-1.898***	-2.196***	-2.012***	-4.664***	-4.318***	-3.873***	-6.252***	6.009***	6.216***	6.069***	8.264***
	(0.761)	(0.646)	(0.660)	(0.815)	(0.261)	(0.246)	(0.225)	(0.246)	(0.560)	(0.464)	(0.494)	(0.640)	(0.634)	(0.524)	(0.558)	(0.722)
Unskilled	1.425	3.240***	-1.367	2.106*	0.114	-0.999**	-0.0688	-0.472	-1.395*	-0.703	2.243***	-0.503	1.281	1.702**	-2.173***	0.974
	(1.107)	(0.982)	(1.045)	(1.274)	(0.433)	(0.422)	(0.391)	(0.429)	(0.788)	(0.678)	(0.753)	(0.967)	(0.880)	(0.760)	(0.844)	(1.086)
Affiliated with a worker/vocational union	5.242***	2.444***	-4.729***	-1.736***	-1.920***	-0.292***	2.753***	1.299***	-1.663***	-1.916***	-0.755**	-0.632	3.583***	2.208***	-1.999***	-0.667
	(0.412)	(0.344)	(0.415)	(0.482)	(0.112)	(0.099)	(0.123)	(0.115)	(0.313)	(0.262)	(0.320)	(0.387)	(0.363)	(0.301)	(0.371)	(0.438)
Vertical Mismatch (baseline Overeducated)																
Undereducated	-2.127*	-1.817*	-5.337***	-2.050	0.0711	-0.0167	0.735*	0.548	2.218***	2.433***	3.473***	0.759	-2.290**	-2.416***	-4.207***	-1.308
	(1.143)	(1.018)	(1.104)	(1.317)	(0.452)	(0.442)	(0.416)	(0.453)	(0.803)	(0.699)	(0.793)	(0.990)	(0.901)	(0.783)	(0.890)	(1.113)
Matching qualifications	-0.439	0.00507	-1.840**	-0.569	0.0276	-0.399	-0.0324	-0.189	0.395	1.089**	1.891***	1.165*	-0.422	-0.690	-1.859***	-0.976
	(0.693)	(0.644)	(0.749)	(0.788)	(0.278)	(0.272)	(0.266)	(0.274)	(0.487)	(0.452)	(0.553)	(0.600)	(0.551)	(0.507)	(0.623)	(0.674)

Has a Contract	10.51***	6.454***	7.386***	7.277***	-1.317***	-0.499***	-0.747***	0.355*	-7.432***	-5.627***	-5.794***	-8.060***	8.749***	6.127***	6.541***	7.704***
	(0.860)	(0.604)	(0.564)	(1.016)	(0.192)	(0.187)	(0.187)	(0.186)	(0.659)	(0.441)	(0.403)	(0.808)	(0.760)	(0.510)	(0.467)	(0.911)
Region																
gaza strip	6.401***	9.107***	14.70***	14.52***	-4.228***	-4.704***	-6.982***	-6.684***	1.902***	-0.183	-0.535*	-1.173***	2.326***	4.887***	7.518***	7.856***
	(0.392)	(0.323)	(0.390)	(0.428)	(0.136)	(0.125)	(0.147)	(0.132)	(0.274)	(0.225)	(0.273)	(0.322)	(0.322)	(0.259)	(0.319)	(0.369)
Urban/Rural (baseline																
Urban																
rural	-2.539***	-1.909***	-1.014***	-1.242***	0.867***	0.671***	0.0413	0.0509	0.394	0.124	0.778***	0.949***	-1.260***	-0.794***	-0.820**	-1.000**
	(0.384)	(0.339)	(0.353)	(0.430)	(0.096)	(0.094)	(0.091)	(0.090)	(0.299)	(0.263)	(0.286)	(0.364)	(0.341)	(0.299)	(0.325)	(0.408)
camp	-1.812***	-0.769**	-0.542	-0.842**	0.740***	0.137	0.452***	0.428***	0.418	0.526**	-0.460	0.00319	-1.159***	-0.663**	0.00840	-0.431
	(0.389)	(0.334)	(0.401)	(0.372)	(0.129)	(0.141)	(0.138)	(0.143)	(0.280)	(0.233)	(0.298)	(0.275)	(0.323)	(0.262)	(0.333)	(0.307)
_cons	25.87***	22.69***	30.59***	26.31***	9.844***	11.04***	9.168***	9.420***	54.18***	53.56***	50.07***	53.23***	35.97***	35.39***	40.76***	37.35***
	(1.608)	(1.443)	(1.562)	(1.915)	(0.645)	(0.631)	(0.578)	(0.638)	(1.113)	(0.971)	(1.124)	(1.452)	(1.251)	(1.096)	(1.260)	(1.628)
N	37270	39930	37198	35024	37270	39930	37198	35024	37270	39930	37198	35024	37270	39930	37198	35024

Standard errors in parentheses

* p<0.1 ** p<0.05 *** p<0.01

Regarding the age variables, the parameters related to the two first age groups (25-34 and 35-44 years), compared to youth workers (younger than 24), have shown improvement followed by reduction in returns to Gini coefficient. This same trend is observed in returns to the upper quintile. In contrast, the returns of the last age group (adult workers) show a decreasing and a positive contribution to the increase of the Gini coefficient and the upper quintile compared to the reference group.

The gender wage gap, while reinforcing the decrease in the wage share held by the bottom 20%, also exacerbates the increase in both the Gini coefficient and the upper quintile of the wage distribution. Similarly, the wage gap between single and married workers is found to contribute to the rise in both Gini and upper quantile statistics, while also contributing significantly to the decline of the bottom and middle quintiles.

Some of the most notable changes take place in the returns on education, industry and occupation. When considering returns to different educational levels, using the primary level as the reference group, the highest educational group, and to a lesser extent the secondary level, have shown nearly improvement of the contribution in reducing the rise of Gini coefficient and the third quintile across years, while for the first quintile, the returns appear to be stagnated at low levels, showing a bit contribution in the decline of wage share held by the bottom 20%. For the middle quintile, the returns show more important contribution in the decline of wage share held by the inter-quintile 20%-80%.

In the estimation of the returns to industry and occupation on different inequality statistics, we assign the services industry and high-skilled non-manual occupations as base group categories. The industry parameters suggest that, compared to services, returns have been increasing in all industries for Gini and upper quintiles statistics over time, with the exception of the mining quarrying & manufacturing industries. This evidence indicates an increase in the contribution of these categorical variables to wage inequality in the Palestinian labor market. Regarding the other inequality measures, specifically the share of the bottom 20% and the middle 20%-80%, the changes in returns to almost all the industrial variables are negative and statistically significant. Similarly, regarding occupations, we observe that the three occupations increase the Gini statistic across time, and that the changes in skilled manual returns put downward pressure on both the wage shares held by the bottom 20% and the middle 20%-80%.

We then examine other labor market and geographic characteristics for their contributions to inequality. We find that returns of having a contract follow a decreasing trend in both Gini and

upper quintile regressions, while contributing markedly to the observed rise of these inequality statistics over the considered period. The changes in the magnitudes of coefficient estimates of living in the Gaza Strip show simultaneously an increasing contribution to the rise of both the Gini coefficient and the upper quintile, and to the decline of the wage share held by the bottom 20% and the middle 20%-80%. Workers living in this region are, then, heavily and increasingly penalized in labor market contributing significantly to the rise of wage inequality during the considered period. Furthermore, the magnitudes of coefficient estimates show that the premium associated with working in urban areas has a decreasing contribution to the rise of inequality over the period.

4.2. Decomposition

Figure 3 provides a first look at the results of the aggregate wage decomposition on the four selected statistics across time. Panel (a) and (d) presents the overall decomposition of wage changes on the Gini coefficient and the upper quintile over the period ranging between 2009 and 2016. Consistent with the pattern displayed in Figure 2a, and 2d, we find a clear increase in the values of the inequality statistics, specifically during the second period starting in 2013. The analysis of the aggregate decomposition results shown in these figures lead us to conclude that the rise in both the Gini and upper quintile values is driven mainly by the changes in the returns to characteristics (unexplained component), which dominate the differences in endowment (explained component) over the second period.

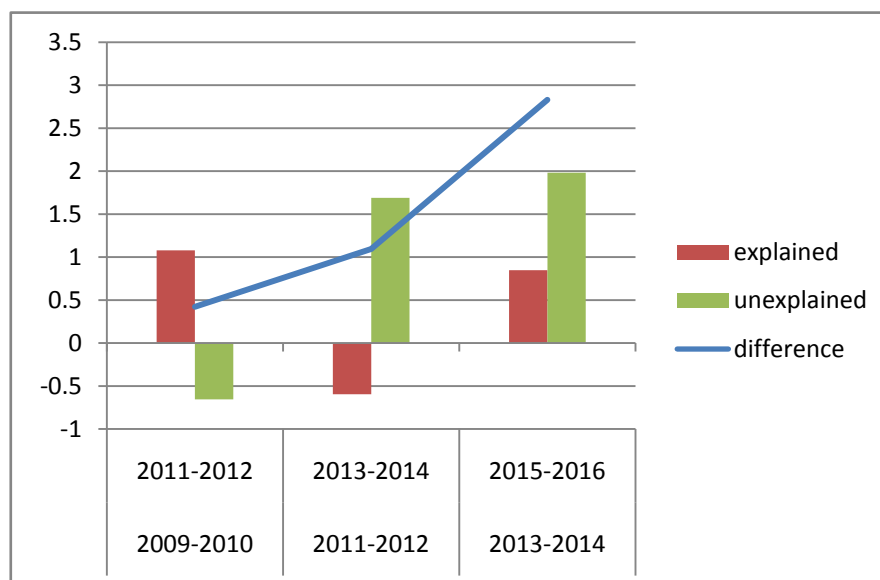


Figure 3a: Decomposition on Gini coefficient , 2009–2016

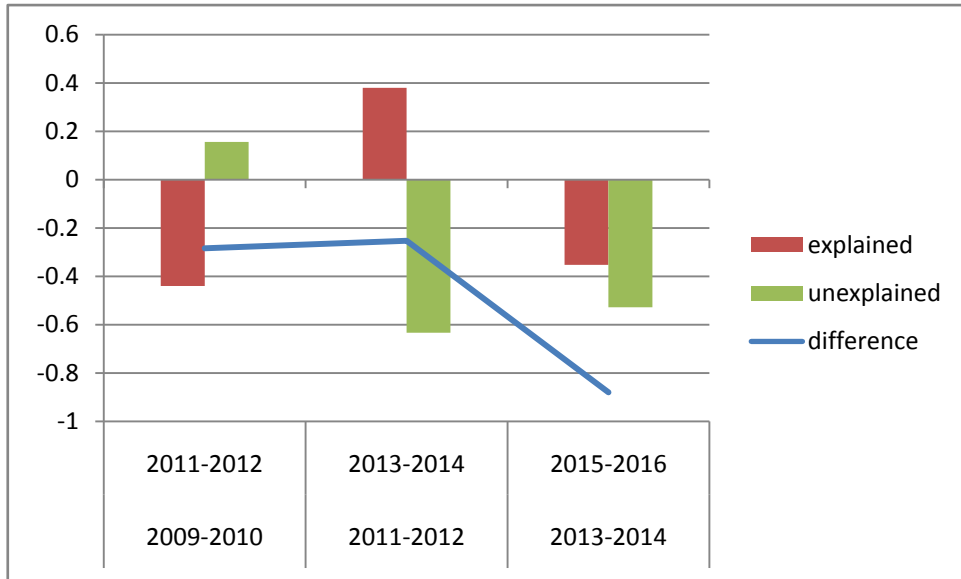


Figure 3b: Decomposition on bottom quintile , 2009–2016

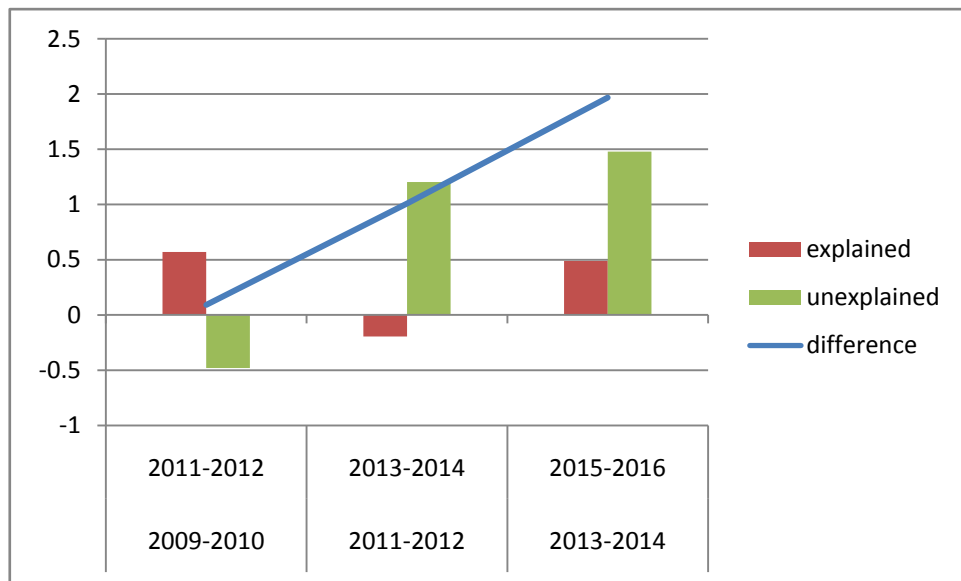


Figure 3c: Decomposition on middle inter-quintiles , 2009–2016

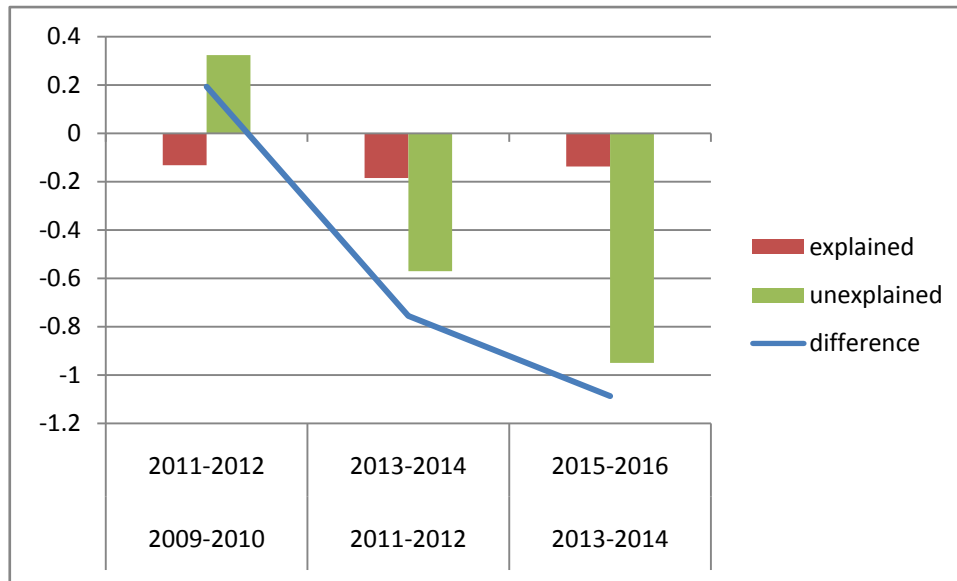


Figure 3d: Decomposition on upper quintile , 2009–2016

In contrast, the results suggest that for the first period (2009-2012), the changes in wage inequality measured by the considered statistics are mainly driven by improvements in endowments. Over the whole period, we may conclude that the change in the wage structure effect was large enough that it outweighed the decline in the composition effect, translating to a sharp increase in wage inequality between 2009 and 2016. Looking at panel (b) and (c), which show the aggregate wage decomposition results on the bottom quintile and the middle inter-quintile, we find that the overall decline of both quintiles is mainly driven by changes in differences in returns to characteristics. Overall, the wage structure effect is, accordingly, the main contributor to the considerable increase in wage inequality in the Palestinian labor market.

Table 5: KOB quantile decomposition results

	Gini			Share held by Bottom 20%			Share held by middle 20%-80%			Share held by top 20%		
	2009-2010	2011-2012	2013-2014	2009-2010	2011-2012	2013-2014	2009-2010	2011-2012	2013-2014	2009-2010	2011-2012	2013-2014
	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016	2011-2012	2013-2014	2015-2016
Year T+1	32.18***	33.27***	36.11***	6.933***	6.680***	5.800***	53.65***	52.90***	51.81***	39.42***	40.42***	42.39***
	(0.135)	(0.149)	(0.172)	(0.044)	(0.045)	(0.047)	(0.097)	(0.111)	(0.134)	(0.113)	(0.129)	(0.154)
Year T	31.76***	32.18***	33.27***	7.217***	6.933***	6.680***	53.46***	53.65***	52.90***	39.32***	39.42***	40.42***
	(0.151)	(0.135)	(0.149)	(0.047)	(0.044)	(0.045)	(0.111)	(0.097)	(0.111)	(0.129)	(0.113)	(0.129)
difference	0.422**	1.095***	2.831***	-0.284***	-0.253***	-0.880***	0.193	-0.755***	-1.087***	0.0911	1.008***	1.967***
	(0.203)	(0.200)	(0.228)	(0.064)	(0.063)	(0.064)	(0.148)	(0.148)	(0.174)	(0.171)	(0.172)	(0.201)
explained	1.079***	-0.595***	0.848***	-0.440***	0.380***	-0.352***	-0.132***	-0.185***	-0.137**	0.571***	-0.195***	0.489***
	(0.083)	(0.092)	(0.100)	(0.030)	(0.032)	(0.032)	(0.047)	(0.054)	(0.062)	(0.061)	(0.070)	(0.079)
unexplained	-0.656***	1.690***	1.982***	0.156**	-0.633***	-0.528***	0.324**	-0.570***	-0.950***	-0.480***	1.203***	1.478***
	(0.197)	(0.197)	(0.227)	(0.061)	(0.063)	(0.058)	(0.147)	(0.148)	(0.182)	(0.169)	(0.170)	(0.206)
explained												
age	0.0385**	0.0213	0.0549***	-0.0130**	-0.00772	0.0219***	-0.0113	0.0000888	0.0150	0.0243**	0.00764	0.00685
	(0.019)	(0.015)	(0.014)	(0.005)	(0.005)	(0.004)	(0.008)	(0.006)	(0.010)	(0.012)	(0.009)	(0.012)
gender	0.0540***	-0.0197	0.00778	0.0335***	0.0110	-0.00376	-0.00284	-0.00285	-0.000299	0.0307***	-0.00820	0.00406
	(0.015)	(0.016)	(0.020)	(0.009)	(0.009)	(0.010)	(0.003)	(0.003)	(0.001)	(0.009)	(0.007)	(0.011)
education	0.00919	0.0740***	-0.00998	-0.00208	0.0128***	0.00296	-0.00946	0.0506***	0.00347	0.0115	-0.0634***	-0.00643
	(0.007)	(0.019)	(0.014)	(0.002)	(0.004)	(0.002)	(0.011)	(0.017)	(0.016)	(0.012)	(0.018)	(0.017)
mstatus	0.143***	0.0538***	0.0997***	0.0469***	0.0125***	0.0221***	0.0548***	0.0250***	-0.0655***	0.102***	-0.0374***	0.0876***
	(0.020)	(0.012)	(0.022)	(0.007)	(0.004)	(0.006)	(0.010)	(0.007)	(0.017)	(0.015)	(0.009)	(0.019)
refugee	0.251***	0.0273***	-0.0248**	-0.112***	0.0118***	0.0101**	-0.0164	0.00635*	0.00685*	0.129***	-0.0182***	-0.0169**
	(0.046)	(0.010)	(0.011)	(0.017)	(0.004)	(0.004)	(0.033)	(0.003)	(0.004)	(0.038)	(0.007)	(0.008)
industry	0.422***	0.204***	0.135**	-0.158***	0.0527***	0.0438***	0.0645***	-0.104***	-0.0372	0.222***	0.157***	0.0810**
	(0.045)	(0.045)	(0.055)	(0.018)	(0.015)	(0.017)	(0.015)	(0.021)	(0.025)	(0.027)	(0.032)	(0.039)
occupation	0.0273	0.0848***	0.0432	-0.0157*	-0.0219**	-0.00901	0.0280	-0.0605***	-0.0239	-0.0122	0.0824***	0.0329

	(0.028)	(0.032)	(0.035)	(0.008)	(0.009)	(0.008)	(0.017)	(0.020)	(0.024)	(0.022)	(0.027)	(0.030)
union	0.0853***	-0.560***	0.178***	0.0102***	0.326***	-0.133***	0.0669***	-0.0894**	0.0647	0.0771***	-0.237***	0.0683
	(0.015)	(0.052)	(0.050)	(0.004)	(0.018)	(0.013)	(0.011)	(0.038)	(0.040)	(0.013)	(0.045)	(0.045)
h_match	0.00851	0.00891	0.0207	0.00137	-0.00162	-0.00628	-0.0149*	-0.00485	-0.00561	0.0136	0.00646	0.0119
	(0.010)	(0.016)	(0.014)	(0.003)	(0.003)	(0.005)	(0.008)	(0.009)	(0.010)	(0.009)	(0.012)	(0.011)
hcontract	-0.103***	0.0382**	0.0637***	0.00800**	0.00387**	0.00311*	0.0902***	-0.0300**	-0.0705***	0.0982***	0.0338**	0.0674***
	(0.017)	(0.015)	(0.018)	(0.003)	(0.002)	(0.002)	(0.014)	(0.012)	(0.019)	(0.015)	(0.013)	(0.019)
Region	0.252***	-0.217***	0.280***	-0.125***	0.0930***	-0.128***	-0.00864	0.0253***	-0.0241***	0.133***	-0.118***	0.152***
	(0.038)	(0.057)	(0.058)	(0.019)	(0.026)	(0.026)	(0.005)	(0.007)	(0.009)	(0.020)	(0.030)	(0.032)
unexplained												
age	0.157	0.457**	0.663***	-0.0139	0.0188	-0.217***	-0.271	-0.505***	-0.327*	0.285	0.486**	0.544***
	(0.292)	(0.228)	(0.221)	(0.056)	(0.050)	(0.047)	(0.228)	(0.182)	(0.182)	(0.264)	(0.212)	(0.210)
gender	-0.583***	-0.146	-0.402*	0.218***	-0.0192	0.0569	0.195	-0.173	0.347**	-0.413**	0.192	-0.404**
	(0.203)	(0.204)	(0.235)	(0.070)	(0.069)	(0.071)	(0.141)	(0.144)	(0.174)	(0.166)	(0.169)	(0.202)
education	0.00376	-0.252**	0.221*	0.0162	0.0358	-0.0448	-0.0373	0.185**	-0.108	0.0211	-0.221***	0.153
	(0.102)	(0.100)	(0.121)	(0.037)	(0.034)	(0.038)	(0.072)	(0.074)	(0.094)	(0.083)	(0.084)	(0.106)
mstatus	-0.00477	0.402***	0.0646	0.0434	-0.181***	-0.0204	-0.00465	-0.112	0.0692	-0.0389	0.293***	-0.0489
	(0.130)	(0.106)	(0.134)	(0.048)	(0.040)	(0.043)	(0.091)	(0.076)	(0.102)	(0.105)	(0.087)	(0.116)
refugee	0.0570***	0.0952**	0.0243	0.0177***	-0.0387**	-0.00315	0.0177	-0.0521	-0.0176	-0.0355**	0.0908**	0.0207
	(0.020)	(0.047)	(0.047)	(0.007)	(0.016)	(0.014)	(0.015)	(0.035)	(0.037)	(0.017)	(0.040)	(0.042)
industry	-0.819***	0.425**	-0.406*	0.0920	-0.181**	0.118	0.608***	-0.0870	0.167	-0.700***	0.268	-0.285
	(0.235)	(0.206)	(0.234)	(0.086)	(0.080)	(0.080)	(0.167)	(0.146)	(0.174)	(0.192)	(0.166)	(0.198)
occupation	-0.0733	0.0194	-0.268***	0.132***	0.0357	0.0449	-0.231***	-0.214***	0.209***	0.0982	0.179***	-0.254***
	(0.087)	(0.072)	(0.096)	(0.031)	(0.027)	(0.034)	(0.064)	(0.053)	(0.070)	(0.072)	(0.059)	(0.079)
union	0.808***	1.821***	-0.405***	-0.470***	-0.773***	0.197***	0.0730	-0.295***	-0.0166	0.397***	1.068***	-0.180**
	(0.155)	(0.138)	(0.086)	(0.043)	(0.041)	(0.023)	(0.118)	(0.105)	(0.068)	(0.136)	(0.122)	(0.078)
h_match	0.0780	-0.399**	0.303	-0.0659	0.0814	-0.0293	0.110	0.154	-0.204	-0.0444	-0.236	0.233
	(0.198)	(0.193)	(0.213)	(0.082)	(0.076)	(0.076)	(0.138)	(0.138)	(0.158)	(0.155)	(0.155)	(0.178)
hcontract	1.720***	-0.411	0.0475	-0.347***	0.109	-0.480***	-0.766**	0.0733	0.986**	1.113***	-0.182	-0.507

	(0.446)	(0.364)	(0.506)	(0.114)	(0.116)	(0.115)	(0.337)	(0.263)	(0.393)	(0.389)	(0.305)	(0.446)
Region	-0.829***	-1.083***	0.132	0.255***	0.386***	-0.0471	0.397***	0.188	-0.0246	-0.652***	-0.574***	0.0716
	(0.195)	(0.193)	(0.217)	(0.062)	(0.064)	(0.066)	(0.145)	(0.143)	(0.168)	(0.166)	(0.163)	(0.190)
_cons	-1.057	0.761	2.007***	0.278	-0.107	-0.104	0.233	0.267	-2.031***	-0.511	-0.160	2.136***
	(0.777)	(0.633)	(0.725)	(0.236)	(0.223)	(0.215)	(0.571)	(0.454)	(0.550)	(0.660)	(0.522)	(0.625)

Standard errors in
parentheses

* p<0.1 ** p<0.05 *** p<0.01

To better understand which factors are contributing to the observed changes in the wage structure and composition effects, Table 5 presents the detailed decomposition of the Gini coefficient and the bottom, middle and upper quintiles with respect to all worker and market characteristics across the period. As shown in Table 5, there was a sharp increase in the Gini coefficient between the 2013–14 and 2015–16 periods accompanied by a decline in the wage shares held by both the bottom 20% and the middle 20%-80%, and a substantial increase of the upper quintile. Consistent with the results in Figure 3, the decomposition results shown in Table 5 reveal that most of the observed rise of wage inequality can be attributed to changes in the wage structure effect that dominate the composition effect mainly during the second period (2013-2016), while for the first period ending in 2012, differences in characteristics are found to be the main contributor to the rise of wage inequality as measured by the Gini coefficient and the bottom quintile.

In our analysis of the composition effect we find that the rise of the Gini coefficient between the two periods 2009-2010 and 2011-2012 is mainly driven, in decreasing order of importance, by changes in industry sectors (100%), region (59.72%) and refugee characteristics (59.48%). To a lesser extent, changes in marital status and affiliation with worker/vocational union characteristics are found to explain 33.89 percent and 20.21 percent, respectively, of the rise in wage inequality between the two periods. Changes in gender composition and possession of a contract appear to reduce wage inequality by 24.41 percent and 12.80 percent, respectively.

The same pattern is apparent when explaining the observed decrease of the wage share held by the top 20% during the same period. This decrease of the bottom quintile is explained mainly by changes in industry (55.63%), region (44.01%), and refugee characteristics (36.44%), while differences in gender and possessing a contract contribute 11.80 percent and 2.82 percent, respectively, to the increase of this wage share. Changes in the composition of educational characteristics appear to not contribute significantly to both the changes in the Gini coefficient and bottom quintile between the aforementioned periods. In summary, the compositional differences in industry sectors, region and refugee characteristics during the first years can explain a significant portion of the rise of wage inequality. Changes in gender and having a contract are also partly responsible for the wage differentials between the two periods, but in the opposite direction.

Our analysis also yields a number of important findings regarding the contributions of the wage structure to changes in wage inequality over the period. First, differences in age seem to be one

of the main contributors to the rise of wage inequality as measured by the increase in the Gini coefficient and upper quintile. As shown in Table 5, age explains 41.75% of the change in the Gini coefficient and 48.21% of the wage share held by the top 20% between the 2011-2012 and 2013-2014 periods. For the last periods, the contribution to these measures declined to 23.42% and 27.66%, respectively. Second, changes in the gender wage gap between the last two periods appear to have opposing effects on the different wage inequality measures. While contributing to a reduction of the Gini index and the wage share held by the top 20% by 14.20% and 20.54%, respectively, it decreases the middle quintile by 31.92%.

Similarly, we have found consistent evidence between the two later periods that the changes in educational levels contributed significantly to the wage differentials in terms of the Gini coefficient, middle inter-quintiles and upper quintile. The wage structure effect due to different returns to education between 2011-2012 and 2013-2014 is found to contribute significantly to reducing both the levels of the Gini coefficient and the wage share held by the top 20% by around 22%, while it contributes significantly to counter the decline of the wage share held by the middle 20%-80% by around 10 percent. Furthermore, the detailed wage structure decomposition results for the same periods (2011-2014) show that changes in marital status explain about 36.71 percent, and 29.07 percent, respectively, of the increase in wage inequality measured by the Gini coefficient and the upper quintile. It contributes, too, to the decline of the wage share held by the bottom 20% by around 71.54 percent.

In view of the contributions of returns on industry and occupation in explaining the changes in wage inequality, the table reveals different results across inequality indicators and periods. While the wage structural effect of industry may have a significant and positive effect on the Gini coefficient, bottom quintile and middle inter-quintile during the first two periods, occupation is found to have a small negative effect on the Gini coefficient and upper quintile during the last period. The results show further that the largest contribution of the wage structural effect of industry is seen when decomposing the expansion of the upper quintile (-768.39%) during the first period, while the largest contribution of occupation is to the middle quintile decomposition during the same period (-119.69%).

Among other factors, we find that there has been a statistically significant and large contribution of changes in the returns to possession of a contract and being unionized. The evidence shown here indicates that across the first period ending in 2014, the changes in union wage benefits have contributed to the increase of wage inequality assessed by the increase of the Gini coefficient and the upper quintile. For the second period, changes in this variable have a smaller

positive effect on the Gini coefficient and the upper quintile by 14.31 percent and 12.91 percent, respectively. Regarding the change in having contract benefits, the large contribution to the increase in wage inequality is seen in the decomposition of changes to the upper quintile during the first period (2009-2012). In contrast, changes in returns on regional factors appear to contribute negatively to wage inequality mainly during the first two periods, while contributing to the rise of wage share held by the bottom 20%.

5. Conclusion and policy implications

This paper examines the changes of wage inequality over the period 2009-2016 in Palestine's labor market, using the nationally representative labor force surveys collected annually by the Palestinian Central Bureau of Statistics (PCBS). We find a sizable increase in wage inequality in terms of Gini coefficient of about 5 percentage points. This increase starting mainly in 2013 was accompanied by a decrease of both the wage shares held by the bottom 20% and the middle 20%-80% and an increase of the upper quintile. Our KOB decomposition results show that the increase of wage inequality during the first period 2009-12 is primarily attributable to the composition effect explained by differences in demographic and labor market characteristics. However, for the second period the wage structure effect attributable to different returns to those characteristics contributes more to the changes in wage inequality than the composition one.

Using detailed decomposition of both composition and wage structure effects, we show that the compositional differences in industry composition, region and refugee status during the first years can explain a significant portion of the rise in wage inequality during the first period, while the wage structural effect of age and discrimination against female workers may make a significant and positive contribution to the increase of the Gini coefficient and upper quintile during the second period. Furthermore, we find evidence that differences in returns to education, occupation and region are found to put downward pressure on the rise in wage inequality mainly during the period starting in 2011.

A lesson from the decompositions is that most of the observed rise of wage inequality occurred in the period (2013–16) were driven by the changes in the wage structure effect which dominate the changes in demographic and labor market characteristics. This implies that the set of economic policies and macroeconomic conditions have allowed for inequalities in wages to perpetuate in the labor market. However, in recommending policies to address the observed contributors to wage inequality, we are cognizant that the appropriate macroeconomic conditions and labor market environment are constrained by the occupation. Thus, these recommendations cannot address long-term, underlying drivers of wage inequality and distorted

labor market outcomes, such as reducing unemployment, economic growth strategies, or appropriate fiscal interventions, as such policies would have to assume the end to occupation-imposed constraints.

In response to this study's conclusions, a key recommendation is to improve labor force participation of women, and specifically, by expanding the supply of employment opportunities for educated women outside of the public sphere. While educated women are increasingly entering the Palestinian labor market, they face multiple obstacles to finding well-paid employment appropriate to their education level. A policy intervention would require both improving the supply of these jobs and addressing the needs of women who seek to enter the workforce but are constrained by a lack of support (i.e., necessary social policies). This intervention falls under the umbrella of a second key recommendation, which is to improve coordination between the public sector, private sector, and foreign donors in developing sound labor market policy. With major labor market challenges, and an expanding and changing Palestinian population, there is a need for unified efforts rather than piecemeal interventions from different stakeholders. Developing cohesive labor market policy is important not only for effectively using the limited available financial resources to improve employment outcomes, but also to strengthen Palestine's institutional environment and, therefore, the effective deployment, compliance, and enforcement of labor market policies.

References

- Albotmeh, S., & Irsheid, S. (2013). Barriers to female labor market participation and entrepreneurship in the Occupied Palestinian Territory.
- Agbahey, J., Siddig, K., Grethe, H., & McDonald, S. (2020). Labor exports from Palestine to Israel: a boon or bane for the West Bank economy?. *IZA Journal of Labor Policy*, 10(1) <https://doi.org/10.2478/izajolp-2020-0008>.
- Azevedo, J. P., Inchauste, G., & Sanfelice, V. (2013). Decomposing the recent inequality decline in Latin America. *World Bank Policy Research Working Paper*, (6715).
- Blinder, A. S. (1973). "Wage Discrimination: Reduced Form and Structural Estimates". *Journal of Human Resources*. 8 (4): 436–455.
- Canavire-Bacarreza, G., & Rios-Avila, F. (2017). On the determinants of changes in wage inequality in urban Bolivia. *Journal of Human Development and Capabilities*, 18(4), 464-496.
- Deaton, A. (2013). *The Great Escape: Health, Wealth, and the Origins of Inequality*. Princeton University Press. Princeton, New Jersey.
- ETF. (2014). Labor market and employment policies in Palestine.

- Firpo, S. P., N. M. Fortin, and T. Lemieux. (2009). Unconditional quantile regressions. *Econometrica* 77: 953-973.
- Firpo, S. P., Fortin, N. M., & Lemieux, T. (2018). Decomposing wage distributions using recentered influence function regressions. *Econometrics*, 6(2), 28.
- Gasparini, L. and Lustig, N. (2011). The Rise and Fall of Income Inequality in Latin America. *The Oxford Handbook of Latin American Economics*, 691–714. Chicago, IL: Oxford University Press.
- Heckman, J. (1979), “Sample selection bias as a specification error”, *Econometrica*, Vol. 47 No. 1, pp. 153-161.
- Heckman, J., Urzua, S. and Vytlacil, E. (2006), “Understanding instrumental variables in models with essential heterogeneity”, *The Review of Economics and Statistics*, 88(3): 389-432.
- ILO. (2014). Labor market transitions of young women and men in the Occupied Palestinian Territory.
- ILO. (2018). The Occupied Palestinian Territory: An Employment Diagnostic Study. ISBN:9789221313960
- Kitagawa, Evelyn M. (1955). "Components of a Difference Between Two Rates". *Journal of the American Statistical Association*, 50(272): 1168–1194.
- Kock, U., Sumlinski, M. and Qassis, H. (2012). West Bank and Gaza: Labor Market Trends, Growth, and Unemployment.
- Morrar, R. and Rios-Avila, F. (2021). Discrimination against refugees in the Palestinian labor market, *International Journal of Manpower*, 42(6): 1002-1024.
<https://doi.org/10.1108/IJM-08-2019-0396>
- Oaxaca, R. (1973). "Male-Female Wage Differentials in Urban Labor Markets". *International Economic Review*. 14 (3): 693–709.
- PCBS. (2018), National Account Statistics
- PCBS. (2016). Number and Percentage of Employed Persons Aged 15 Years and Above Who are Working in Israel and Settlements from Palestine by Possession of the Work Permit, 2005–2015.
- Ravallion, M. (1997). Can high-inequality developing countries escape absolute poverty?. *Economics letters*, 56(1), 51-57.
- Ravallion, M. (2007). ‘Inequality is Bad for the Poor’, in J.Micklewright and S.Jenkins (eds.), *Inequality and Poverty Re-Examined*. Oxford: Oxford University Press.
- Rios-Avila, F (2020). “Recentered influence functions (RIFs) in Stata: RIF regression and RIF decomposition.” *Stata Journal*, 20(1), 51-94.
- Stiglitz, J. (2012). How today's divided society endangers our future. In *The price of inequality*. New York: WW Norton.

- UNCTAD. (2013). Growth and poverty eradication: Why addressing inequality matters. UNCTAD Post-2015 Policy Brief Series No. 2. UNCTAD/PRESS/PB/2013/4. Geneva.
- UNCTAD. (2014). Tackling inequality through trade and development in the post-2015 development agenda. TD/B/61/7. Geneva. 4 August.
- UNFPA. (2016). Palestine 2030-demographic change: opportunities for development. *State of Palestine: United Nations Population Fund Palestine*.
- Voitchovsky, S. (2008). Inequality, Growth, and Sectoral Change. Background paper for Chapter 22 in Nolan, Salverda and Smeeding (eds.), *Oxford Handbook of Economic Inequality*.