

ORIGINAL ARTICLE

Public–private wage differentials in Tunisia: Consistency and decomposition

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Abstract

In this paper, we estimate and decompose the public–private wage differentials for urban areas, using the 2012 Tunisia urban youth survey. Oaxaca decomposition results suggest that, on average, public sector workers earn more than their private counterparts. Additionally, the results indicate that a substantial part of the conditional gap in urban areas can be attributed to observed characteristics. Human capital, particularly education, are the main reason behind the observed log-wage advantages. Using unconditional quantile decomposition, our findings reveal that, for urban areas, the discrimination effect becomes more pronounced at the upper quantiles of the wage distribution. Separate analyses by gender and educational levels show that male workers across both sectors receive higher compensation than their female counterparts, with a more pronounced gender gap in private sector. Less educated workers are compensated much more in the public sector than in the private sector, while the wage differential for skilled workers decreases rapidly through the distribution.

JEL CLASSIFICATION

J16, J31, J38, J45

1 | INTRODUCTION

The public–private wage gap within countries has received a great deal of attention in economic literature for many decades. The literature has provided several reasons why private and public-sector employees can be paid differently. First, the monopolistic power of governments can set wages in a non-competitive way (Reder, 1975; Tansel et al., 2020a). The relationship between monopolistic power and non-competitive wages is further accentuated by the potential divergence in objective functions between the government and private sectors (Gunderson, 1979). While the private sector is predominantly influenced by market forces profit maximization, the public sector may be motivated by political considerations, including voter support, budget allocation and considerations of equity and fairness. Governments are under pressure to serve as model employers and refrain from paying low wages to their less skilled workforce (Melly, 2005; Morgan & Allington, 2002). Additionally, another body of research emphasizes that wage-setting environments and labour market structures substantially differ between the public and private sectors (Campos et al., 2017; Chassamboulli & Gomes, 2023; Dickson et al., 2014). For instance, studies have demonstrated that union density and collective bargaining tend to be higher in the public sector compared with the private sector (Antonczyk et al., 2010; Card, 2001; Card et al., 2017; Card et al., 2020). Assaad (2014) argues that Arab regimes strategically use public-sector employment as a tool to appease politically salient groups within the framework of the ‘authoritarian bargain’ social contracts. These disastrous policies, according to Assaad (2014), have essentially undermined the labour market’s primary function, which is to efficiently allocate human capital to its most production uses.

In addition to the aforementioned factors, the productivity-related attributes of employees, such as their level of education or experience, can also contribute to explaining the wage gap between the public and private sectors (i.e., public-sector employees with higher education degrees should receive higher wages). The government should ensure the principle of ‘equal pay for work of equal value’ and leverage productivity as a tool to enhance compensation. However, it is important to recognize that the pursuit of this goal could potentially impact the efficiency of the labour market (Mizala et al., 2011). If a government offers excessively high wages, private-sector workers may be more inclined to transition to the public sector in pursuit of comparatively higher-paying positions. This scenario could result in higher taxes and budget deficits. Conversely, if the public sector pays too low of a wage, it may struggle to attract and retain skilled and committed employees (Melly, 2005).

The public–private wage gap in the case of Tunisia presents a credible policy alternative that merits careful consideration from economists and policymakers. Indeed, Tunisia has undergone significant changes in its wage-setting arrangements since the revolution on 14 January 2011. Right after the revolution, to address the concerns of the Tunisian people and maintain socio-political stability, the government substantially increased hiring in the public sector. In 2011 and 2012, over 90,000 new employees joined the public sector. Between 2010 and 2014, the total public-sector employment rose by 20 per cent to 615,000 workers, and currently stands at 795,000, representing a ratio of total public employment to the overall employed workforce of approximately 24 per cent. This level is three times higher than in countries like Morocco and emerging markets such as Chile or Mexico (IMF, 2015).¹ The recruitment drive resulted in a 44 per cent increase in the wage bill between 2010 and 2014, a figure notably higher than the 28 per cent increase between 2006 and 2009. This surge contributed to macroeconomic imbalances in the country (Brockmeyer et al., 2015) and exacerbated the public–private wage gap. To illustrate, the wage differential between public and private-sector positions stands at 40 per cent

for university graduates (excluding engineers) (Achy, 2011). Furthermore, the public-sector wage premium elevates public wages by about 18 per cent (between 24 and 30 per cent for women) above those of the private sector (Achy, 2011). Consequently, the wage bill has experienced a substantial increase from 10.7 per cent of GDP in 2010, to 15 per cent in 2017 (nearly 49 per cent of public expenditure and more than 60 per cent of government revenues)—among the highest in the world—compared with 6.6 per cent in Egypt, 11.5 per cent in Morocco and 10.3 per cent in Lebanon (Tamirisa & Duenwald, 2018; World Bank and African Development Bank, 2020).²

While the Tunisian government invested more on recruitments and wage increases, the performance and productivity of the public sector continued to deteriorate (World Bank and African Development Bank, 2020). As a result, emergency measures and reforms have been enacted to manage the wage bill and reduces costs, including the freezing of public-sector wages and rationalization of their increases under the agreement with the Tunisian General Labour Union (*Union Générale Tunisienne du Travail*—UGTT). Additionally, there is a focus on restricting recruitment to priority services, such as health and education, as well as in value-added technical and technological sectors. Moreover, the government has established a special programme for early retirement ahead of the legal retirement age. Given the lack of fiscal space and high public debt, the government adopted the public–private partnership—PPP law (law N° 2015–49 on 27 November 2015) to mobilize funds for cooperative projects in construction, financing, and the ongoing operation and maintenance of infrastructure assets. If effectively operationalized, the PPP law can play a crucial role in fostering inclusive and sustainable growth for Tunisia (OCDE, 2016). It can improve governance, reduce corruption, attract financing, and faster open competition, which are the most crucial prerequisites for private-sector growth in Tunisia.

While the public–private wage dichotomy has been confirmed in Tunisia, the evidence on the reasons behind this gap is much more limited. This paper tries to fill this gap by analysing determinants of the public–private wage differentials in Tunisia after the Arab Spring. We use a representative household survey covering the urban area of Tunisia conducted in 2012 by the World Bank, in collaboration with the National Statistical Office and the General Commissariat for Regional Development. We used the Oaxaca-Blinder and the unconditional quantile decomposition techniques to analyse the wage differentials both at the mean and along the wage distribution. We found that public sector employees earn more than their private counterpart. Moreover, a substantial part of the conditional gap in urban area is explained by observed characteristics. Our findings also revealed that in urban areas, the discrimination effect contributes more to the wage differentials than the characteristics effect at the higher end of the wage distribution. Our decomposition results by educational levels show that less educated workers are compensated much more in the public sector than in the private sector.

However, few studies seek to investigate the public–private wage gap determinants in Arab countries (Tansel et al., 2020a). This paper is among the few that focus on the post-revolution public–private wage differentials distribution in Tunisia. More specifically, this paper focuses on the differences in the relative wages at the mean and by gender, education, and region, in order to present evidence on the public–private wage gap structure. Moreover, this paper examines changes in the public–private gap in Tunisia, by decomposing wage differentials both at the mean (into endowment and discrimination effects) and along the wage distribution (quantile decomposition).

The paper is structured as follows: the next section offers a brief review of the existing literature on public/private wage differentials. Section 3 briefly describes Tunisia's labour market

institutions. The data and the used methodology are presented in Section 4. Section 5 discusses the results, and Section 6 concludes.

2 | WAGE DIFFERENTIAL: A SHORT LITERATURE REVIEW

Although the sectoral (private/public) wage determination process for paid employees has received a great deal of attention in the empirical literature, there is no formal theoretical model of why the wage differential exists (Bender, 1998). According to Bender (1998), there are relatively few purely theoretical papers that have provided explanations on why there may be differentials between public and private-sector pay structures. Among them, Gunderson (1979) noted a fundamental distinction between the two sectors, highlighting that in the public sector, the pursuit of profit is typically set aside in favour of an overarching political constraint through institutional channels, such as taxation power and bargaining process.³ He also finds that most studies on wage difference falls into one or more of the best-known labour market theories, such as supply/demand models (Freeman & Katz, 1995; Katz, 1999), human capital models (Becker, 1964; Mincer, 1958, 1974), segmented labour models (Piore, 1972; Taubman & Wachter, 1986) and bargaining models (see Willis (1986) for a survey of human capital earnings functions). Mincer (1958) uses the principle of compensating differences to explain why persons with different level of schooling receive different earnings (see Heckman et al. (2006) for technical details on the Mincer model). Holmlund (1993) introduced a theoretical model, in which there are public and private sector unions with a utilitarian government (Bender, 1998). Holmlund (1993) approximated these negotiations to a game that can be cooperative or non-cooperative. More specifically, he argued that if unions act non-cooperatively, there will be a wage premium in the public sector, whereas if they act cooperatively, the gap disappears.

Numerous empirical studies have already examined the issue of public–private wage differentials. There are excellent surveys about this issue for developed countries (Mizala et al., 2011). The pioneering works primarily focused on U.S. employees (Bellante & Long, 1981; Quinn, 1979; Smith, 1976; Smith, 1981). The main finding of these studies is the evidence that workers in the public sector were paid more than those in the private sector. This difference in wages cannot be attributed to difference in productivity, but rather to factors such as gender and notably, the level of government (i.e., federal, state or local). Furthermore, other empirical studies have explored public–private wage differentials in Europe, including Lucifora and Meurs (2006) in France, Great Britain and Italy, Van Ophem (1993) in Netherlands, Lassibille (1998), Hospido and Moral-Benito (2016) in Spain and Dustmann and Van Soest (1997), Jürges (2002) and Melly (2005) in Germany. Melly (2005) employed German Socio-Economic Panel data spanning the years 1984–2001, discovering that individuals with only basic schooling and those with more perform better in the public sector. Furthermore, results from quantile decomposition indicate that the earnings gap between the public and private sectors is less explained by employees' characteristics at the lower end of the wage scale.

Lucifora and Meurs (2006) used microdata for Great Britain, France and Italy to explore public–private pay determination. Employing quantile regression methods to analyse and decompose the public–private wage gap within and across countries, their findings revealed that, in the three countries, the public sector tends to remunerate low-skilled workers more than the private sector does, while the opposite holds true for high-skilled workers. Additionally, they observed that females are considerably better in the public sector compared with the

private sector. Depalo et al. (2015) expanded the analysis of the public-private wage gap by examining 10 Euro-area countries during the period of 2004–07. By scrutinizing specific covariates at various quantiles of wage distribution, they identified significant heterogeneity across countries. In some nations, the distribution of public wages was less varied compared with the private sector. Additionally, the public-private pay gaps were more attributed to endowments at the upper end of the wage distribution and higher returns at the lower end. Furthermore, Cai and Liu (2011) also employed quantile regressions to investigate how the sectoral wage effect varies along the wage distribution in Australia. Their findings indicated that the most substantial portion of the public-private wage gap is explained by the differences in individual and job characteristics.

Mueller (2000) attempted to estimate the earnings surplus of the public sector, representing the remaining portion of wage differential that cannot be accounted by differences in endowments. Using data of the Canadian Labour Market Activity Survey from 1988 to 1990, the author identified that rent payments are highest in the public sector, particularly among employees at the lower end of the wage distribution. In the context of developing countries, there has been a recent surge in literature addressing the public-private sector wage differential, as these countries try to find ways to decrease public expenditures to reduce debt levels (Bender, 1998). Among others, Panizza and Qiang (2005) used household surveys for 13 Latin American countries to investigate wage differentials between the public and private sectors. Through quantile decomposition, they observed that in most of these countries, public sector workers received higher compensation, with women often experiencing a larger premium than men. Mizala et al. (2011) estimated the public-private wage gap for urban workers in 11 Latin American countries for the period of 1992–2007. Their findings indicated that public sector employees earned more than private sector counterparts, and this gap widened over the specified time frame.

Shifting focus slightly away from the Latin America, but still within the realm of developing countries in Asia, Glinskaya and Lokshin (2007) employed sector selection bias correction and Propensity Score Matching methods to examine wage disparities between the public sector, formal-private sector, and informal-causal sectors. Using data from the 1993–94 and 1999–2000 India Employment and Unemployment surveys, they determined that public-sector wages exceed those in the formal and informal private sectors, with these differentials being more pronounced in rural areas, among women, and for low-skilled workers. Ahmed and McGillivray (2015) investigated Labour Force Surveys for the years 1999–2000, 2005–06 and 2009–10, using the quantile decomposition to analyse the public-private wage gap in Bangladesh. Their study revealed that improvement in female education in Bangladesh, coupled with reduced discrimination against woman, had a significant impact, leading to a 31 per cent reduction in the average wage gap between men and women.

In contrast to developed and developing economies in Asia and Latin America, few studies have explored the wage gap between sectors in African countries and much less so in the Middle East and North African countries. However, the number of empirical studies addressing the wage premium in these countries has been rapidly increasing in recent years, thanks to the proliferation of survey data on labour market information (see e.g., Assaad (1997), Said (2009, 2015), Tansel et al. (2020a), Tansel et al. (2020b) for Egypt, Bouassida and El Lahga (2018), Ghazali (2011), Marouani and Le (2022) for Tunisia, Kwenda and Ntuli (2018) for South Africa, Lachaud (1995) for French-speaking Africa and Assaad (2014) for selected Arab countries).

One notable study is by Nielsen and Rosholm (2002), who used three cross-sections of Zambian Household surveys from the early 90s, corresponding to an economic transition period for the country. They employed quantile decomposition to investigate how the determinants of

the public–private wage gap changed at different points of the wage distribution over time. Their primary findings saw a higher gap for some groups of low-skilled employees compared with high-skilled groups. Seshan and Anos (2006) found that Djiboutian public-sector employees earned a wage premium, independent of their personal attributes and human capital endowments. The authors raised concerns about the government hiring and wage-setting practices that generated distortions in the labour market in Djibouti. Lindauer and Sabot (1983) similarly found that in urban Tanzania, public-sector employees earned a substantial wage premium over workers employed in the private sector.

The study by Kippra (2013) delved into the issue of the public–private wage gap in the Kenyan labour market. The study drew upon various data sources, including surveys of private and public institutions, public sector wage data for 2010 from the government's annual Economic Survey, and data from the National Human Resource survey of 2009. Using the matching technique method, Kippra's (2013) research discovered that wages in the private sector were higher than those in the public sector. Despite these pronounced inequalities, workers in the public sector, particularly among highly educated ones, chose to remain in the public sector due to job characteristics, such as job security, prestige, allowances and other non-wage benefits.

3 | INSTITUTIONAL BACKGROUND AND WAGE STRUCTURES IN TUNISIA

The Tunisian labour market faces inefficiencies due to several key reasons and numerous imperfections (Stampini & Verdier-Chouchane, 2011; World Bank, 2014). State wage policies and the actions of trade unions, which have led to wages surpassing the market equilibrium, can be identified as sources of wage rigidity in the labour market. These factors may create distortions that deter potential employers, and subsequently, increase unemployment rates. Notably, the expansion of public sector employment and the widening wage gap between the public and private sectors indicate significant influence of public-sector trade unions. According to the DTDA's (2020) report, the trade union density was estimated at 38 per cent among total employment in 2019, which is more than three times the world level (estimated at 11.2 per cent according to International Labour Organization—ILO).⁴ Through this density, trade unions have been able to negotiate and sometimes impose their working conditions to different governments, particularly following the events of 14th January 2011. According to the Tunisian Institute of Competitiveness and Quantitative Studies (ITCEQ), the total average monthly remuneration in the public sector is estimated at 1774 dinars in 2016, in stark contrast to the 1063 dinars in the private sector (see Figure 1).

Several factors may contribute for the wage gap observed between the two sectors in Tunisia, such as the differences in human capital (education, training, etc.), the union's history, the accumulation of advantages acquired in the public sector over time since the French colonial period,⁵ and the role of trade unions in negotiating employment contracts. Furthermore, the Tunisian labour legislation and the collective bargaining process may influence recruitment mechanisms and industrial relations, particularly in wage policies, such as minimum wage legislation and the indexation clauses.

Overall, wage policy reflects a delicate balance between the interests of the employers, whether at the state or enterprise level, and the concerns of the workers. It facilitates the reconciliation of a variety of strategies, such as trade unions striving to enhance living standards and

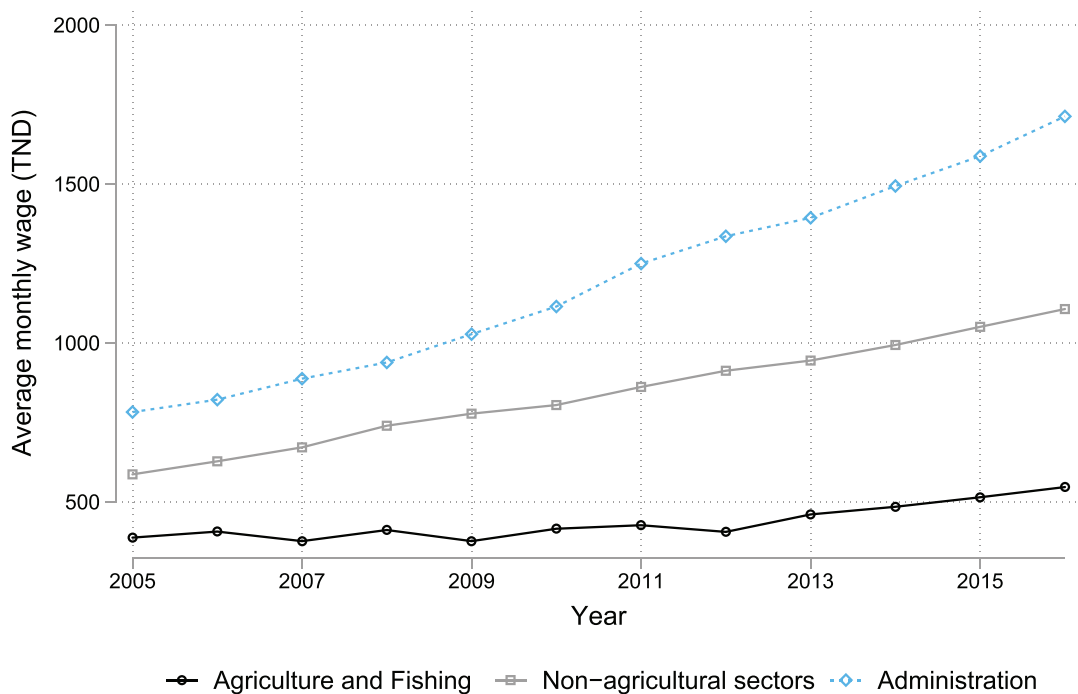


FIGURE 1 Average monthly wage (TND/employee) for both public (administration) and private (non-agricultural) sectors. *Source:* Authors based on data from ITCEQ.

working conditions for their members, and employers seeking to manage wage costs. The objectives of trade unions, whether in the public or private sectors, remain consistent: to advocate for wage reviews, secure favourable wage agreements, and improve working conditions. In pursuit of these goals, trade unions play a dual role as intermediaries between the government and employers. However, the processes of wage-setting vary between the public and private sectors.

In the Tunisian private sector, collective bargaining occurs at the national level following the establishment of a signed framework collective agreement and a social pact endorsed by the Tunisian General Labour Union (UGTT) and the Tunisian Confederation of Industry, Trade and Handicrafts (UTICA) under state control. These collective bargaining agreements serve to organize social relations and address certain gaps in the Labour Code, contributing to the maintenance of social peace. Sectoral agreements draw substantial inspiration from this overarching collective agreement.

For public civil servants, although collective bargaining is absent, trade unions play a role in shaping their statutes through their representatives within the establishments. In the case of employees in public enterprises, each entity has its own statute that determines wages based on categories and working conditions.

The actions taken by trade unions and the wage policies implemented by the state through mechanisms like collective bargaining can introduce distortions to the smooth operation of the labour market. A critical aspect in this context is the establishment of two types of minimum wages: the interprofessional guaranteed minimum wage (SMIG) for non-agricultural sectors and the guaranteed minimum agricultural wage (SMAG) for the agricultural sector (Krafft & Hannafi, 2022). Both minimum wages are determined and revised by the government in a

decree following consultation with the most representative employers and workers organizations (UGTT and UTICA, in particular). The SMIG is a monthly basis for both 40 h and 48 h work week regimes, which serves as a reference point for wage negotiations and collective bargaining agreements, playing a pivotal role in setting fair and equitable standards.⁶ Additionally, it serves as a foundational element for computing social security benefits and taxes.

The UTICA, in turn, aims to sustain the competitive standing of Tunisian domestic firms in the market during each wage negotiation round. To achieve this goal, firms must maintain their average costs at levels comparable to those of their competitors. If wages rise more than productivity, it could lead to an increase in market prices or a reduction in profits and market share for the firms. Therefore, a firm's challenge lies in preserving their market positions. However, collective bargaining is not necessarily aligned with a firms' expectations, such as employment and productivity. Instead, their negotiations from the UGTT side are primarily intended to enhance the purchasing power of workers. The apparent contradiction between UGTT and UTICA often gives rise to challenging negotiations, with state intervention becoming necessary to bring the two parties to an agreement.

In conclusion, the wage gap between the public and private sectors in Tunisia can be attributed to three primary factors. First, post-revolution, and in order to absorb the people's frustration and uphold political and social stability, the government has adopted a more generous approach by increasing salaries and the number of employees in the public sector compared with the private sector. The UGTT, whose membership has grown from 500,000 in 2012 to 700,000 in 2019, with national representation covering all 24 of Tunisia's governorates, has succeeded in raising the wages of its members. The latest SMIG increase was 4.5 per cent from 2021 to 2022, reaching TND 459 (US\$ 149) on average. Nevertheless, this increment proved insufficient to sustain the workers' income purchasing power in the wake of escalating consumer prices (DTDA, 2023).

Second, the impact of unionization is more pronounced in the public sector than in the private sector. Private-sector unionization stands at 15 per cent with 250,000, including 200,000 from UGTT, whereas public-sector unionization, including public companies, is significantly higher at 61 per cent (DTDA, 2020, 2023). Third, organizing workers in the private sector poses challenges due to their low-wages and the prevalence of small-scale activities, with approximately 80 per cent of workers employed in small companies.

4 | DATA AND METHODOLOGY

4.1 | Data and descriptive statistics

This study is based on the Tunisia Household Survey on Youth in Urban Areas (THSYUA or HYSU-2012 for short) carried out in 2012–13.⁷ The THSU-2012 was implemented by the World Bank in collaboration with the National Institute of Statistics (INS) and the General Commissariat for Regional Development (CGDR).⁸ It has a coverage of urban areas, both nationally and regionally for the seven regions⁹ that the country has been divided into. Microdata, along with all survey documentation, including the questionnaire and survey's technical report in both French and English, are publicly available free of charge in the World Bank Microdata Library for academic and research purposes.¹⁰

The HYSU-2012 covers a wide-range of topics, including individual, demographic and labour market characteristics, job search methods, the effectiveness of active labour market

programmes, attitudes of young people to government and the economy, time use and activities of young people among others. It includes a sample of 4214 urban households (16,995 individuals) selected through two steps (World Bank, 2014).¹¹ In the first step, 352 Enumeration Areas (EAs) have been drawn with probability proportional to size, using the General Census of Population and Housing in 2004 as a sampling frame, as well as the number of households as the measure of size. All households in each selected EA are listed. In the second stage, within each Enumeration Area selected in the first step, 12 households will be randomly chosen with equal probabilities.

All urban workers of the active employed population aged between 15 and 64 years that declare having positive labour income are included in this study. The analysis is focused on total monthly net income (in TND) from principal economic during the past 7 days. Income acquired in exchange for labour is categorized into four groups: unpaid work, work with fixed salary, work with variable income, and work combining fixed salary and variable income. The distribution of these work categories for both the public and private sectors is presented in Table 1.

Table 1 shows that the average monthly earnings of public sector workers were TND 618 (about US \$396 in 2012 when the survey took place), while private sector workers earned an average of TND 419 (US \$268). Most public-sector workers (95 per cent) receive fixed salaries, with only 3 per cent receiving variable salaries. In the private sector, nearly half (48 per cent) of employees receive a fixed salary, while two in five (40 per cent) receive a variable salary. The wage gap between the public and private sectors was more pronounced among workers with fixed salary (627 vs. 456). However, there was no significant difference between public and private sectors among workers earning fixed salary with variable incomes (440 vs. 438). For both sectors, the percentages of unpaid work (without pay) was small, not exceeding 1 per cent for the public sector and 2 per cent for the private sector. Unpaid workers were excluded in our final analysis, since their earnings are not observed.

TABLE 1 Distribution of work categories by sectors.

	Public sector		Private sector		Urban area (public and private sectors)	
	Share (%)	Average monthly earning (TND)	Share (%)	Average monthly earning (TND)	Share (%)	Average monthly earning (TND)
Without pay	1.03	0.00	2.06	0.00	1.77	0.00
Fixed salary	95.11	627	48.30	456	61.23	528
Variable income	3.00	410	39.58	367	29.48	368
Fixed salary with variable income	0.86	440	10.06	438	7.52	438
Total	100	618	100	419	100	474

Note: The category 'without pay' includes any form of labour where the individual is not remunerated for their efforts (i.e., a person working for a company family); Fixed salary: does not change according to work amount; variable income: the income that changes according to work amount (paid income by unit/piece or number of produced units/pieces). All statistics are computed using sample weights.

Table 2 reports the descriptive statistics for monthly wage by sectors across different covariates (gender, region, education level, marital status, and sector of occupation). The public sector employs around 27.8 per cent of the urban population. This proportion seems to be increasing with the level of education: from 13.6 per cent for the basic education level to 54.9 per cent for employees with a higher level of education. It is noteworthy that, employees with basic or secondary education levels in the public sector enjoy higher salaries compared with their counterparts in the private sector. On average, wages in the public sector surpassed those in the private sector by 24 and 22 per cent for workers with basic and secondary levels, respectively. However, this gap becomes non-significant for highly skilled workers (tertiary education).

Women are much more likely to be employed in public sector than men. The share of public employment peaked at around 26.4 per cent for men and 31.3 per cent for women. Moreover, both men and women in the public sector earned considerably more than their counterparts in the private sector. Employment in urban areas of the coastal regions (Great Tunis, North East and Central East) is primarily concentrated in the private sector, ranging from 63 per cent to 76 per cent. In the northwest and centre-west regions, the public sector accounts for 42 per cent of urban employment, while in the southwest, it constitutes 57 per cent. The decrease in the private sector's share of urban employment in the non-coastal regions partly reflects the limited economic opportunities provided by the private sector and the lack of adequate infrastructure in these regions. In terms of remuneration, public-sector workers, regardless of the region, received much higher salaries than their private sector counterparts. The most significant difference is noted in the northwest, where wages in the public sector are 1.87 higher than those in the private sector.

The distribution of employment and wages by branch of activity highlights a substantial disparity between the public and private sectors. Notably, 82.2 per cent of workers engaged in education, health and administration are employed in the public sector, compared with only 17.8 per cent in the private sector. Meanwhile, the public sector's share in agriculture is 20.5 per cent, and in transport and communication, it stands at 30.6 per cent. For the other branches, such as manufacturing (5.1 per cent), construction and public works (6.3 per cent), and trade (2.1 per cent), public-sector employment share remains relatively low. When examining wages, Table 2 reveals a notable contrast: employees in the public manufacturing sector earn 1.46 times the income of their private sector counterparts. The average salary for government workers in agriculture amounts to TND 478, significantly surpassing the TND 306 earned by their private-sector counterparts in the same field. In the trade branch, public sector workers enjoy a substantial 11 per cent higher income compared with their private sector counterparts, but this difference is not statistically significant, due to the very low number of observations for public-sector trade workers. Marginal differences (for which the differences are statistically not significant) exist in earnings between the two sectors for the remaining branches, namely construction and public works, transport and communications and education, health and administrative services.

Figure 2 shows the kernel density estimates of the log monthly wages in the public and private sectors. The public sector kernel density stands to the right of that of the private sector, indicating that urban public-sector workers earn higher wages compared with their counterparts in the private sector.

Figure 3 illustrates the monthly wage kernel density for both the public and private sectors, categorized by gender, as well as that of both genders by sector. Analysing each sector independently reveals no significant gender differences, particularly in the public sector. For the private

TABLE 2 Descriptive statistics for public and private sectors in urban areas, 2012.

	Average monthly income		Ratio (1)/(2)	t-statistics	% Public sector	No. observations		No. expanded observations	
	Public (1)	Private (2)				Public	Private	Public	Private
All	618	419	1.47***	(6.99)	27.80	1229	2658	357,338	928,263
Education									
Basic education	409	330	1.24***	(5.17)	13.63	258	1303	72,450	458,922
Secondary education	552	452	1.22***	(3.88)	31.78	442	813	127,804	274,351
University	810	784	1.03	(1.57)	54.90	480	330	143,727	118,054
Region									
Greater Tunis	692	488	1.42***	(7.65)	27.06	288	764	131,126	353,525
North East	614	391	1.57***	(7.23)	25.89	145	356	49,469	141,610
North West	552	294	1.87***	(9.96)	42.30	189	242	34,593	47,182
Central East	605	379	1.60***	(8.54)	19.07	162	643	60,355	256,062
Central West	566	383	1.48***	(5.80)	42.53	174	215	34,012	45,963
South East	563	405	1.39***	(4.69)	26.88	118	318	24,272	66,011
South West	487	282	1.73***	(7.41)	56.76	153	120	23,511	17,910
Gender									
Male	620	449	1.38***	(13.03)	26.39	855	1984	242,923	677,525
Female	614	338	1.81***	(10.77)	31.33	374	674	114,415	250,738
Marital status									
Single	521	375	1.39***	(5.74)	16.61	232	965	65,938	331,024
Married/Widowed or Divorced	641	444	1.44***	(12.75)	32.79	997	1693	291,340	597,239
Sector									
Agriculture and fishing	478	306	1.56***	(3.05)	20.47	54	163	13,929	54,125
Manufacture	552	378	1.46***	(3.21)	05.14	41	639	12,750	235,139

(Continues)

TABLE 2 (Continued)

	Average monthly income		Ratio (1)/(2)	t-statistics	% Public sector	No. observations		No. expanded observations	
	Public (1)	Private (2)				Public	Private	Public	Private
Construction and public works	375	364	1.67	(0.19)	06.31	42	423	8779	130,254
Trade	711	426	1.11	(1.51)	02.08	9	407	3019	141,927
Transport and Communications	652	587	1.04	(1.26)	30.62	82	167	27,057	61,301
Education, health, administrative	672	644	1.24	(0.44)	82.17	698	122	202,064	43,852
Other services	556	448	1.54***	(3.64)	27.02	253	586	77,565	209,474

Note: The descriptive statistics use the weighted observations.

Source: Authors' computations using HYSU-2012.

***Indicates significance at 1 percent level.

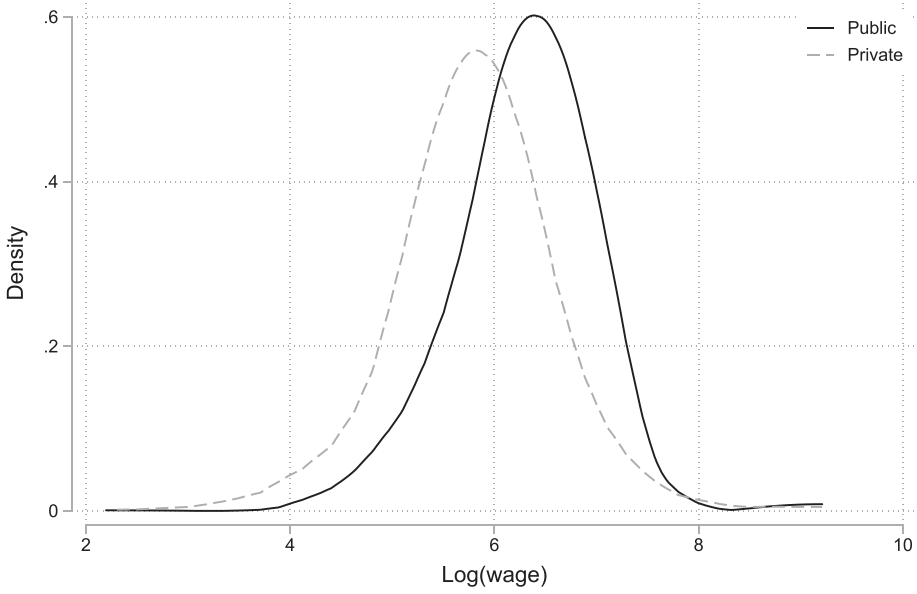


FIGURE 2 Density of public and private sector monthly wages (in log), HYSU-2012.

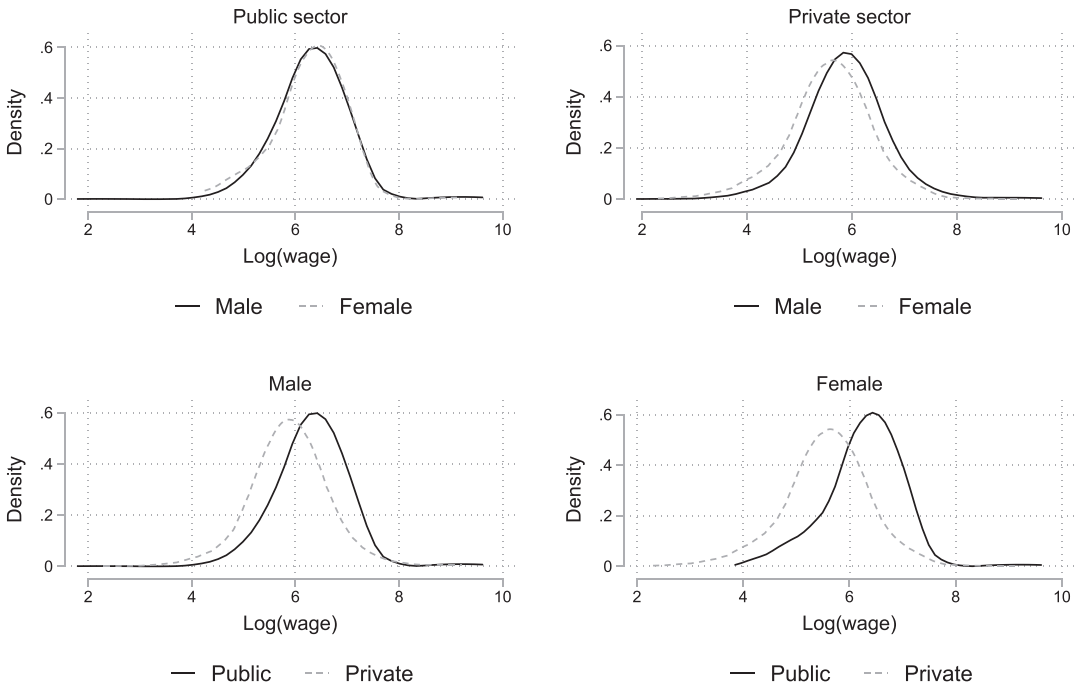


FIGURE 3 Density of public and private sector monthly wages by gender (in log), HYSU-2012.

sector, the female earning distribution is slightly left-shifted in comparison to the male. The absence of a noteworthy gender gap, specifically in the public sector, can be attributed to the nature of the Tunisian labour market legislation, which expressly prohibits gender-based discrimination.¹²

However, upon comparing salaries between the two sectors, it becomes clear that both male and female workers in the public sector earn substantially higher salaries than their counterparts in the private sector, offering preliminary evidence of a sector pay gap in Tunisia.

Figure 4 plots the wage differentials between the public and private sectors at every percentile of the distribution. The differential tends to close to the average (0.477) for the lowest-paid one third of employees, above the average for the middle class of wage earners, and smaller for the highly paid workers.

4.2 | Methodology

While the descriptive statistics presented above offer valuable insights into the wage gap between the public and private sectors in urban areas, it is crucial to note that they represent unconditional earning distributions without accounting for observed worker characteristics that might significantly influence the wage gap. To address this limitation, we employed the Oaxaca-Blinder decomposition (Blinder, 1973; Oaxaca, 1973) (OB decomposition hereafter) and quantile decomposition methods to estimate the wage gap as a function of several crucial observable characteristics, including gender, age, age squared, region, education level, marital status and sector of occupation (see Fortin et al. (2011) for a comprehensive review of decomposition methods). The choice of these variables is based on the main theoretical and empirical works that are used in the investigation of the public-private sector wage differential, among others, Pederson et al. (1990), Smith (1976), and Katz and Krueger (1991). See Bender (1998) for a detailed review of these works.¹³

To gain a deeper understanding of the various factors contributing to the wage differential between the public and private sectors in urban areas, we conducted a comprehensive decomposition analysis at both the mean and various quantiles. Our analysis began with an OB

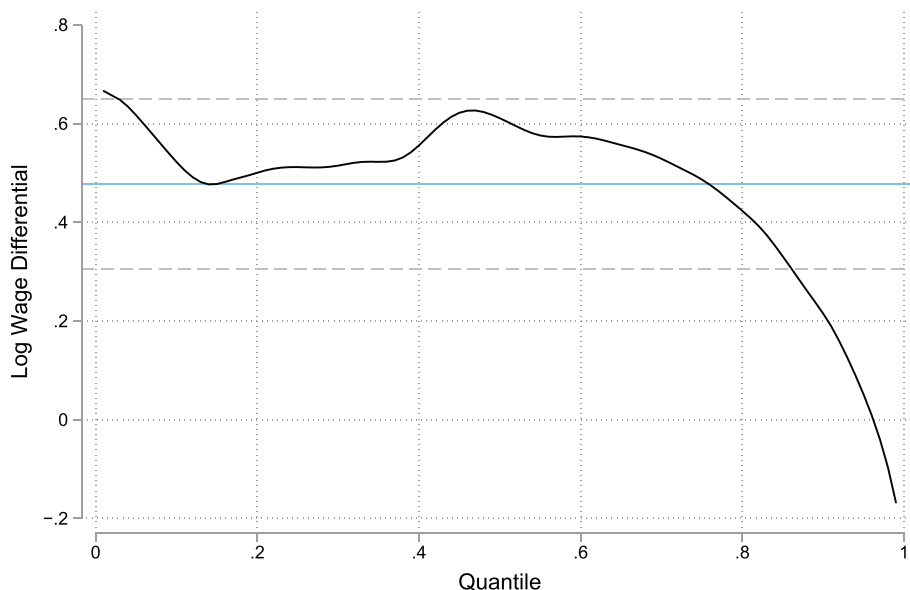


FIGURE 4 Wage differentials at the percentiles of the respective monthly wage distributions, HYSU-2012.

decomposition, focusing on changes in public-private wage. This method decomposes the change in the wage gap into two components: the raw difference attributed to variations in observed characteristics or endowments (explained effect—‘E’ part), also known as composition effect and the differences in coefficients (unexplained effect—‘U’ part), also referred to as the ‘wage structure’ effect. Through the OB decomposition, we can further delineate the contribution of individual covariates to the wage gap.

Consider a regression model, in which log wage of worker i , y_i , is a linear function of some variable X_i :

$$y_i = \alpha + \beta X_i + \varepsilon_i \quad (1)$$

Which, at the mean for ordinary least squares (OLS) yields (since the error term ε for a mean value is zero by the definition of OLS regression, we drop it from the equation):

$$\bar{y} = \hat{\alpha} + \hat{\beta}\bar{X} \quad (2)$$

The wage gap between public and private sectors is given by:

$$\bar{y}_{\text{pub}} - \bar{y}_{\text{priv}} = \underbrace{(\hat{\alpha}_{\text{pub}} - \hat{\alpha}_{\text{priv}}) + \bar{X}_{\text{priv}}(\hat{\beta}_{\text{pub}} - \hat{\beta}_{\text{priv}})}_{\text{Unexplained}} + \underbrace{\hat{\beta}_{\text{pub}}(\bar{X}_{\text{pub}} - \bar{X}_{\text{priv}})}_{\text{Explained}} \quad (3)$$

or as

$$\bar{y}_{\text{pub}} - \bar{y}_{\text{priv}} = \underbrace{(\hat{\alpha}_{\text{pub}} - \hat{\alpha}_{\text{priv}}) + \bar{X}_{\text{pub}}(\hat{\beta}_{\text{pub}} - \hat{\beta}_{\text{priv}})}_{\text{Unexplained}} + \underbrace{\hat{\beta}_{\text{priv}}(\bar{X}_{\text{pub}} - \bar{X}_{\text{priv}})}_{\text{Explained}} \quad (4)$$

where \bar{y}_{pub} , \bar{y}_{priv} and \bar{X}_{pub} , \bar{X}_{priv} represents the mean log monthly wage earnings and mean characteristics of workers in the public and private sectors, respectively. $\hat{\beta}_{\text{pub}}$ and $\hat{\beta}_{\text{priv}}$ are the estimated vectors of returns to worker characteristics.

In addition to examining the factors contributing to wage inequality at the mean, we conducted a decomposition analysis across various percentiles the distribution. This analysis employs an OB type decomposition approach based on Recentered Influence Function (RIF) regressions, as proposed by Firpo et al. (2009). This method allowed us to dissect the wage gap between public and private sector workers at different points within the wage distributions.

Using unconditional quantile decomposition (UQR), the wage gap at the τ th quantile can be decomposed as follows:

$$Q_{\tau}(F_{y_{\text{pub}}}) - Q_{\tau}(F_{y_{\text{priv}}}) = (\bar{X}_{\text{pub}} - \bar{X}_{\text{priv}})\hat{\beta}_{\text{pub},\tau} + \bar{X}_{\text{priv}}(\hat{\beta}_{\text{pub},\tau} - \hat{\beta}_{\text{priv},\tau}) \quad (5)$$

where $Q_{\tau}(F_{y_s})$ is the τ th quantile of distribution of logarithm of wage (s represent the sector: public or private), and $\hat{\beta}_{s,\tau}$ is the estimated coefficient from unconditional quantile regression at the τ th quantile for the respective sector. The first term, $((\bar{X}_{\text{pub}} - \bar{X}_{\text{priv}})\hat{\beta}_{\text{pub},\tau})$ represents the endowment effect—the sector wage gap at the τ th quantile arising from differences in

endowments. The second term $(\bar{X}_{\text{priv}}(\hat{\beta}_{\text{pub},\tau} - \hat{\beta}_{\text{priv},\tau}))$, quantifies the public–private wage gap at the τ th quantile due to the different returns (also referred to as the discrimination effect). The estimation of Equation (5) involves two steps: in the first step of decomposition, RIF regressions are employed to obtain unconditional quantile regression estimates for each sector. The RIF of the dependent variable for each sector can be estimated using the following equation (assuming linear unconditional quantile regression, as proposed by Firpo et al. (2009)):

$$\text{RIF}(y_s; Q_\tau, F_{y_s}) = Q_\tau + \frac{\tau - I(y_s \leq Q_\tau)}{f_{y_s}(Q_\tau)} \quad (6)$$

$$E[\text{RIF}(y_s; Q_\tau, F_{y_s} | X)] = X\beta \quad (7)$$

where $I(\cdot)$ is an indicator function, $f_{y_s}(\cdot)$ is the density of the marginal distribution of y , and Q_τ is the population τ -quantile of the unconditional distribution of y .

The second step decomposes the sector wage gap into explained and unexplained components across quantiles in a similar spirit as the OB decomposition and assuming linearity between the RIF and explanatory variables. To elaborate further, for any given unconditional quantile, the analogous OB decomposition can be expressed as:

$$\hat{\Delta}_\tau = (\bar{X}_{\text{pub}} - \bar{X}_{\text{priv}})\hat{\gamma}_{\text{pub},\tau} + \bar{X}_{\text{pub}}(\hat{\gamma}_{\text{pub},\tau} - \hat{\gamma}_{\text{priv},\tau}) \quad (8)$$

where $\hat{\Delta}_\tau$ is the estimated wage differential between public and private sectors at the τ th quantile, and $\hat{\gamma}_{\text{pub},\tau}$ and $\hat{\gamma}_{\text{priv},\tau}$ denote the estimated coefficients derived from computing the RIF over the set of variables specific to the public and private workers at the τ th quantile, respectively.

5 | EMPIRICAL RESULTS

Before exploring the main results of the public–private wage gap decomposition, it is interesting to initially estimate the single wage equation model following the Mincer earnings functions (Equation (1), with a binary variable to distinguish between the public and private sectors). Additionally, two separate equations, one for each sector, will be examined. Table 3 documents the results associated with these regressions.

Columns 1 and 3 in Table 3 display the results of estimating Equation (1) for the public and private sectors, respectively. Across both sectors, male workers received higher compensation than women. Notably, the gender gap is more pronounced in the private sector, where males earned 33 per cent more than their female counterparts, as opposed to a 15 per cent difference in the public sector. For both sectors, workers with higher levels of education generally received higher salaries compared with their less educated counterparts. Within the private sector, individuals with primary education experienced a 74 per cent lower pay, while those with secondary education experienced 47 per cent lower pay compared with their counterparts with tertiary education. In comparison, the gaps in public sector were slightly lower, with employees possessing primary and secondary education facing a 72 per cent and 38 per cent pay gap, respectively, compared with their tertiary-educated counterparts.

TABLE 3 OLS Log wage regressions—one equation and two equations models, HYSU-2012.

	Two equations model				One equation model	
	Public sector		Private sector		Pooled coefficients	Standard Error
	Coefficients	Standard Error	Coefficients	Standard Error		
Sector (= 1 if public)					0.160***	(0.026)
Demographic variables						
Age	0.053***	(0.012)	0.040***	(0.008)	0.042***	(0.006)
Age squared	-0.051***	(0.014)	-0.042***	(0.009)	-0.042***	(0.008)
Gender (= 1 if male)	0.152***	(0.029)	0.332***	(0.029)	0.266***	(0.022)
Education (tertiary as reference)						
Primary	-0.719***	(0.038)	-0.743***	(0.038)	-0.729***	(0.027)
Secondary	-0.384***	(0.030)	-0.467***	(0.038)	-0.432***	(0.025)
Marital status (=1 if married)	0.122***	(0.042)	0.131***	(0.033)	0.130***	(0.026)
Region (Great Tunis as reference)						
North East	-0.133***	(0.044)	-0.157***	(0.038)	-0.154***	(0.030)
North West	-0.154***	(0.043)	-0.379***	(0.045)	-0.293***	(0.033)
Central East	-0.051	(0.043)	-0.116***	(0.032)	-0.102***	(0.026)
Central West	-0.177***	(0.043)	-0.217***	(0.047)	-0.217***	(0.033)
South East	-0.130***	(0.049)	-0.114***	(0.040)	-0.117***	(0.031)
South West	-0.267***	(0.045)	-0.346***	(0.061)	-0.315***	(0.039)
Sector of occupation (manufacturing as reference)						
Agriculture	-0.237***	(0.090)	-0.262***	(0.054)	-0.216***	(0.044)
Construction and public works	-0.328***	(0.102)	-0.175***	(0.039)	-0.163***	(0.034)
Trade	-0.025	(0.156)	-0.024	(0.038)	-0.020	(0.034)

(Continues)

TABLE 3 (Continued)

	Two equations model				One equation model	
	Public sector		Private sector		Pooled coefficients	
	Coefficients	Standard Error	Coefficients	Standard Error	Coefficients	Standard Error
Transport and Communications	0.030	(0.082)	0.156***	(0.051)	0.164***	(0.041)
Education, Health, Administrative	-0.100	(0.071)	0.144**	(0.058)	0.074**	(0.036)
Other services	-0.207***	(0.073)	-0.050	(0.034)	-0.052*	(0.029)
Constant	5.353***	(0.257)	5.356***	(0.149)	5.326***	(0.123)
Observations	1132		2312		3444	
R-squared	0.392		0.317		0.398	

Note: ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively. Bootstrap standard errors are in parenthesis, 100 replications.

In terms of occupational sectors, the findings indicated no significant difference in public remuneration between manufacturing workers and those employed in trade, transport & communications, as well as in education, health and administration. Conversely, workers in the private sector within these three sectors received higher wages compared with their counterparts in the private manufacturing sector.

Column 5 of Table 3 reports the OLS results of the one equation model. The coefficient of the binary variable sector (=1 if public) is positive and statistically significant, suggesting that, after accounting for certain individual characteristics, workers in the public sector earn a higher monthly wage compared with their counterparts in the private sector. Age is positively associated with monthly earnings, reflecting the potential for learning by doing over the course of career development. Male workers tend to earn more than their female counterparts. Earnings increase with the level of education; in particular, compared with those with tertiary education, workers with only primary or secondary education earn less.

The coefficients for the six economic regions included in the estimation are all negative and significant, indicating that workers in Greater Tunis (comprising the capital Tunis and the three other neighbouring governorates—Ariana, Ben Arous and Manouba) received the highest salaries. Additionally, employees in the manufacturing industry earned, on average, a substantial wage premium compared with their counterparts in agriculture or in construction and public—22 and 16 per cent respectively. However, they earned less than those employed in the transport and communications sector or in education, health and administration.

For a deeper understanding of the factors contributing to the wage gap between the public and private sectors, Table 4 presents the results of OB decomposition of the difference in mean predicted outcome. For comparative analysis, we presented our OB decomposition according to the choice of the reference or base group. Specifically, three different OB decomposition results were reported: the OB decomposition using the public sector coefficients as the reference group (column 1), the OB decomposition based on the private sector coefficients as the reference group (column 3), and column 5 uses the pooled coefficients as reference group (Neumark (1988) recommends using the pooled coefficients). Since the selection of workers into public and private sectors may be not random, we used a two-stage Heckman selection procedure (Heckman, 1979) to correct for this estimation problem. The results of the OB decomposition adjusted for selection bias are reported in column 7 of Table 4.

Given the fact that the OB decompositions involved several sets of categorical variables (education, region and occupation) as independent variables, an identification problem arises, due to the lack of agreement over which category should serve as the reference group. Consequently, the detailed coefficients' effect attributed to dummy variables are not invariant to the choice of reference groups (Gardeazabal & Ugidos, 2004; Yun, 2005). To address this challenge, we adopted the normalized regression approach proposed by Oaxaca and Ransom (1999). The normalized regressions allowed us to identify the constant and estimates of each dummy variable used in our OB decomposition. The results with normalized coefficients are reported in columns 2, 4, 6 and 8 of Table 4.

The upper part of Table 4 outlines the wage gap between the two sectors, along with the two explained and unexplained components. In the lower part of the table, we present the contribution of the various explanatory variables to each of the two components. To facilitate the interpretation of the decomposition results, and considering the substantial number of regressors involved, we aggregate the regressors into five sub-groups: demographic factors (including age, age squared/100, and gender); educational background (basic education, secondary education, and higher education); marital status; regional factors (involving all dummy variables for

TABLE 4 Public–private wage gap: Oaxaca–Blinder decomposition results (HYSU-2012).

	Using public sector coefficients (from col. 1, Table 3)		Using private sector coefficients (from col. 3, Table 3)		Using coefficients from pooled model (from col. 5, Table 3)		Oaxaca–Blinder decomposition adjusted for selection bias	
	Coefficients	Normalization of the coefficients	Coefficients	Normalization of the coefficients	Coefficients	Normalization of the coefficients	Using pooled coefficients	Using pooled coefficients (normalized)
Overall								
Public sector	6.311*** (0.016)	6.311*** (0.016)	6.311*** (0.016)	6.311*** (0.016)	6.311*** (0.016)	6.311*** (0.016)	6.296*** (0.032)	6.296*** (0.032)
Private sector	5.850*** (0.014)	5.850*** (0.014)	5.850*** (0.014)	5.850*** (0.014)	5.850*** (0.014)	5.850*** (0.014)	5.891*** (0.027)	5.891*** (0.027)
Difference	0.461*** (0.021)	0.461*** (0.021)	0.461*** (0.021)	0.461*** (0.021)	0.461*** (0.021)	0.461*** (0.021)	0.405*** (0.042)	0.405*** (0.042)
Explained	0.267*** (0.035)	0.267*** (0.035)	0.329*** (0.033)	0.329*** (0.033)	0.301*** (0.021)	0.301*** (0.021)	0.321*** (0.021)	0.321*** (0.021)
Unexplained	0.194*** (0.037)	0.194*** (0.037)	0.132*** (0.035)	0.132*** (0.035)	0.160*** (0.024)	0.160*** (0.024)	0.084* (0.044)	0.084* (0.044)
Composition effects attributed to								
Demographic variables	0.063*** (0.013)	0.063*** (0.013)	0.023** (0.010)	0.023** (0.010)	0.033*** (0.009)	0.033*** (0.009)		
Education	0.212*** (0.015)	0.212*** (0.015)	0.216*** (0.015)	0.216*** (0.015)	0.213*** (0.013)	0.213*** (0.013)	0.211*** (0.013)	0.211*** (0.013)
Marital status	0.022*** (0.008)	0.022*** (0.008)	0.024*** (0.006)	0.024*** (0.006)	0.024*** (0.005)	0.024*** (0.005)	0.054*** (0.006)	0.054*** (0.006)
Region	−0.031*** (0.006)	−0.031*** (0.006)	−0.045*** (0.008)	−0.045*** (0.008)	−0.039*** (0.006)	−0.039*** (0.006)		
Sector of occupation	0.001 (0.031)	0.001 (0.031)	0.111*** (0.031)	0.111*** (0.031)	0.070*** (0.017)	0.070*** (0.017)	0.056*** (0.018)	0.056*** (0.018)
Wage structure effects attributed to								
Demographic variables	0.201 (0.291)	0.201 (0.291)	0.241 (0.302)	0.241 (0.302)	0.230 (0.305)	0.230 (0.305)		
Education	0.040 (0.041)	0.005 (0.011)	0.036 (0.027)	0.001 (0.006)	0.039 (0.033)	0.004 (0.003)	0.087** (0.037)	0.005 (0.004)
Marital status	−0.005 (0.034)	−0.005 (0.034)	−0.007 (0.044)	−0.007 (0.044)	−0.007 (0.044)	−0.007 (0.044)	−0.011 (0.036)	−0.011 (0.036)
Region	0.043 (0.028)	−0.017 (0.011)	0.057* (0.031)	−0.003 (0.005)	0.051* (0.027)	−0.009 (0.007)		
Sector of occupation	−0.081 (0.061)	0.012 (0.014)	−0.192** (0.078)	−0.098*** (0.037)	−0.150** (0.067)	−0.057** (0.024)	−0.245*** (0.071)	−0.029 (0.026)
Constant	−0.003 (0.297)	−0.002 (0.284)	−0.003 (0.297)	−0.002 (0.284)	−0.003 (0.302)	−0.002 (0.290)	0.254** (0.101)	0.119** (0.059)
Number of observations	3444		3444		3444		3444	

Note: ***, ** and * indicate significance at 1, 5 and 10% levels, respectively. Bootstrap standard errors are in parenthesis, 100 replications. Demographic variables: age, age-square/100, gender (male as reference modality); Education: basic education, secondary education and tertiary education (tertiary level as reference modality); Marital Status: single as reference modality versus Married/widowed or divorced; Region: Great Tunis, Northeast, Northwest, Central East, Central West, Southeast and Southwest (Greater Tunis as reference modality), sector of occupation (manufacturing as reference modality).

each region) and occupational sector (including all dummy variables associated with different occupational sectors). See Table A1 in the Appendix for the detailed OB decompositions.

Turning to our findings shown in Table 4, the mean log-wage gap between public and private workers was 0.461 and statistically significant at 1 per cent, whatever the reference group coefficients. The positive and statistically significant log-wage gap indicates that higher wages are paid to public workers in urban area. This first result is in line with most previous studies on public-private wage gap in developing countries, showing that a public-sector worker earns more than his/her private counterpart. For example, Mizala et al. (2011), using matching methods, confirmed this hypothesis for urban workers in 11 Latin American countries for the 1992–2007 period. They added that the raw public-private gap increased in all the countries except Costa Rica and Paraguay. Melly (2005) argued that only public woman worker earns more than her private counterpart, while men are paid more in private sector.

Table 4 shows, in addition, that the log-wage gap is largely attributed to the explained component, which accounts for 71 per cent when using the private sector as reference group, 57 per cent when considering public sector as reference and 65 per cent when we use the coefficients from the pooled model over both sectors as the reference coefficients. This result shows that discrimination against private sector workers, while it exists and is also significant, remains relatively low and explains only 35 per cent of the total log-wage gap, when the coefficients of the pooled model are considered. Analysis of the contributions of the aggregated groups of covariates to the explained effect of the log-wage gap shows that differences in human capital (particularly education) were the main reason behind the observed log-wage advantages. Education explains by itself 0.707 (about 71 per cent) of the total explained component, and about 46 per cent of the total log-wage gap. Our findings are in accordance with the human capital theory developed by Mincer (1974) and Becker (1964) to explain wage inequality, which suggests that differences in individual education, training and experience accounts for differences in wages. In addition, significant contribution in explaining the wage gap comes from difference in demographic variables, marital status, and sector of occupation. By contrast, the opposite significant effect comes from region.

The detailed OB decomposition (Table A1 in the Appendix) reveals some interesting results, particularly regarding the contribution of different education categories to the wage gap, which needs to be discussed. In general, employees with primary and tertiary education are better paid in the public sector than those in the private sector. Specifically, the contribution of the low educational level (basic and primary education) accounts for a significant part of the explained component (36 per cent) and by 24 per cent to the log-wage gap. Similarly, the tertiary level contributes by 35 and 23 per cent to the explained part and the log-wage gap, respectively. The log-wage gap is negative (-0.002) for workers with secondary level, showing that private sector workers are paid slightly more than their public sector counterparts. The result for workers with low levels of education brings into question the positive relationship between human capital and wages, especially in the public sector. Indeed, the positive log-wage gap may not be associated with a productivity gain in the public sector, but is likely attributed to a form of compensation or rent that public-sector employees enjoy. Those results have a useful interpretation in terms of policy implications aimed at reducing the public-private wage gap and strengthen the public sector's productivity.

Similar results were obtained by Gindling et al. (2020), covering 130 developing countries. Gindling et al. (2020) showed that the public sector generally pays a wage premium compared with all private sector salaried employees, but the size of the premium varies considerably by worker characteristics. More specifically, the public sector premium is greater for employees

with less education and those whose earnings fall in the lower part of the conditional earnings distribution. The authors have even questioned at the end of their analysis if these relatively generous salaries encourage better public sector performance and lead to greater government productivity?

As previously mentioned, the standard OB decomposition does not consider the sample selection bias, given the non-random nature of sectoral choice. The results controlling for the selection bias are presented in the last two columns of Table 4. Before examining the OB decomposition with bias selection correction, we began by interpreting the regression results based on the model using Heckman sample selection (Table A2 in the Appendix). Tertiary education level and log-wages in both public and private sectors were significantly and positively correlated (columns 2 and 4 of Table A2 respectively). Additionally, the log-wage returns to higher education were greater in private sector than in public sector. These findings confirm the study carried out by the Ministry of Vocational Training and Employment on the determinants of net monthly salaries of the 2004 higher education graduates (ONEQ, 2004).¹⁴ The ONEQ's results show that, overall, net monthly salaries in the public sector are significantly higher than those in the private sector. Moreover, the effect of professional experience on net monthly salary is significantly higher in the private sector than in the public sector. In fact, one additional month's work translates into an increase in net monthly salary of 0.8 per cent in the private sector compared with 0.5 per cent in the public sector.

The results in Table A2 show, in addition, that married workers earn more than their single counterparts in both sectors, with very similar coefficients. However, unlike the private sector, workers in the public manufacturing sector are better paid than other workers. The estimated Mills ratio (Inverse Mills Ratio—IMR) as shown in Table A2 is statistically significant (at only 10 per cent level) and has a negative coefficient for only the private sector, indicating a selection bias against private sector. At the 5 per cent significance level, the results of the OB decomposition in Table 4 remain robust and are not affected by selection bias. That is why the observed log-wage gap, as well as the explained part with selection correction (last column in Table 4), are relatively similar to the previous results without selection bias correction (0.405 vs. 0.461 and 0.321 vs. 0.301, respectively). However, the contribution of the unexplained part to the total log-wage gap with bias correction was lower than without correction (21 per cent compared with 35 per cent). According to Vilerts (2018), this improvement is attributed to positive selection effects, indicating that employees in the public sector are better selected (when observable characteristics were identical in both sectors, public sector employees would still command higher wages, owing to superior unobservable characteristics). Education level always remains the most important factor, explaining alone 52 per cent of the total observed wage gap and 65.7 per cent of the total explained.

In addition to the previous decomposition analysis at the mean, we looked at different parts of the log-wage distribution following Fortin et al. (2011), Firpo et al. (2009) and Chernozhukov et al. (2013). We started by estimating our wage Equation (1) for both public and private sectors, respectively, using the Recentered Influence Function (RIF) regressions proposed by Firpo et al. (2009). Table 5 reports results of regressions for three quantiles: the 10th, the 50th (median) and the 90th. As can be observed, results confirmed our earlier findings regarding the gender gap, which is more significant in the private sector. Specifically, for the 10th quantile, males earn 40.6 per cent more than their female counterparts, as opposed to a 39.5 per cent difference in the public sector. The gender gap in the log-wage has closed for the highest quantile (90th), to 13.9 and 24.8 per cent for public and private sectors, respectively.

TABLE 5 RIF quantile regression by public and private sectors, HYSU-2012.

	10%		50%		90%	
	Public	Private	Public	Private	Public	Private
Demographic variables						
Age	0.148*** (0.031)	0.141*** (0.019)	0.057*** (0.014)	0.028*** (0.007)	0.007 (0.016)	0.002 (0.023)
Age square/100	-0.164*** (0.035)	-0.166*** (0.024)	-0.056*** (0.015)	-0.026*** (0.009)	0.003 (0.018)	0.016 (0.028)
Gender	0.395*** (0.073)	0.406*** (0.075)	0.104*** (0.032)	0.276*** (0.027)	0.139*** (0.038)	0.248*** (0.090)
Education (tertiary as reference)						
Primary	-0.596*** (0.097)	-0.380*** (0.095)	-0.877*** (0.043)	-0.457*** (0.034)	-0.553*** (0.051)	-1.987*** (0.114)
Secondary	-0.157** (0.074)	-0.160* (0.096)	-0.429*** (0.032)	-0.219*** (0.035)	-0.373*** (0.039)	-1.661*** (0.116)
Marital status (=1 if married)	0.207** (0.105)	0.034 (0.083)	0.056 (0.046)	0.053* (0.030)	0.077 (0.055)	0.234** (0.100)
Region (Great Tunis as reference)						
North East	-0.117 (0.110)	-0.123 (0.094)	-0.059 (0.048)	-0.024 (0.034)	-0.079 (0.058)	0.247** (0.113)
North West	-0.264** (0.111)	-0.495*** (0.117)	-0.067 (0.048)	-0.314*** (0.043)	-0.176*** (0.058)	-0.503*** (0.141)
Central East	-0.050 (0.107)	-0.100 (0.082)	0.002 (0.047)	-0.011 (0.030)	-0.029 (0.056)	0.047 (0.098)
Central West	-0.363*** (0.110)	-0.546*** (0.120)	-0.070 (0.048)	-0.153*** (0.043)	-0.152*** (0.058)	-0.024 (0.144)
South East	-0.253** (0.124)	-0.122 (0.103)	-0.078 (0.054)	-0.047 (0.037)	-0.144** (0.065)	-0.203 (0.124)
South West	-0.362*** (0.112)	-0.223 (0.152)	-0.150*** (0.049)	-0.213*** (0.055)	-0.070 (0.059)	0.029 (0.183)
Sector of occupation (manufacturing as reference)						
Agriculture	-0.785*** (0.228)	-0.542*** (0.135)	-0.206** (0.100)	-0.121** (0.049)	-0.169 (0.119)	0.183 (0.162)
Construction and public works	-0.940*** (0.256)	-0.300*** (0.099)	-0.136 (0.112)	-0.075** (0.036)	-0.028 (0.134)	-0.112 (0.119)
Trade	-0.303 (0.393)	-0.156 (0.095)	-0.086 (0.172)	0.071** (0.035)	-0.113 (0.205)	0.266** (0.115)
Transport and communications	-0.059 (0.209)	-0.081 (0.129)	0.141 (0.092)	0.165*** (0.047)	-0.150 (0.109)	0.385** (0.156)
Education, health, administrative	-0.127 (0.179)	-0.123 (0.147)	-0.091 (0.078)	0.205*** (0.053)	-0.194** (0.093)	0.418** (0.176)
Other services	-0.618*** (0.183)	-0.307*** (0.086)	-0.141* (0.080)	0.042 (0.031)	-0.141 (0.096)	0.201* (0.103)
Constant	2.602*** (0.655)	2.736*** (0.375)	5.497*** (0.287)	5.343*** (0.136)	6.982*** (0.342)	7.800*** (0.451)
R-squared	0.169	0.0761	0.3466	0.2118	0.1377	0.1646
Observations	1236	2503	1236	2503	1236	2503

Note: ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively. Bootstrap standard errors are in parenthesis, 100 replications.

With regard to education factor, results showed that the log-wage gap between the public and private sectors is always significant, whatever the quantiles (10th, 50th and 90th), and confirmed that workers with higher levels of education generally received higher salaries compared with their less educated counterparts. Moreover, it was clear that wage gap was smaller at the lower quantile than at the other quartiles. For example, workers in public and private sectors with secondary level had 15.4 and 16 per cent lower pay, respectively, than those with tertiary education in the lower quantile (10th) compared with 37.3 and 166 per cent at the top quantile (90th). Results of Table 5 confirmed the findings of the no significant difference of public remuneration between manufacturing workers and those employed in trade and in transport and communications whatever the quantile. In contrast, workers in private manufacturing sector earned less than in private trade or private transport and communication sectors, specifically in the 50th and 90th quantiles.

In addition to OB decomposition at the mean of the log-monthly wage gap between the public and private sectors, we decomposed differences from a distributional viewpoint based on the RIF regressions. We provided decompositions only for three quantiles: the 10th, the 50th (median) and the 90th (Table 6). The results showed the existence of significant (at 1 per cent level) and positive wage gaps between the public and private sectors at the 10th and 50th quantiles. In contrast, there was no significant (at 5 per cent level) log-wage gap at the 90th quantile, but it did become significant at only 10 per cent level, after correcting for potential selection bias.

In line with our earlier OB decomposition results, we found that human capital, specifically education, explains the largest share of the explained part. The education contribution to the explained component becomes more pronounced as we move towards the upper quantiles (it is about 46 per cent for the first 10th quantile, 66 per cent for the 50th quantile, and 79 per cent for the upper quantile—90th).

To better understand the effect of human capital on the log-wage gap between the two sectors, we re-estimated the quantile decomposition for the different levels of education (basic or primary education, secondary education, and tertiary education level). The results of this decomposition are presented in the form of figures (Figure 5) for better readability (see Figures A1 and A2 in the Appendix for gender and regional decomposition of the log-wage gap, respectively). Several interesting findings emerged from Figure 5. That is, with the exception of the first and last quantiles, the total log-wage gap between public and private workers holding primary or secondary education remained nearly identical across the entire distribution. The public-sector premium was greater specifically for employees with basic education from the first (10th) and second (20th) quantiles (the first panel of Figure 5).

Public-sector workers, specifically those falling within the lowest wage quantiles (first and second quantiles), received more favourable compensation compared with their private sector workers. This finding could potentially explain the relatively high unemployment rate among higher education graduates in Tunisia (23.7 per cent in 2023 compared with 15.6 per cent at the national level), as well as the relatively long waiting period before accepting the first job. In contrast, the public–private log-wage gap gradually decreases for the highest quantiles, becoming negative (favouring private-sector workers) from the 7th quantile onward. Those results are in line with those found by Gindling et al. (2020) regarding the public sector wage premium in developing countries. Gindling et al. (2020) showed that higher skilled public sector employees in developing countries are most often paid the same as their private sector counterparts or may even pay a penalty for working in the public sector.

TABLE 6 RIF decomposition results, HYSU-2012 (normalized coefficients).

	10%		50%		90%	
	Pooled coefficients	Pooled coefficients with correction	Pooled coefficients	Pooled coefficients with correction	Pooled coefficients	Pooled coefficients with correction
Overall						
Public sector	5.611*** (0.035)	5.469*** (0.075)	6.527*** (0.017)	6.501*** (0.034)	6.972*** (0.018)	6.887*** (0.039)
Private sector	5.255*** (0.030)	5.237*** (0.060)	5.874*** (0.012)	5.831*** (0.023)	7.002*** (0.038)	6.737*** (0.077)
Difference	0.356*** (0.046)	0.232** (0.097)	0.653*** (0.021)	0.669*** (0.041)	-0.029 (0.042)	0.150* (0.087)
Explained	0.276*** (0.045)	0.299*** (0.041)	0.257*** (0.019)	0.263*** (0.018)	0.504*** (0.054)	0.454*** (0.052)
Unexplained	0.079 (0.065)	-0.067 (0.110)	0.395*** (0.023)	0.406*** (0.042)	-0.534*** (0.069)	-0.304*** (0.108)
Composition effects attributed to						
Demographic variables	0.069*** (0.024)		0.029*** (0.007)		0.047** (0.019)	
Education	0.133*** (0.019)	0.137*** (0.029)	0.184*** (0.011)	0.173*** (0.011)	0.398*** (0.031)	0.358*** (0.031)
Marital Status	0.015 (0.013)	0.061*** (0.012)	0.011** (0.005)	0.035*** (0.005)	0.032** (0.013)	0.063*** (0.011)
Region	-0.062*** (0.014)		-0.033*** (0.005)		-0.022* (0.012)	
Sector of occupation	0.121*** (0.040)	-0.012 (0.078)	0.066*** (0.016)	0.056*** (0.017)	0.049 (0.048)	0.033 (0.049)
Wage structure effects attributed to						
Demographic variables	0.311 (1.058)		0.589* (0.308)		-0.152 (0.540)	
Education	0.012 (0.009)	0.003 (0.016)	0.001 (0.005)	0.000 (0.005)	0.039*** (0.015)	0.038** (0.015)
Marital status	0.134 (0.118)	0.080 (0.088)	0.001 (0.043)	0.032 (0.035)	-0.120 (0.087)	-0.185*** (0.065)
Region	0.006 (0.017)		-0.010 (0.007)		-0.007 (0.017)	
Sector of occupation	-0.018 (0.065)	0.112 (0.093)	-0.063*** (0.023)	-0.042* (0.024)	-0.043 (0.043)	-0.023 (0.043)
Constant	-0.365 (1.027)	-0.148 (0.137)	-0.122 (0.291)	0.415*** (0.057)	-0.251 (0.502)	-0.133 (0.107)
Number of observations	3739		3739		3739	

Note: ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively. Bootstrap standard errors are in parenthesis, 100 replications. Demographic variables: age, age-square/100, gender (male as reference modality); Education: basic education, secondary education and tertiary education (tertiary level as reference modality); Marital Status: single as reference modality versus Married/widowed or divorced; Region: Great Tunis, Northeast, Northwest, Central East, Central West, Southeast and Southwest (Greater Tunis as reference modality), sector of occupation (manufacturing as reference modality).

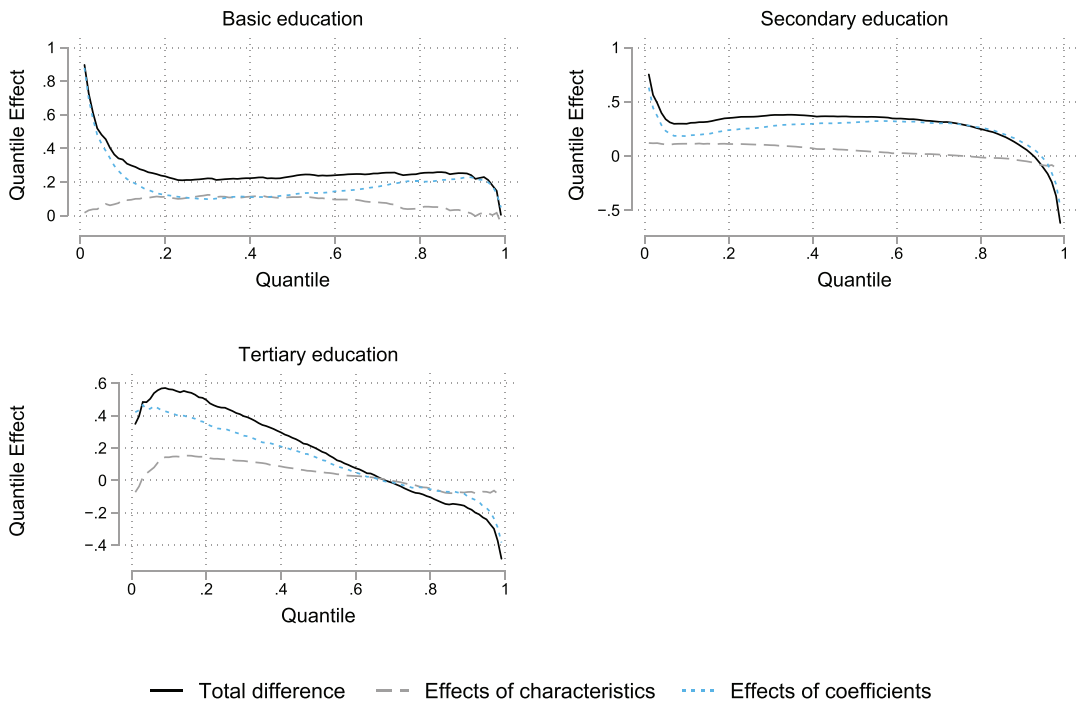


FIGURE 5 Quantile decomposition of the log-wage gap by education level.

It is also interesting to note that, in contrast to the results found for the whole urban population, the wage gap between the two sectors by level of education is explained mainly by the effect of the coefficients (unexplained component). This result is expected, given that education is the most important explanatory variable influencing the explained part of the results already found. Estimating by level of education greatly reduces the share of the explained part in the total gap. Moreover, in the upper of the distribution, the contribution of the composition or characteristics of workers is almost irrelevant, indicating that the total log-wage gap is mainly attributed to the returns to characteristics effect for the highest-paid workers.

6 | CONCLUSION

While there is a clear observable evolution of the wage gap between the public and private sectors in Tunisia, especially after the 2011 revolution, there is a lack of evidence for the reasons behind this wage gap in this country. This paper analyses determinants of the public–private wage differentials in Tunisian urban area after the Arab Spring. Using the 2012 Tunisia Household survey on Youth in Urban Areas (THSYUA or HYSU-2012 for short), we computed standard and selectivity-corrected Oaxaca-Blinder decompositions of monthly wages for both public and private sectors to estimate wage gap component, which is explained by differences in the remunerations of similar characteristics.

The results of the analysis are summarized as follows: First, it is observed that, overall, the public employees generally receive higher wages compared with their counterparts in the private sector. Second, this wage gap is largely explained by the differences in observed

characteristics. Looking at the wage differential by gender, male workers across both sectors received higher compensation than their female counterparts, with a more pronounced gender gap in the private sector. By education level, we found that less educated employees were compensated much more in the public sector. In addition, occupational sectors also influence wages, with certain sectors in the private sector offering higher remuneration compared with their public sector counterparts. Third, correcting for sample selection bias using a two-stage Heckman selection procedure, our results remain robust. Moreover, even when we used the RIF quantile regression, the wage gap persisted across various quantiles, with education remaining a key explanatory factor.

The empirical results found in this study provides comprehensive insights into the factors contributing to the public-private wage gap in Tunisia, emphasizing the role of education and highlighting nuanced differences across different segments of the wage distribution. The sign of overall wage inequality, its decomposition into endowment and returns effects, and their ranking at various population quantiles can help policy makers develop targeted policies related to employment, unemployment and wages policy that bring together all the actors, including the labour organizations and training (UGTT, UTICA, universities, research institutions, etc.). This would require a concerted and sustained effort of the government for both public and private sectors, in order to absorb the country's growing workforce and maintain socio-political stability for years to come.

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ENDNOTES

- ¹ IMF Country Report No. 15/285.
- ² The wage bill covers salaries and wages for central government staff employed in both central and regional administrations, excluding, however staff working in local governments (around 30,000) and state-owned enterprises (around 190,000) (World Bank and African Development Bank, 2020).
- ³ In the standard neo-classical theory, wage rates are determined exclusively by the interaction of supply and demand (see e.g., Katz, 1999).
- ⁴ The trade union density rate measures the percentage of workers who are trade union members. According to the ILO data, Tunisia is ranked 12th out of 134 countries in 2019.
- ⁵ Christofides and Pashardes (2002) argue that the public sector, including its union structures, in the vast majority of developing countries was an extension of a colonial power, that was used to administer highly controlled economic environments. Tunisia is no exception. Indeed, under the French protectorate (1881–1956), the first unions in Tunisia were organized as local sections of the socialist and communist unions in France—the General Confederation of Labour and the United General Confederation of Labour, respectively (Ly Netterström, 2016). labour market is characterized by legislative rigidity and strict employment regulations dictated by the Labour Code of 1966. Moreover, the assassination of Farhat Hached in 1952, the founder of the UGTT in 1946, by the colonial powers assured the sympathy of the Tunisian people for the UGTT, which became a national symbol of the defence of workers' interests, and not just a social organization (Madi, 2023).
- ⁶ According to the official statistics, the minimum wage for the 48-h week will be TND 460 in 2022, while the minimum wage for the 40-h week will be TND 391. Hourly wage earners in the 48-h regime will receive TND 2.2 for each hour worked. Those on the 40-h regime will be entitled to TND 2.3 for each hour worked, stipulated the government decree dated October 19, 2022. Employees receiving the SMIG also enjoy an increase in bonuses in accordance with Government decree N° 215–1764 dated 9 November 2015, including a transport bonus of TND 36.1 per month and a second attendance bonus of TND 2.1 per month. The SMAG is fixed per day and amounts to TND 16.5 in 2022. Domestic workers are excluded from the minimum wages.

- ⁷ Tunisia Urban Youth Survey 2012, Ref. TUN_2012_UYS_v01_M_PUF. Dataset downloaded from: <https://microdata.worldbank.org/index.php/catalog/2332/get-microdata>.
- ⁸ A second survey was carried out in 2012 in rural areas. The Household Survey of Young Tunisians in Rural Areas (THSYRA) comprises 1400 households, a representative sample of the entire rural area of Tunisia. In our study, we have opted to exclude rural areas due to the limited presence of public sector workers. Out of 6499 workers aged between 15 and 64, only 175 (2.64 per cent of total rural population) are employed in the public sector.
- ⁹ District of Tunis, North East, North West, Central East, Central West, South East and South West.
- ¹⁰ <https://microdata.worldbank.org/index.php/catalog/2332>.
- ¹¹ For more details see Annex 1 'Data Sources' of the World Bank, 2014 report '*Breaking the barriers to youth inclusion*'.
- ¹² Article 5 bis of the labour Code, introduced by Law N° 93–66 on 5 July 1993, explicitly states, 'there can be no discrimination between men and women in the application of the provisions on the present code and the texts adopted for its application'. Furthermore, the amendments introduced in 1993 empowered women to participate in the job market without requiring their husband's consent.
- ¹³ According to Bender (1998), four types of econometric techniques are commonly used in investigating the public sector wage differential. The first category does not explicitly utilize econometric modelling to measure the wage gap between the two sectors, but it relies on the presence of a public sector wage premium, demonstrated through lower quit rates in the public sector or the existence of queues for public sector jobs. The second category involves estimating a single wage equation following the Mincer earnings functions, incorporating a binary variable to distinguish between the public and private sectors. A wage gap is identified when the coefficient of this variable is statistically significant. The third approach (the most popular) involves estimating two equations, one for each sector, and decomposes the earnings differential (using the Oaxaca or similar decomposition) into the differences in worker endowments (characteristics) and differences in unexplained factors (parameters). The last category of econometric models is designed to address selection bias, given that there is a choice being made by workers whether to work in the public or private sector (Bender, 1998).
- ¹⁴ Observatoire National de l'Emploi et des Qualifications—ONEQ (2004). Les déterminants des salaires des diplômés du supérieur.

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APPENDIX A

TABLE A1 Detailed OB decompositions, HYSU-2012.

	Public sector coefficients		Public sector coefficients		Private sector coefficients		Private sector coefficients		Pooled coefficients		Pooled coefficients	
	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error
Overall												
Public	6.311***	(0.016)	6.311***	(0.016)	6.311***	(0.016)	6.311***	(0.016)	6.311***	(0.016)	6.311***	(0.016)
Private	5.850***	(0.014)	5.850***	(0.014)	5.850***	(0.014)	5.850***	(0.014)	5.850***	(0.014)	5.850***	(0.014)
Difference	0.461***	(0.021)	0.461***	(0.021)	0.461***	(0.021)	0.461***	(0.021)	0.461***	(0.021)	0.461***	(0.021)
Explained	0.267***	(0.035)	0.267***	(0.035)	0.329***	(0.033)	0.329***	(0.033)	0.301***	(0.021)	0.301***	(0.021)
Unexplained	0.194***	(0.037)	0.194***	(0.037)	0.132***	(0.035)	0.132***	(0.035)	0.160***	(0.024)	0.160***	(0.024)
Composition effects attributable to												
Age	0.250***	(0.060)	0.250***	(0.060)	0.191***	(0.039)	0.191***	(0.039)	0.196***	(0.037)	0.196***	(0.037)
Age square/100	-0.177***	(0.050)	-0.177***	(0.050)	-0.146***	(0.035)	-0.146***	(0.035)	-0.145***	(0.032)	-0.145***	(0.032)
Gender (female as reference)	-0.010***	(0.003)	-0.010***	(0.003)	-0.022***	(0.006)	-0.022***	(0.006)	-0.017***	(0.005)	-0.017***	(0.005)
Primary	0.230***	(0.017)	0.112***	(0.009)	0.238***	(0.017)	0.109***	(0.008)	0.233***	(0.015)	0.109***	(0.007)
Secondary	-0.018***	(0.007)	-0.001	(0.001)	-0.022***	(0.008)	-0.003**	(0.001)	-0.020***	(0.008)	-0.002**	(0.001)
Tertiary			0.100***	(0.008)			0.110***	(0.009)			0.106***	(0.008)
Marital status (single as reference)	0.022***	(0.008)	0.022***	(0.008)	0.024***	(0.006)	0.024***	(0.006)	0.024***	(0.005)	0.024***	(0.005)
Great Tunis			-0.007***	(0.002)			-0.010***	(0.003)			-0.009***	(0.003)
North East	0.002	(0.002)	0.000	(0.000)	0.002	(0.002)	-0.000	(0.001)	0.002	(0.002)	-0.000	(0.000)
North West	-0.008***	(0.003)	-0.001	(0.002)	-0.020***	(0.005)	-0.010***	(0.003)	-0.016***	(0.004)	-0.007***	(0.002)
Central East	0.005	(0.005)	-0.008**	(0.004)	0.012***	(0.004)	-0.008***	(0.003)	0.011***	(0.003)	-0.007***	(0.002)
Central West	-0.011***	(0.003)	-0.003	(0.002)	-0.014***	(0.004)	-0.002	(0.002)	-0.014***	(0.003)	-0.003	(0.002)
South East	0.003*	(0.002)	0.000	(0.001)	0.003*	(0.002)	-0.002*	(0.001)	0.003*	(0.002)	-0.001	(0.001)
South West	-0.021***	(0.005)	-0.011***	(0.003)	-0.028***	(0.006)	-0.013***	(0.004)	-0.025***	(0.005)	-0.012***	(0.003)
Agriculture	0.003	(0.002)	0.002	(0.001)	0.004*	(0.002)	0.003*	(0.002)	0.003*	(0.002)	0.003*	(0.002)

TABLE A1 (Continued)

	Public sector coefficients		Public sector coefficients		Private sector coefficients		Private sector coefficients		Pooled coefficients		Pooled coefficients	
	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error
Manufacturing			-0.028*	(0.014)			-0.007	(0.006)			-0.007	(0.005)
Construction and public works	0.045***	(0.014)	0.028***	(0.010)	0.024***	(0.006)	0.020***	(0.004)	0.022***	(0.005)	0.018***	(0.004)
Trade	0.004	(0.024)	-0.015	(0.019)	0.004	(0.006)	-0.001	(0.004)	0.003	(0.006)	-0.002	(0.005)
Transport and Communications	0.000	(0.000)	0.000	(0.001)	0.000	(0.001)	0.000	(0.002)	0.000	(0.002)	0.000	(0.002)
Education, Health, Administrative	-0.055	(0.039)	0.013	(0.018)	0.079**	(0.032)	0.095***	(0.026)	0.040**	(0.018)	0.057***	(0.013)
Other services	0.004	(0.003)	0.001	(0.001)	0.001	(0.001)	0.000	(0.001)	0.001	(0.001)	0.000	(0.000)
Wage structure effects attributable to												
Age	0.474	(0.542)	0.474	(0.542)	0.534	(0.610)	0.534	(0.610)	0.528	(0.612)	0.528	(0.612)
Age square/100	-0.136	(0.258)	-0.136	(0.258)	-0.167	(0.316)	-0.167	(0.316)	-0.168	(0.314)	-0.168	(0.314)
Gender (female as reference)	-0.137***	(0.031)	-0.137***	(0.031)	-0.125***	(0.029)	-0.125***	(0.029)	-0.130***	(0.031)	-0.130***	(0.031)
Primary	0.013	(0.029)	-0.006	(0.015)	0.005	(0.011)	-0.002	(0.006)	0.010	(0.018)	-0.003	(0.008)
Secondary	0.027*	(0.016)	0.015*	(0.008)	0.031*	(0.018)	0.018*	(0.010)	0.029*	(0.017)	0.017*	(0.009)
Tertiary			-0.005	(0.004)			-0.015	(0.013)			-0.010	(0.009)
Marital status (single as reference)	-0.005	(0.034)	-0.005	(0.034)	-0.007	(0.044)	-0.007	(0.044)	-0.007	(0.044)	-0.007	(0.044)
Great Tunis			-0.018*	(0.010)			-0.014*	(0.008)			-0.015*	(0.008)
North East	0.003	(0.008)	-0.005	(0.006)	0.003	(0.007)	-0.004	(0.006)	0.003	(0.007)	-0.005	(0.006)
North West	0.019***	(0.005)	0.014***	(0.004)	0.031***	(0.009)	0.023***	(0.007)	0.026***	(0.007)	0.019***	(0.006)
Central East	0.016	(0.013)	0.001	(0.010)	0.009	(0.007)	0.001	(0.005)	0.010	(0.008)	0.000	(0.006)
Central West	0.003	(0.005)	-0.002	(0.004)	0.006	(0.009)	-0.003	(0.007)	0.006	(0.008)	-0.002	(0.007)
South East	-0.002	(0.008)	-0.009	(0.006)	-0.002	(0.006)	-0.007	(0.005)	-0.002	(0.006)	-0.008	(0.005)
South West	0.003	(0.003)	0.001	(0.003)	0.010	(0.009)	0.002	(0.007)	0.007	(0.006)	0.001	(0.005)
Agriculture	0.001	(0.006)	0.007	(0.004)	0.001	(0.005)	0.005	(0.003)	0.002	(0.005)	0.006	(0.004)
Manufacturing			0.024	(0.018)			0.003	(0.002)			0.003	(0.004)

(Continues)

TABLE A1 (Continued)

	Public sector coefficients		Public sector coefficients (normalized)		Private sector coefficients		Private sector coefficients (normalized)		Pooled coefficients		Pooled coefficients (normalized)	
	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error	Coefficients	Standard error
Construction and public works	-0.025	(0.018)	-0.010	(0.012)	-0.004	(0.003)	-0.002	(0.002)	-0.003	(0.005)	0.000	(0.004)
Trade	-0.000	(0.026)	0.015	(0.021)	-0.000	(0.001)	0.001	(0.001)	0.001	(0.002)	0.002	(0.002)
Transport and Communications	-0.009	(0.007)	-0.002	(0.004)	-0.009	(0.007)	-0.002	(0.004)	-0.009	(0.006)	-0.002	(0.004)
Education, Health, Administrative	-0.013***	(0.005)	-0.008**	(0.003)	-0.146***	(0.055)	-0.090***	(0.035)	-0.108***	(0.040)	-0.052***	(0.018)
Other services	-0.036*	(0.019)	-0.015	(0.010)	-0.034*	(0.017)	-0.014	(0.009)	-0.034*	(0.017)	-0.014	(0.010)
Constant	-0.003	(0.297)	-0.002	(0.284)	-0.003	(0.297)	-0.002	(0.284)	-0.003	(0.302)	-0.002	(0.290)
Number of observations	3444		3444		3444		3444		3444		3444	

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Standard errors in parenthesis.

TABLE A.2 Estimated results of wage function by public and private sectors, HYSU-2012.

	Public sector		Private sector	
	Coefficients	Normalized coefficients	Coefficients	Normalized coefficients
Education				
Primary	-0.657*** (-15.33)	-0.318*** (-12.24)	-0.773*** (-19.32)	-0.352*** (-19.38)
Secondary	-0.360*** (-11.72)	-0.021 (-1.08)	-0.489*** (-11.79)	-0.068*** (-3.56)
Tertiary		0.339*** (16.31)		0.421*** (16.44)
Marital status				
Married	0.288*** (8.20)	0.288*** (8.20)	0.303*** (11.62)	0.303*** (11.62)
Sector of activity				
Agriculture	-0.295*** (-3.15)	-0.133** (-2.22)	-0.162*** (-2.91)	-0.216*** (-4.80)
Manufacturing		0.162** (2.45)		-0.055** (-2.18)
Construction and public works	-0.436*** (-4.14)	-0.274*** (-3.77)	-0.047 (-1.22)	-0.102*** (-3.41)
Trade	-0.088 (-0.54)	0.074 (0.57)	0.080** (2.07)	0.025 (0.85)
Transport and communications	0.065 (0.75)	0.227*** (4.45)	0.324*** (6.20)	0.269*** (6.45)
Education, health and administration	-0.136* (-1.84)	0.026 (0.77)	0.153** (2.51)	0.098** (1.98)
Other services	-0.243*** (-3.20)	-0.081** (-2.17)	0.035 (1.01)	-0.019 (-0.75)
Mills ratio (Lambda)	0.094 (0.56)	0.094 (0.56)	-0.252* (-1.81)	-0.252* (-1.81)
Constant	6.489*** (76.49)	5.988*** (130.44)	6.235*** (120.59)	5.869*** (189.69)
Observations	1132	1132	2312	2312
R-squared	0.325	0.325	0.234	0.234

Note: *t*-statistics in the parenthesis. ***, ** and * indicate significance at 1, 5 and 10 per cent levels, respectively. Variables used in selection equation: age, age square/100, gender, regional dummy variables, interaction between gender variable and higher education level, interaction between gender variable and primary education level, primary education, secondary education, interaction between gender and married variable.

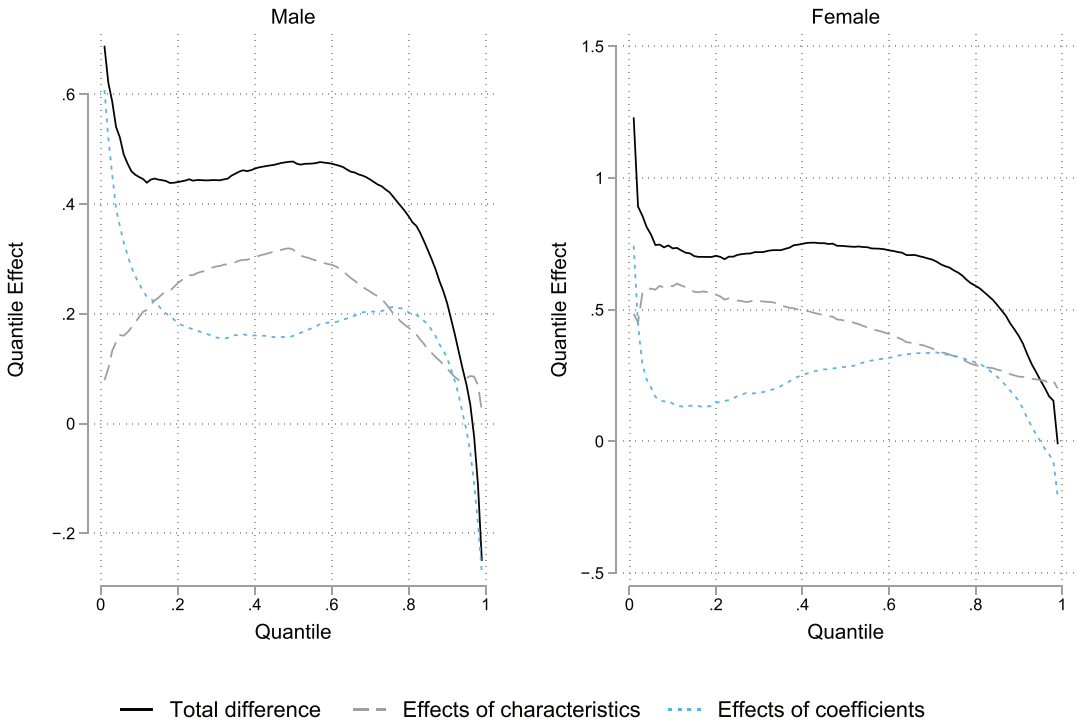


FIGURE A1 Quantile decomposition of the log-wage gap by gender.

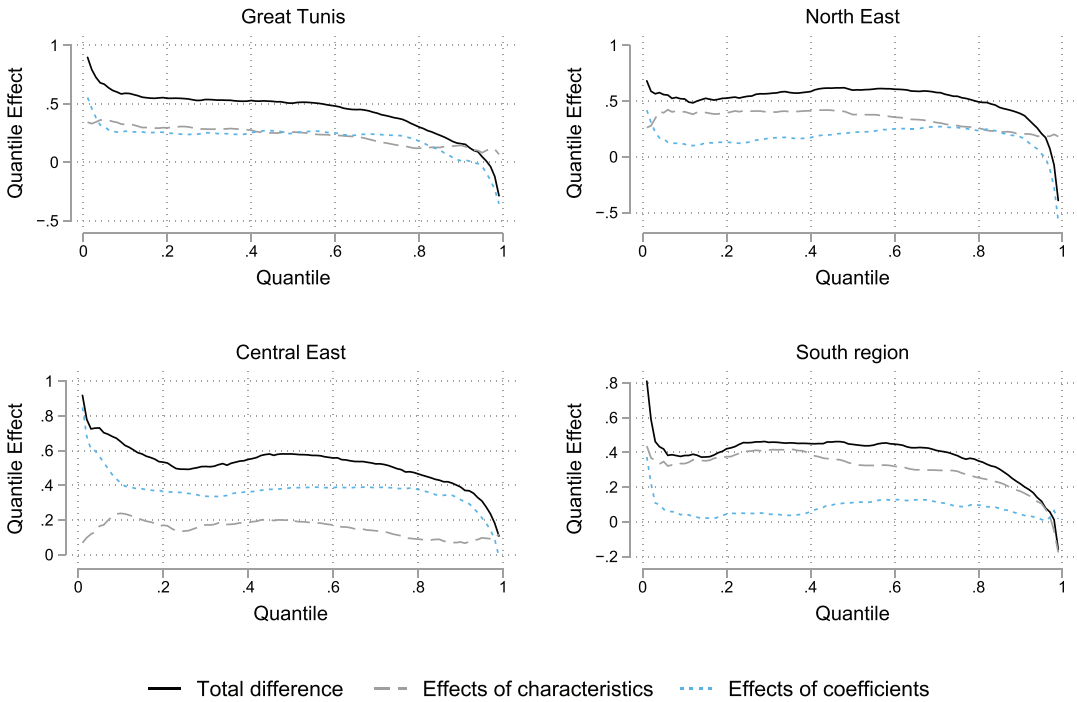


FIGURE A2 Quantile decomposition of the log-wage gap by region. Figures for the north-western and central-western regions are not presented here, given the limited number of observations, especially for the public sector in these two regions.