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Abstract

This paper examines the role of industrial and occupational segregation in explaining the gender wage gap and its evolution in Georgia between 2004 and 2015. It first documents the declining trends observed in the gender wage gap in Georgia during this period, commenting on some of the possible underlying factors driving such trends. It then presents evidence that employment patterns by industry and occupations are highly concentrated in the country and measures the degree of segregation using the Duncan index. Next, it analyzes if and how much industrial and occupational segregation have contributed to the gender wage gap and its decline by decomposing the gender wage gap into the within-category and between-category components. The results point to existing gender wage gaps within sectors, industries, and occupations being the primary drivers of the wage gap in Georgia, and find a smaller role of gender segregation per se in these categories.

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Occupational Segregation and Declining Gender Wage Gap: The Case of Georgia

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I. Introduction

Gender inequality represents a significant barrier for human development, and consequently a hinder to the full economic growth and development of any country. Gender inequality entails a different degree of access to similar opportunities based on the single circumstance of gender, placing women in a disadvantageous situation. Its importance has been emphasized in recent years by including it as a key dimension in the context of the MDGs and SDGs. Therefore, a comprehensive assessment of gender disparities should come from several fronts, as suggested by the different measures that have been developed to evaluate the extent of it. For instance, the United Nations Gender Inequality Index (GII) measures gender inequalities present in three human development aspects, which include reproductive health, empowerment, and economic status. On the other hand, the Global Gender Gap Index analyzes gender inequalities in four different areas, which are health, education, economy, and politics. The advantages of achieving gender equality are numerous, however in this process it is of primary importance to identify the underlying factors and understand how they drive the disparities across genders in several fronts.

This paper focuses on the economic front of gender equality, as its primary focus is the gender wage gap in Georgia. In the global context, Georgia ranked 76 of 159 countries in the 2015 UN GII, placing it just above the lower half. However, in a more recent ranking, the country ranks 94 of 144 in the 2017 Global Gender Gap Index, placing it below the global average. In the context of the Eastern Europe and Central Asia region, the country ranks as the fifth lowest performer in terms of the Global Gender Gap Index. Of the four sub-indexes that compose the global index, Georgia performs best at economic participation and opportunity, ranking 75 globally. Nevertheless, similar to other countries in the region, Georgia performs worst at health and survival, ranking 124 of 144. The main underlying factor for the low health performance is the high sex ratio at birth of boys to girls, which places the country at place 138 out of a total of 144. Thus, gender inequality remains a challenge in Georgia.

This paper complements the literature on gender wage gaps in Georgia by investigating the contribution of occupational and sector segregation. To this end, the paper is organized as follows: section II presents a brief overview of the gender wage gap trends observed in Georgia in the last decade, section III documents the existing gender segregation in terms of occupations and sectors in Georgia, and section IV describes the methodology for the remaining analysis. Main findings of the role of segregation in the gender wage gap are presented in section V, and finally section VII concludes and comments on policy implications of our findings.

II. Data and descriptive statistics

This study uses data from the Georgian Household Budget Survey (HBS) for the period 2004-2015. The HBS is a quarterly survey of about 3,000 households that follows a rotating panel design. Surveyed households remain in the sample for four quarters before being replaced by a new cohort. We limit the sample to 25–55-year-old individuals to avoid issues related to the selection into

retirement and schooling. We assess the wages of wage workers only, who comprise about 40 percent of female and male labor force. The original sample includes 525,601 observations. The age restriction results in 232,614 observations with non-missing labor force status. For the analysis on gender wage gap, we use contractual monthly wages from primary employment, excluding bonuses, subsidies, and presents, and convert them into 2005 constant Georgian laris (GEL) using the quarterly Consumer Price Index. Monthly rather than hourly wages are used due to the lack of the data on the exact number of hours worked.

Male and female wage workers in 2015 are younger than in 2004 (Table 1). There are proportionately more men among 25-34-year-olds, almost equal proportion of male and female workers among 35-44-year-olds, and proportionately fewer men among 45-55-year-olds. This pattern is consistent with women being out of workforce during their 20s and early 30s and (re-) entering the workforce in their late 30s and 40s.

During this period the share of married workers in female employment increased faster whereas it decreased for men, resulting in the contraction in the gap. We note that the sharpest spike in the female share took place during the 2008 crisis, which is consistent with the female added worker effect.

Work hours increased for women and decreased for men. Hence, the gender gap in the share of workers employed for 40 hours or more contracted throughout the 2004 – 2015 period as it decreased from 0.476 to 0.428 for men and increased from 0.229 to 0.358 for women. It is notable that the consistent decrease for men is observed even during the economic recovery period after 2012.

The role of vocational education declined for both men and women, but more so for men. The 10-percentage points decline for men between 2004 and 2015 was associated with a 7 percentage point increase in the share of male workers with high school education or less. For women, the changes in the educational composition were not as dramatic and they maintained their advantage in the share of workers with higher education.

Somewhat paralleling these developments in education, the share of male workers in blue-collar occupations increased during this period. But the composition of blue-collar occupations shifted as their share in low-skill blue collar occupations increased by 9.5 percentage points and their share in high-skill blue collar occupations declined between 2004 and 2015. For women, the relocation appears to have taken place within white-collar occupations from high-skill to low-skill occupations. As a result of these developments, the gender gap in low-skill blue-collar jobs widened whereas it shrank in high-skill blue-collar jobs. Similarly, the gender gap (favoring women) in high-skill white-collar occupations contracted whereas it shrank in low-skill white-collar occupations.

During this period, the role of the private sector expanded and did so more for women than for men. The share of female workers in the private sector increased by 16.8 percentage points from 0.414 to 0.582 between 2004 and 2015. Men, on the other hand, experienced only a 6.9 percentage

point increase from 0.627 to 0.696. These changes have been particularly evident since 2011, which indicates that private sector may be playing an increasingly prominent role in the more recent shifts taking place in the Georgian economy. The shares of workers in trade and finance increased for both men and women. For men the share of workers in the mining industry also increased, which is consistent with the growing importance of blue-collar occupations in men's employment composition although notably their share in manufacturing declined during this period. At the same time, the share of employment in typically state-dominated economic sectors such as education, health and public administration and defense either declined or has not changed, even as some of them (e.g. health) became increasingly privatized.

Despite these changes, women's employment patterns by industries and occupations remained highly concentrated. As many as 47.2 percent of female workers in 2015 were employed in only three sectors: health, education and culture and 86.4 percent of them were employed in white-collar occupations. Men's employment composition is much more evenly distributed across different sectors and occupations.

Table 1. Summary statistics, men and women, selected years.

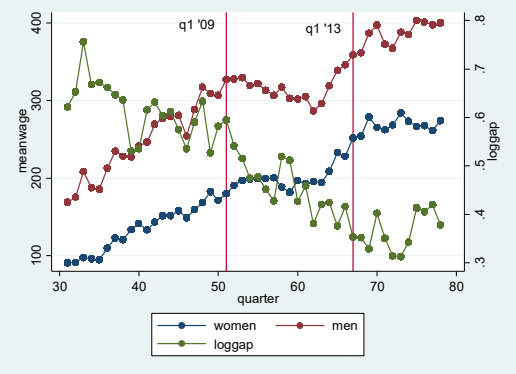
	2004	2007	2011	2012	2013	2014	2015	2004	2007	2011	2012	2013	2014	2015
	MALES							FEMALES						
Age														
25-34	0.289	0.331	0.373	0.371	0.38	0.349	0.364	0.237	0.264	0.264	0.28	0.277	0.303	0.31
35-44	0.366	0.315	0.302	0.299	0.284	0.321	0.324	0.393	0.357	0.348	0.363	0.332	0.325	0.329
45-55	0.345	0.353	0.325	0.33	0.335	0.329	0.312	0.37	0.379	0.388	0.357	0.391	0.372	0.361
Education														
Secondary or lower	0.261	0.282	0.324	0.307	0.309	0.301	0.333	0.151	0.133	0.148	0.157	0.159	0.132	0.161
Vocational	0.255	0.206	0.187	0.205	0.182	0.183	0.155	0.268	0.244	0.25	0.225	0.23	0.22	0.217
Higher	0.484	0.512	0.489	0.488	0.509	0.516	0.512	0.581	0.623	0.602	0.618	0.611	0.648	0.622
Marriage														
0	0.181	0.223	0.187	0.177	0.191	0.204	0.212	0.378	0.413	0.345	0.334	0.324	0.316	0.337
1	0.819	0.777	0.813	0.823	0.809	0.796	0.788	0.622	0.587	0.655	0.666	0.676	0.684	0.663
Georgian														
0	0.115	0.092	0.066	0.082	0.077	0.078	0.071	0.107	0.094	0.075	0.078	0.057	0.084	0.072
1	0.885	0.908	0.934	0.918	0.923	0.922	0.929	0.893	0.906	0.925	0.922	0.943	0.916	0.928
Urban														
0	0.334	0.303	0.356	0.35	0.337	0.34	0.362	0.275	0.231	0.256	0.293	0.312	0.309	0.31
1	0.666	0.697	0.644	0.65	0.663	0.66	0.638	0.725	0.769	0.744	0.707	0.688	0.691	0.69
Tbilisi														
0	0.611	0.542	0.65	0.639	0.633	0.625	0.613	0.569	0.515	0.574	0.597	0.591	0.573	0.589
1	0.389	0.458	0.35	0.361	0.367	0.375	0.387	0.431	0.485	0.426	0.403	0.409	0.427	0.411
Working														
20 hours or less	0.033	0.034	0.05	0.044	0.038	0.042	0.032	0.098	0.134	0.166	0.15	0.15	0.147	0.114
21-39	0.439	0.293	0.432	0.412	0.404	0.432	0.485	0.661	0.46	0.494	0.493	0.48	0.486	0.516
40 or more	0.476	0.599	0.447	0.479	0.483	0.453	0.418	0.229	0.39	0.311	0.325	0.354	0.347	0.358
Seasonal	0.052	0.074	0.071	0.065	0.074	0.074	0.065	0.011	0.016	0.029	0.031	0.016	0.02	0.013

State														
0	0.627	0.603	0.66	0.653	0.689	0.687	0.696	0.414	0.389	0.499	0.514	0.573	0.575	0.582
1	0.373	0.397	0.34	0.347	0.311	0.313	0.304	0.586	0.611	0.501	0.486	0.427	0.425	0.418
Skill														
low-skill blue-collar	0.217	0.231	0.312	0.308	0.279	0.269	0.312	0.06	0.068	0.081	0.085	0.081	0.083	0.096
high-skill blue-collar	0.188	0.211	0.139	0.145	0.135	0.124	0.131	0.048	0.038	0.037	0.047	0.031	0.018	0.04
low-skill white-collar	0.141	0.129	0.168	0.136	0.137	0.145	0.142	0.209	0.207	0.255	0.231	0.239	0.227	0.255
high-skill white-collar	0.455	0.429	0.382	0.411	0.449	0.462	0.415	0.683	0.687	0.627	0.637	0.648	0.672	0.609
Industry														
Agriculture	0.053	0.05	0.042	0.039	0.042	0.032	0.041	0.01	0.014	0.012	0.01	0.007	0.005	0.016
Mining	0.011	0.013	0.038	0.04	0.033	0.03	0.047	0	0.001	0.006	0.003	0.006	0.014	0.007
Manufacturing	0.14	0.149	0.113	0.107	0.111	0.106	0.103	0.07	0.049	0.078	0.087	0.076	0.061	0.068
Utilities	0.062	0.035	0.057	0.047	0.054	0.045	0.03	0.011	0.008	0.009	0.008	0.016	0.009	0.005
Construction	0.073	0.154	0.109	0.119	0.096	0.095	0.112	0.001	0.017	0.006	0.006	0.003	0.01	0.009
Trade	0.12	0.109	0.13	0.123	0.144	0.133	0.142	0.112	0.142	0.127	0.117	0.121	0.132	0.136
Hotels	0.012	0.011	0.011	0.023	0.022	0.016	0.014	0.032	0.029	0.033	0.036	0.038	0.028	0.042
Transport	0.106	0.11	0.091	0.12	0.101	0.123	0.101	0.042	0.022	0.03	0.011	0.032	0.041	0.043
Finance	0.018	0.025	0.034	0.017	0.033	0.033	0.03	0.025	0.034	0.021	0.033	0.046	0.049	0.056
Real estate	0.047	0.058	0.047	0.038	0.043	0.052	0.065	0.043	0.043	0.021	0.027	0.024	0.021	0.024
Public administration	0.195	0.153	0.18	0.168	0.191	0.179	0.191	0.099	0.064	0.083	0.083	0.082	0.09	0.09
Education	0.07	0.056	0.069	0.052	0.036	0.058	0.048	0.359	0.328	0.325	0.342	0.329	0.333	0.28
Health	0.025	0.024	0.024	0.025	0.034	0.035	0.026	0.126	0.177	0.132	0.125	0.128	0.118	0.119
Culture	0.058	0.052	0.045	0.065	0.054	0.06	0.047	0.054	0.048	0.073	0.079	0.051	0.056	0.073
Private hh	0	0.002	0.009	0.013	0.003	0.001	0	0.013	0.021	0.04	0.033	0.037	0.028	0.029
International	0.01	0.001	0.001	0.005	0.003	0.001	0.003	0.003	0.003	0.003	0.001	0.004	0.004	0.002

Notes: weighted proportions; Skill categories correspond to four occupational groups based on the ISCO-88 single-digit occupation coding: 1–3 = high-skilled white-collar (such as teachers, physicians, engineers); 4–5 = low-skilled white-collar (such as office clerks, sales, and customer service personnel); 6–7 = high-skilled blue-collar (such as machine operators and skilled agricultural workers); and 8–9 = low-skilled blue-collar (such as drivers, movers).

As Figure 1 shows, real wages of men and women grew between 2004 and 2008 and the gap contracted from 64 to 59 log points as women's wages grew faster. The 2008 crisis contributed to the contraction in men's wages and stagnation of women's wages between the first quarter of 2009 and the last quarter of 2011, which led to the further contraction in the gap down to 44 log points in 2011. Starting from the beginning of 2012, the growth in men and women's wages resumed as gender wage gap continued contracting, reaching 38 log points in 2013, indicating that during the post-recession recovery women's wages continued catching up with men's wages. Since then, however, there has been a slowdown in wage growth and the gap appears to have grown to 45 log points, the highest level since 2011. Nevertheless, the overall trend of the gender wage gap is declining, as it contracted by 19 log points between 2004 and 2015.

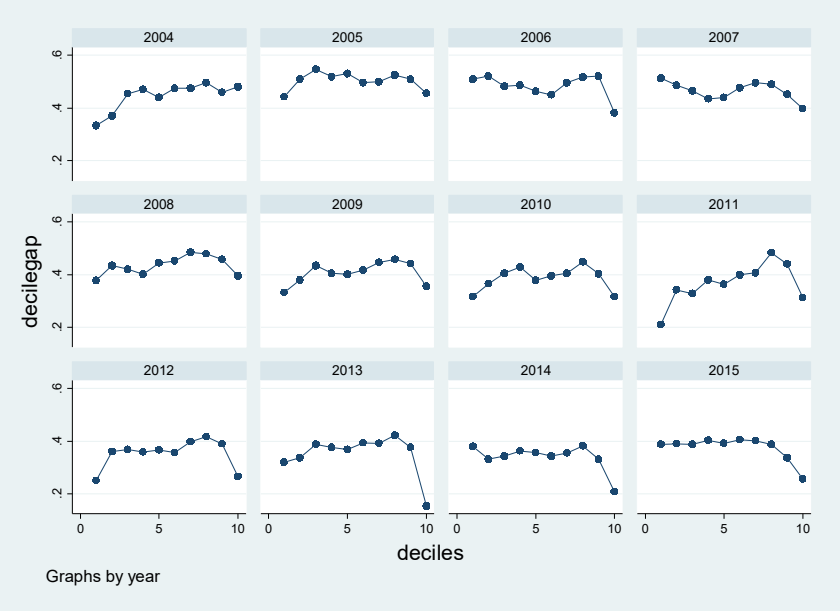
Figure 1. Real wages of men and women in 2005 constant GEL and the gender wage gap in log points



The developments observed in the gender wage gap were powered by different distributional dynamics (Figure 2). In particular, during 2004, the gap was upward sloping across the wage distribution, potentially indicative of the glass ceiling effect, which is present when women in high-earning occupations are unable to advance due to the limited access to promotion opportunities or other forms of discrimination. By 2007, the gap became downward sloping, suggesting that the contraction in the gap at the mean was driven by improvements in the position of women at the top of the distribution, likely due to changes in the public sector. In fact, at the bottom end of the distribution, the gap increased, likely due to the expansion of male-dominated construction and transport sectors. The 2008 crisis resulted in the cyclical contraction of these industries, which shrank the gap at the bottom end of the distribution back to the pre-recession level. The gap also contracted at the top end, leading to an inverted-U shape of the gender wage gap across wage distribution present through 2012. Since then, the gap widened at the bottom end of the distribution, potentially indicative of the recovery in the male-dominated industries, resulting in a flat curve until the 80th percentile, at which point it

slopes downwards. This impact was strong enough to result in the expansion of the gender wage gap at the mean between 2013 and 2015.

Figure 2. The gender wage gap across the wage distribution.



These observations suggest that gender wage gap movements contain a strong cyclical element, due to the considerable industrial and occupational segregation. Similarly, for the period before 2012, Khitarishvili (2016) attributes the considerable size of the gender wage gap to the high degree of industrial and occupational segregation. This motivates the focus of the present paper to examine and quantify the role that segregation, in terms of occupations and sectors, has played in the movement of the gender wage gap in Georgia between 2004 and 2015.

III. The state of industrial and occupational segregation in Georgia

In Georgia, women's employment patterns by industries and occupations remain highly concentrated. As many as 47.2 percent of female workers in 2015 were employed in only three sectors: health, education, and culture, and 86.4 percent of them were employed in white-collar occupations. This contrasts with men's employment composition, which is much more evenly distributed across different sectors and occupations. Industrial and occupational segregation are typically among the main explanatory factors underlying the gender wage gap (references). But, to what extent is it the case in Georgia? We explore this question by first examining in greater detail the degree of industrial and occupational segregation in Georgia during 2004 – 2015 and then by quantifying its contribution to the gap.

We establish the extent of industrial and occupational segregation by using the Duncan index (Duncan and Duncan, 1955), defined as:

$$D = \frac{1}{2}\sum_{i=1}^{N}|m_i - w_i|,$$

where m_i is the percentage of males in total males in category *i* and w_i is the percentage of females in total females in category *i*. The value of the index varies from 0 to 1. The value of 0 implies that there is no segregation by category *i*, and the value of 1 indicates complete segregation. The value of the index increases with the level of disaggregation. For example, Anker (1998) reports that the value of the Duncan index in France in 1990 was 0.393 when using single-digit standard industrial classification (SIC) categories for occupation and 0.607 when using three-digit SIC categories. In this analysis, we present the values for industries and occupations based on five sets of categories: public and private sector; 13 industry categories; 4 skill categories, 9 single-digit ISCO-88 categories; and 299 ISCO-88 four-digit occupation categories.

Table 2. Duncan index in Georgia.

year	public	industry	Skill (4 categories)	Occupation (9 single-digit ISCO-88 categories)	Occupation (299 categories, four-digit ISCO-88 categories)
2004	0.2137	0.4489	0.3229	0.3763	0.7007
2005	0.1859	0.4458	0.3329	0.3737	0.6697
2006	0.1964	0.4987	0.3581	0.3897	0.7044
2007	0.2162	0.5176	0.3637	0.3903	0.6996
2008	0.1807	0.5068	0.3784	0.3995	0.7012
2009	0.1536	0.5159	0.3608	0.3873	0.6859
2010	0.1561	0.4735	0.3508	0.3784	0.7048
2011	0.1796	0.4666	0.3493	0.3579	0.7180
2012	0.1748	0.4671	0.3514	0.3716	0.7316
2013	0.1695	0.4613	0.3298	0.3570	0.7058
2014	0.1575	0.4479	0.3196	0.3388	0.6884
2015	0.1444	0.4588	0.3378	0.3546	0.7290
average	0.1774	0.4757	0.3463	0.3729	0.7033

Source: GHBS data

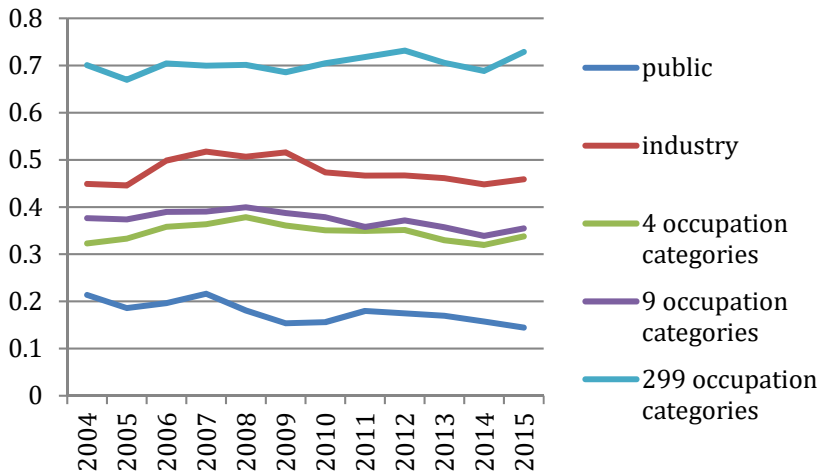
The value of the index is 0.1774 when using the public and private sector categories, indicating that 17.74 percent of workers have to be moved in order to obtain an equal gender distribution of employment (Table 2). There is a strong correlation between public ownership and

industrial composition in Georgia. For example, education, health, and culture are mainly state-financed whereas manufacturing, trade, and finance are privately-financed. Therefore, industry-based analysis can shed further light on the findings of the public/private sector analysis. When the index is defined in terms of 13 industrial categories, as expected, we obtain a higher value, indicating that 47.47 percent of workers have to be moved in order to achieve gender balance in employment.

Next, we consider the Duncan index of occupational segregation. As we move from the least detailed breakdown (4 skill categories) to the most detailed (299 four-digit categories), the Duncan index rises from 0.3463 to 0.7033. The latter index is the closest to the commonly reported index out of the three occupation-based indices in Table 2. It reveals the degree of occupational segregation much higher than what is observed in industrialized countries. For example, the recent estimates of the Duncan index for the US based on the three-digit 1990 Census occupational classifications indicate the value of about 0.50 in 2011 (Hegewisch and Hartmann, 2014).

During the 2004 – 2007 expansion the degree of industrial and occupational segregation increased (Figure 3). After 2009 however, a downward trend is discernable in the index calculated using all, but the most detailed, categories (Figure 3). This would indicate a decrease in the degree of industrial and occupational segregation. With that said, these changes are not large, which is not unusual. For example, Anker (1998) reports that between 1973 and 1990, the Duncan index in the Netherlands decreased from 0.671 to 0.588 when measured in three-digit SIC categories. On the other hand, in Japan between 1970 and 1990 it hardly changed, if anything increasing from 0.526 to 0.529. In the United States, after declining from about 0.70 to 0.50 between 1970 and mid-1990s, the index stalled at about 0.50 in 2011 (Hegewisch and Hartmann, 2014).

Figure 3. Duncan index trends in Georgia.



IV. Methodology

Hence, we establish that the degree of industrial and occupational segregation in Georgia is considerable. For our purposes, a key issue is whether and how much industrial and occupational segregation have contributed to the presence of the gender wage gap and its decline in Georgia between 2004 and 2015, especially in the context of the relatively stable picture in terms of industrial and occupational employment patterns. We examine this question by using the approach proposed in Brown, Moon and Zoloth (1980), hereafter BMZ. This approach breaks down the gender wage gap into the intra-category and inter-category components. For example, considering the case of industrial segregation, the gender wage gap is decomposed into the component that is due to the presence of the gap within each industry (intra-industry component) and the component due to gender differences in industry employment shares (inter-industry component). The second component can be viewed as the contribution of industrial segregation to the gender wage gap whose role we are particularly interested in quantifying.

Intuitively, the BMZ approach enables us to see whether the gender wage gap is present due to the wide gap within sectors or due to the high degree of segregation, which relegates women to lowly remunerated industries and occupations. If the culprit is the wide gap within sectors, the overall gender wage gap will be present even if women and men are equally represented in all sectors of the economy, i.e. if there is no industrial or occupational segregation. On the other hand, the overall gender wage gap will also be present if the gap within sectors is very small, but there is high degree of industrial or occupational segregation, in which women are concentrated in industries and occupations with relatively low wages.

To obtain the decomposition in Brown et al. (1980), first consider the Mincerian earnings equation for male and female employees,

$$Y_g^i = \beta_g^i X_g^i + \varepsilon_g^i \,,$$

where g represents gender (m and f) and i represents category (e.g. industry, occupation, skill). Estimating the Mincerian earnings equation for men and women separately, we obtain

$$\bar{Y}_g^i = \hat{\beta}_g^i \bar{X}_g^i ,$$

where $\bar{Y}_g^i$ is the average of the natural logarithm of monthly wages for men and women, $\hat{\beta}_g^i$ is the vector of OLS coefficient estimates for men and women, and $\bar{X}_g^i$ is the matrix of average values of characteristics for men and women, estimated for each category *i*. Next, we can express the gender wage gap as the gap between the weighted sums of wages, the category weight being p_g^i , the share of male and females in occupation *i*:

$$\bar{Y}_m - \bar{Y}_f = \sum_{i=1}^{N} p_m^i \bar{Y}_m^i - \sum_{i=1}^{N} p_f^i \bar{Y}_f^i .$$

In the next step, the gap is further decomposed into the inter-category and intra-category components:

$$\bar{Y}_m - \bar{Y}_f = \sum_{i=1}^{N} p_f^i (\bar{Y}_m^i - \bar{Y}_f^i) + \sum_{i=1}^{N} (p_m^i - p_f^i) \bar{Y}_m^i .$$

The first term on the right-hand side represents the intra-category component of the gender wage gap, which is the sum of the gender wage gap for each category weighted by the employment share of men (women) in this category. The second term represents the inter-category component of the gender wage gap, which is present when there is category-based segregation. For example, if there is strong industrial segregation and the differences in the male and female employment shares are large, the contribution of the inter-category component would be large. Unlike the Duncan index, the actual differences rather than their absolute values are taken. Therefore, it is possible for the degree of industrial segregation to be substantial (as is the case in Georgia) however for the inter-industry component to be small, if women are under-represented in some sectors but over-represented in others.

The last step entails the decomposition of the inter- and intra-category components into explained and unexplained parts, similar to the Oaxaca Blinder approach:

$$\bar{Y}_m - \bar{Y}_f =$$

$$\sum_{i=1}^{N} p_f^i \hat{\beta}_m^i (\bar{X}_m^i - \bar{X}_f^i) + \sum_{i=1}^{N} p_f^i \bar{X}_f^i (\hat{\beta}_m^i - \hat{\beta}_f^i) + \sum_{i=1}^{N} \bar{X}_m^i \hat{\beta}_m^i (p_m^i - \hat{p}_f^i)$$
$$+ \sum_{i=1}^{N} \bar{X}_m^i \hat{\beta}_m^i (\hat{p}_f^i - p_f^i).$$

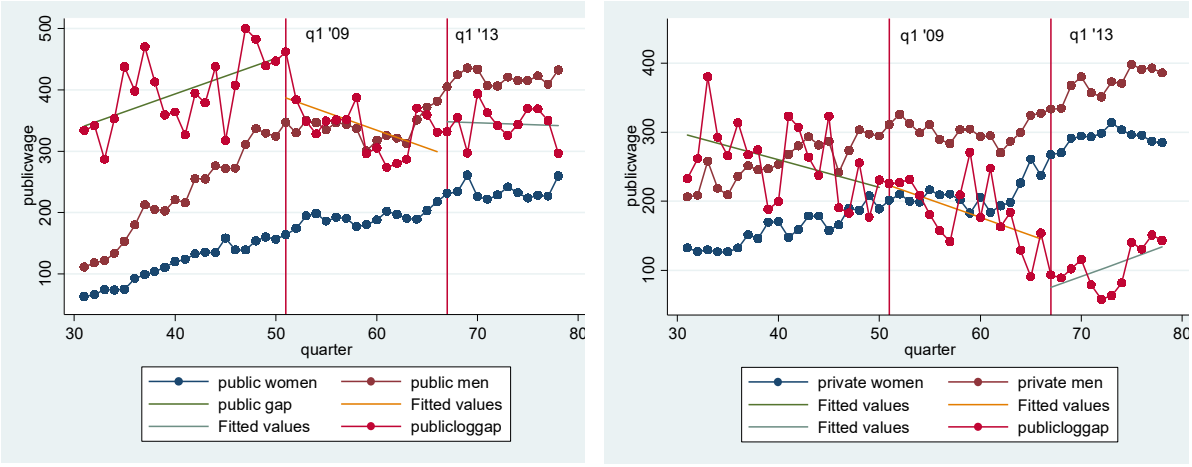
V. The role of segregation in explaining the gender wage gap

Sector segregation

Public and private sector breakdown

We first analyze the breakdown by public and private sectors. Over 40 percent of women and 30 percent of men in 2015 were employed in the public sector. Figure 4 depicts the movements in the wages of men and women and in the gender wage gap between 2004 and 2015 separately for the public and private sectors. Even though wages remain lower in the public sector, the gender wage gap in it is higher than in the private sector (Figure 4). Between 2004 and 2007 public sector wages grew faster than private sector ones. Because the increase in public sector wages was more pronounced for men, the gender wage gap in the public sector increased during this period. On the other hand, it unequivocally contracted in the private sector, resulting in the slight net decrease in the overall gap. The 2008 crisis precipitated the drop in wages in both sectors and hit men harder than women. As a result, the gender wage gap contracted in both sectors immediately following the crisis. Wages started to recover at the beginning of 2012 and continued growing until the end of 2013 when the wage growth stalled and turned negative for women in the private sector. The gap in the public sector remained flat whereas in the private sector it widened, resulting in a slight widening of the overall gap. This lies in contrast to the developments during the 2004-2007 expansionary period when the wages grew and overall gap slightly contracted.

Figure 4. Wages and gender wage gap in the public and private sectors, 2004-2015.



The results of the BMZ decomposition reveal that the primary factors underlying the presence of the large gap in Georgia are considerable gaps within the private and public sectors. Sectoral segregation by public and private sectors appears to be inconsequential in explaining the presence of the gender wage gap in Georgia. Indeed, out of the 53.53 log points in the overall gap during 2004-2015, 53.55 log points (or 100.02 percent) are due to the wage inequality within sectors and, if anything, the inter-sectoral component is negative and the contribution

of the inter-sector component to the gender wage gap is miniscule (Table 3). In part, the small magnitude of the inter-sector component averaged over 2004 and 2015 is a reflection of a switch from a positive to negative contribution between 2004 and 2015 starting from 2007. As Figure 4 demonstrates, this was because prior to 2007 the wages in the female-dominated public sector were slightly lower than the wages in the male-dominated private sector. As a result, the impact of gender differences in the employment shares in the private sector (positive value) outweighed the impact of the gender differences in the employment shares in the public sector (negative value), resulting in a positive inter-sector component in equation (4). After 2007, as the wages in the public sector caught up with private sector wages, so did the negative contribution of the gender differences in the employment shares in the public sector, eventually slightly dominating the gap (Table 3).

Table 3. Decomposition of the gender wage gap into intra- and inter-sectoral components (public/private), 2004-2015.

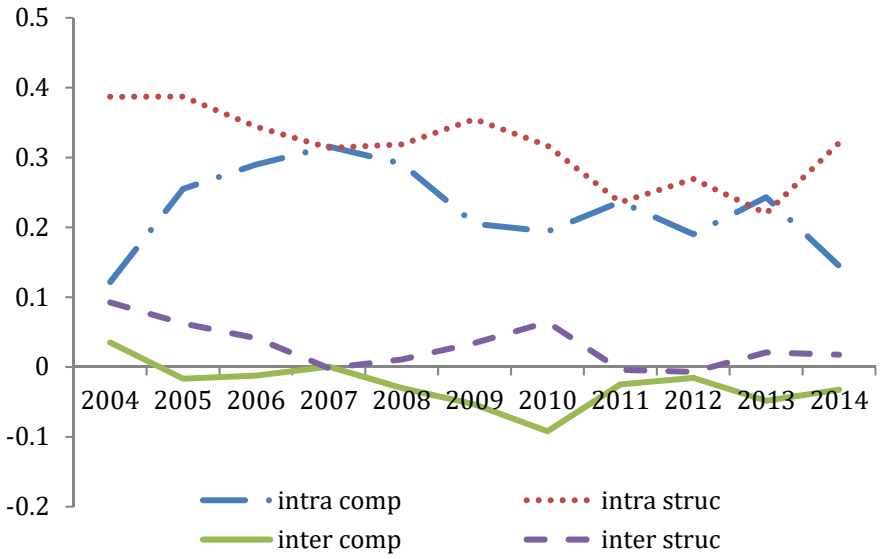
	Total	Intra	Intra private	Intra public	Inter	Inter private	Inter public
2004	0.6361	0.5085	0.2207	0.2878	0.1275	1.0886	-0.9611
	(0.0267)	(0.0249)	(0.0169)	(0.0195)	(0.0133)	(0.0820)	(0.0716)
2005	0.6877	0.6420	0.2350	0.4070	0.0457	0.8390	-0.7933
	(0.0266)	(0.0270)	(0.0173)	(0.0254)	(0.0078)	(0.0885)	(0.0843)
2006	0.6629	0.6339	0.2305	0.4035	0.0290	0.9651	-0.9361
	(0.0270)	(0.0274)	(0.0176)	(0.0213)	(0.0077)	(0.0997)	(0.0953)
2007	0.6284	0.6296	0.2015	0.4280	-0.0012	1.1455	-1.1466
	(0.0283)	(0.0291)	(0.0168)	(0.0246)	(0.0080)	(0.1035)	(0.1032)
2008	0.5903	0.6097	0.1976	0.4122	-0.0194	0.8477	-0.8671
	(0.0219)	(0.0223)	(0.0145)	(0.0191)	(0.0053)	(0.0700)	(0.0719)
2009	0.5406	0.5598	0.1809	0.3789	-0.0192	0.6451	-0.6643
	(0.0176)	(0.0182)	(0.0112)	(0.0154)	(0.0036)	(0.0732)	(0.0749)
2010	0.4830	0.5108	0.1611	0.3498	-0.0279	0.6832	-0.7110
	(0.0182)	(0.0182)	(0.0128)	(0.0138)	(0.0040)	(0.0621)	(0.0646)
2011	0.4431	0.4722	0.2010	0.2711	-0.0291	0.8627	-0.8919
	(0.0240)	(0.0243)	(0.0171)	(0.0193)	(0.0065)	(0.0886)	(0.0914)
2012	0.4368	0.4593	0.1798	0.2796	-0.0226	0.7660	-0.7886
	(0.0252)	(0.0260)	(0.0184)	(0.0189)	(0.0055)	(0.0897)	(0.0922)
2013	0.4354	0.4629	0.1875	0.2754	-0.0276	0.6555	-0.6831
	(0.0251)	(0.0249)	(0.0212)	(0.0155)	(0.0050)	(0.0906)	(0.0939)
2014	0.3823	0.4009	0.1504	0.2504	-0.0186	0.6310	-0.6495
	(0.0233)	(0.0238)	(0.0192)	(0.0159)	(0.0044)	(0.0812)	(0.0838)
2015	0.4509	0.4656	0.2086	0.2570	-0.0146	0.6559	-0.6706
	(0.0225)	(0.0224)	(0.0172)	(0.0149)	(0.0036)	(0.0838)	(0.0852)

Notes: bootstrapped standard errors in parentheses (200 replications); all estimates are statistically significant at 1% significance level.

It was this switch from the widening to the contracting contribution of sectoral (public/private) segregation that contributed to the shrinking of the gender wage gap in Georgia and in some years played the primary role in that process. For example, between 2004 and 2007 the gap within the public sector widened and its contribution to the gap increased from 29 to 43 log points (Figure 5) (intra component). The overall gap nevertheless contracted during this period because, on the one hand, the sectoral segregation turned in women's favor as public sector wages increased (inter-component dropped from 13 log points to 0) and, importantly, the gap within the private sector also shrank (intra private in Figure 5 decreased from 22 to 20 log points) The latter finding highlights the growing role of the private sector in contributing to the reduction in the gender wage gap in Georgia.

Hence, the gender wage gap in Georgia exists primarily because the gaps are considerable within both public and private sectors rather than due to the proportionately greater presence of women in the public sector (sectoral segregation). To what extent can these findings be explained by the differences in the composition of the female and male workforce? The BMZ decomposition reveals that 42 percent of the gender inequality within industries (or the intra-sector component) is due to explanatory factors, such as marital status, educational attainment, and industry of employment (Figure 5). This finding implies that women's joint characteristics within each sector place them at a disadvantage relative to men. However, the unexplained portion is even greater: 58 percent of the within sector inequality is due to unobserved factors, such as discriminatory practices in wage setting and promotion. In terms of sectoral segregation (or the inter-sector component), the composition effect is small but negative, suggesting that, given gender differences in the characteristics of workers, more women than men should be employed in these sectors. However, due to unobserved factors (potentially including discriminatory employment practices), this is not the case. Hence, even though the sectoral segregation dynamics appear to increasingly favor women, women nevertheless face unobserved barriers, both in terms of wages and the selection into sectors.

Figure 5. Decomposition of inter- and intra-industry components into the composition and structure effects.



Industrial segregation

We further disaggregate the results by industries. We observe that, similar to the private/public sector findings, the contribution of the intra-industrial component (gender gap within industries) dominates, although its magnitude is smaller, varying from 52 to 84 percent during 2004 – 2015 (Table 4). Hence, industrial segregation plays a much more important role when we use industries as the metric of analysis implying that within public and private sectors of the economy female-dominated industries tend to remunerate more poorly than male-dominated industries.

Over time, both intra-industrial and inter-industrial components of the gender wage gap contracted, leading to the overall reduction in the gender wage gap (Table 3). This indicates that between 2004 and 2015 women in Georgia benefitted from the changes in their compensation relative to men within industries and from the movement into the industries with higher wages.

Table 4. Decomposition of the gap into intra and inter components by industry.

	total	Intra	Inter
2004	0.6361	0.4730	0.1598
	(0.0266)	(0.0398)	(0.0308)
2005	0.6877	0.4723	0.2214
	(0.0266)	(0.0377)	(0.0287)
2006	0.6629	0.4322	0.2427
	(0.0270)	(0.0382)	(0.0277)
2007	0.6284	0.3496	0.2795
	(0.0283)	(0.0372)	(0.0276)

2008	0.5903	0.4012	0.1924
	(0.0219)	(0.0337)	(0.0249)
2009	0.5406	0.3873	0.1534
	(0.0176)	(0.0287)	(0.0204)
2010	0.4830	0.3139	0.1658
	(0.0182)	(0.0244)	(0.0187)
2011	0.4431	0.2725	0.1718
	(0.0240)	(0.0340)	(0.0258)
2012	0.4368	0.3008	0.1285
	(0.0252)	(0.0416)	(0.0330)
2013	0.4354	0.2260	0.2000
	(0.0251)	(0.0328)	(0.0251)
2014	0.3823	0.2654	0.1145
	(0.0233)	(0.0316)	(0.0216)
2015	0.4509	0.3776	0.0707
	(0.0225)	(0.0304)	(0.0244)

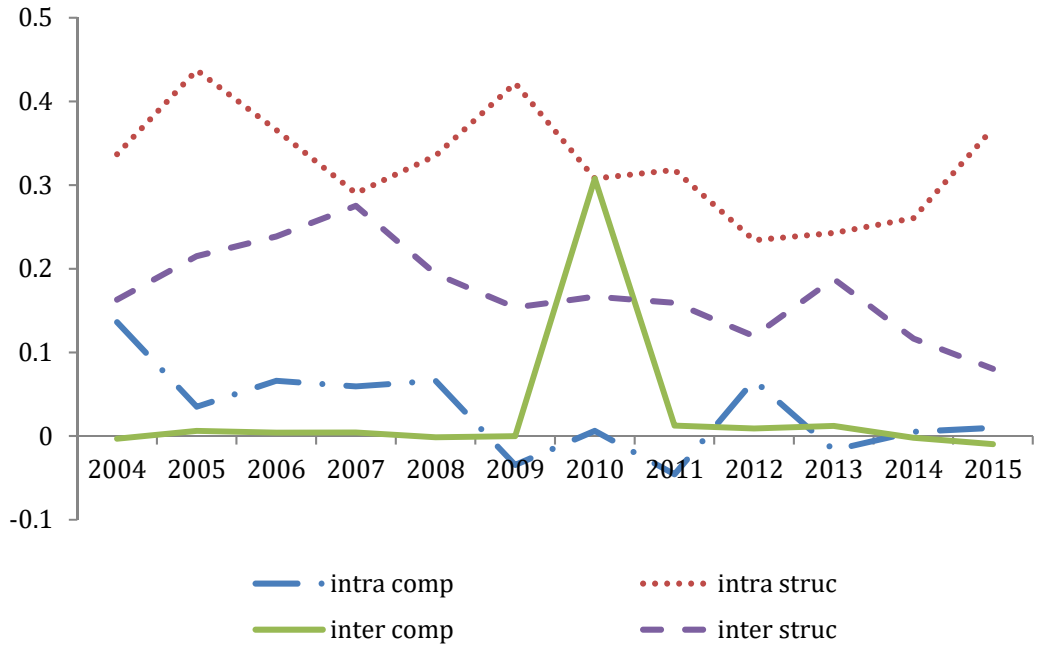
Notes: bootstrapped standard errors in parentheses (200 replications)

What industries drive these developments? The decomposition results suggest that in terms of the gender wage inequality within sectors (intra-industrial component), health care and education were the biggest culprits followed by trade and manufacturing (Table 1 in the Appendix). At the same time, these sectors also experienced the biggest drops in gender wage inequality, contributing the most to the contraction in the overall intra-industrial component. As for the role of industrial segregation (inter-industry component), finance sector is emerging as the sector in which women's representation has increased in recent years, one of the private-sector developments potentially underlying the observed reduction in industrial segregation. Inter-industry component has also decreased in the education sector, although in that case the reduction reflects the growing (rather than diminishing) degree of gender segregation in already the most gender-segregated sector in the Georgian economy. Hence, in the case of the education sector the wage changes within this industry combined with the higher degree of gender segregation have jointly contributed to the contraction in the gap. Given the growing role of the private sector in education, these findings shed more light on the ways in which the private sector has contributed to the gender wage gap contractions in Georgia.

What portion of the gender wage inequality within sectors (intra-industrial component) is due to the gender differences in observed characteristics within industries and how has the role of these gender differences changed over time? We find that, unlike the public/private breakdown, in which about half of the gap within each sector (intra-sector component) could be explained by differences in the characteristics of men and women, a very small proportion of the intra-industrial component can be explained by differences in the characteristics (Figure 6). On average less than 10 percent of the intra-industrial component between 2004 and 2016 is due to observed factors, and in some years the composition effect is in fact negative (suggesting that women receive lower wages despite having stronger characteristics within

sectors). This finding implies that the greater role of observed characteristics in explaining the gaps in the public and private sectors masks a strong selection by observed characteristics into different industries within each sector (as a result of which the composition effect in the intra-industrial component is low). Similarly, the composition effect in industrial segregation (inter-industrial component) is small, implying that selection into industries is also driven primarily by unobserved factors.

Figure 6. Decomposition of inter- and intra-sectoral components into the composition and structure effects.



Occupational segregation

To provide another angle for examining the degree of gender-based segregation in the Georgian labor market, we examine the gap by skill characteristics focusing on low- and high-skill blue- and white-collar occupations.

The BMZ decomposition by skill level reveals that gender differences in skill-based employment composition (inter-occupation component, or occupational segregation) during 2004 – 2015 lower the gap on average by 11 log points (Table 7). This implies that skill-based gender segregation favors women in that it should reduce rather than widen the gender wage gap, mainly due to the high concentration of women in high-skill white-collar occupations. This, in turn, means that the gap is solely due to the high degree of gender wage inequality within skill categories.

Table 7. Decomposition of the gap into intra and inter components, by skill.

	total	intra	intra lsbc	intra hsbc	intra lswc	intra hswc	inter	inter lsbc	inter hsbc	inter lswc	inter hswc
2004	0.6361	0.6610	0.0388	0.0251	0.0979	0.4992	-0.0250	0.7531	0.6853	-0.3332	-1.1302
	(0.0267)	(0.0301)	(0.0055)	(0.0041)	(0.0120)	(0.0265)	(0.0117)	(0.0500)	(0.0480)	(0.0647)	(0.0825)
2005	0.6877	0.7470	0.0469	0.0378	0.1124	0.5500	-0.0593	0.8716	0.6539	-0.4091	-1.1757
	(0.0266)	(0.0307)	(0.0069)	(0.0052)	(0.0123)	(0.0295)	(0.0120)	(0.0664)	(0.0548)	(0.0654)	(0.0820)
2006	0.6629	0.7394	0.0483	0.0366	0.1142	0.5402	-0.0764	0.9530	0.7110	-0.4455	-1.2949
	(0.0270)	(0.0298)	(0.0062)	(0.0057)	(0.0127)	(0.0271)	(0.0119)	(0.0536)	(0.0576)	(0.0692)	(0.0885)
2007	0.6284	0.7397	0.0519	0.0313	0.0842	0.5723	-0.1113	0.8269	0.9082	-0.4008	-1.4456
	(0.0283)	(0.0316)	(0.0075)	(0.0041)	(0.0118)	(0.0302)	(0.0142)	(0.0598)	(0.0533)	(0.0647)	(0.0976)
2008	0.5903	0.7468	0.0516	0.0210	0.0861	0.5880	-0.1564	0.9719	0.7866	-0.3798	-1.5351
	(0.0219)	(0.0217)	(0.0051)	(0.0033)	(0.0086)	(0.0217)	(0.0119)	(0.0545)	(0.0430)	(0.0560)	(0.0821)
2009	0.5406	0.6858	0.0501	0.0150	0.0994	0.5213	-0.1452	1.1199	0.6246	-0.3937	-1.4959
	(0.0176)	(0.0198)	(0.0051)	(0.0022)	(0.0085)	(0.0192)	(0.0103)	(0.0479)	(0.0340)	(0.0482)	(0.0721)
2010	0.4830	0.6177	0.0494	0.0188	0.1354	0.4141	-0.1347	1.1316	0.5664	-0.5188	-1.3139
	(0.0182)	(0.0182)	(0.0044)	(0.0027)	(0.0096)	(0.0154)	(0.0089)	(0.0466)	(0.0287)	(0.0534)	(0.0700)
2011	0.4431	0.5881	0.0512	0.0207	0.1115	0.4048	-0.1451	1.2036	0.5253	-0.4559	-1.4180
	(0.0240)	(0.0257)	(0.0066)	(0.0035)	(0.0118)	(0.0232)	(0.0141)	(0.0694)	(0.0516)	(0.0730)	(0.0946)
2012	0.4368	0.5418	0.0532	0.0259	0.0921	0.3707	-0.1051	1.1893	0.5310	-0.5012	-1.3242
	(0.0252)	(0.0255)	(0.0074)	(0.0049)	(0.0115)	(0.0227)	(0.0124)	(0.0647)	(0.0527)	(0.0680)	(0.0962)
2013	0.4354	0.5537	0.0489	0.0142	0.1023	0.3883	-0.1184	1.0724	0.5630	-0.5575	-1.1962
	(0.0251)	(0.0244)	(0.0058)	(0.0032)	(0.0106)	(0.0219)	(0.0123)	(0.0608)	(0.0429)	(0.0655)	(0.0902)
2014	0.3823	0.4724	0.0480	0.0148	0.0739	0.3356	-0.0901	1.0234	0.5885	-0.4511	-1.2509
	(0.0233)	(0.0241)	(0.0051)	(0.0030)	(0.0099)	(0.0229)	(0.0099)	(0.0622)	(0.0421)	(0.0679)	(0.0932)
2015	0.4509	0.5632	0.0621	0.0200	0.1121	0.3690	-0.1123	1.2015	0.5037	-0.6316	-1.1859
	(0.0225)	(0.0232)	(0.0059)	(0.0034)	(0.0121)	(0.0195)	(0.0112)	(0.0641)	(0.0419)	(0.0718)	(0.0900)

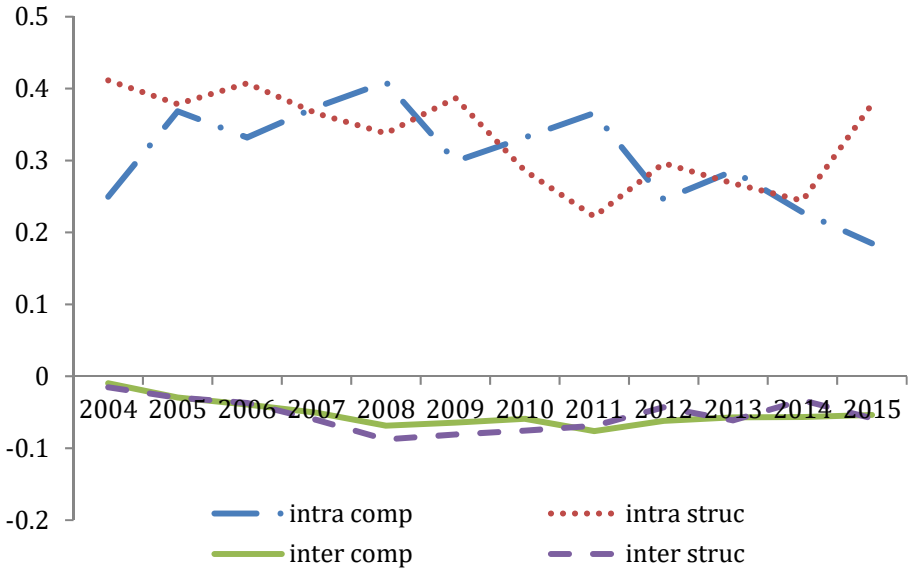
Notes: bootstrapped standard errors in parentheses (200 replications); All estimates are significant at 1% significance level; lsbc is low-skill blue-collar occupations, hsbc is high-skill blue-collar occupations; lswc is low-skill white-collar occupations and hswc is high-skill white-collar occupations.

Between 2004 and 2008 the gender wage inequality within skill categories (intra-skill) widened as its contribution increased from 66 to 75 log points. This impact was driven by the widening inequality in high-skill white-collar occupations (Table 7). The gap nevertheless contracted from 63 to 59 log points because gender differences in skill-based employment composition (or inter-skill component) widened in favor of women from -2 to -16 log points and wages of women in high-skill white collar occupations increased faster than in other categories.

In contrast, since 2008, the intra-skill component shrank, no longer counteracting but rather contributing to the contraction in the gap from 59 to 45 log points between 2008 and 2015. Once again, the changes in the wage inequality in high-skill white-collar occupations were the driving force (Table 7). The contribution of the intra-skill component in high-skill white-collar occupations decreased from 59 to 37 log points. This finding is consistent with the previously-documented reductions in the gap within the public sector generally, and in healthcare and education, in particular, primarily contributing to the contraction in the overall gap. On the other hand, the role of skill-based segregation (inter-skill component) at lowering the gap decreased from –16 to -11 log points between 2008 and 2015. This was to a large degree due to the combined effect of the reduced negative role of skill-based segregation in high-skill white-collar occupations and stronger positive role of skill-based segregation in low-skill blue-collar occupations, which outweighed the reduction in the positive effect of skill-based segregation in high-skill blue-collar occupations and stronger negative impact of the skill-based segregation in low-skill white-collar occupations (Table 7).

To what degree can these changes be explained by observed factors and to what extent are they due to unobserved shifts? The breakdown reveals a roughly equal contribution. That is, almost half of the gender wage gap within each skill category is due to observed differences in characteristics, such as marital status, education level and age, and slightly more than half of wage gap within industries remains unexplained (Figure 7). This picture remains remarkably stable between 2004 and 2015. Similarly, the selection into skill categories and ultimately gender differences in skill-based employment composition can be roughly equally attributed to observed gender differences in the characteristics and to unobserved factors.

Figure 7. Decomposition of inter- and intra-skills components into the composition and structure effects.



VI. Conclusions and policy implications

This paper analyzes the movements in the gender wage gap in Georgia using the lens of industrial and occupational segregation .and reveals that the gender wage gap in Georgia is present mainly due to the gender wage inequality within industries and skill categories rather than due to the industrial and skill-based segregation.

Industrial and occupational segregation have been shown to be important determinants of gender wage gaps in a range of countries. Using the Duncan index, we establish that industrial and occupational segregation in Georgia during 2004 – 2015 was high. We then quantify the role of industrial and occupational segregation in relation to the within-industry or within-occupation gender wage inequality by employing the decomposition approach proposed in Brown et al. (1980). This analysis demonstrates that, despite the high degree of industrial and occupational segregation, it is the gender wage gaps within sectors (public and private), industries and skill categories that are the primary factor underlying the presence of the gender wage gap in Georgia. This is in part because female-dominated industries and occupations do not pay much less than the economy–wide average, because women are concentrated in the industries and occupations that have benefitted during expansionary periods and were not as affected by the 2008 crisis as male-dominated industries. Our findings also highlight the growing role of the private sector in contributing to the gender wage gap contraction in Georgia. Importantly, we establish that at least a half or more of the gaps within sectors (public

and private), industries and skill categories cannot be accounted for by observed characteristics.

Focusing on the changes between 2004 and 2015, the reductions in the inequality within sectors, industries, and skill levels were the main driver of the reductions in the gender wage gap observed between 2004 and 2015. However, changes in industrial and occupational segregation benefitting women also contributed to the reduction in the gap in all three cases.

Previous work has demonstrated large scope for policy interventions in reducing the gender wage gap in Georgia. For example, Khitarishvili (2016) finds that, in part due to the presence of high degree of industrial and occupational segregation, public sector reforms have enabled swift reductions in the gender wage gap in Georgia. Our analysis further underscores the important role that policy interventions can play. In particular, the findings of the high unexplained share of the intra- and inter- components emphasize that unobserved barriers that limit their labor market earnings remain sizable for women in Georgia. Thus, our policy recommendations include the implementation of measures that will directly contribute to equal wages, such as the laws that mandate equal pay for equal work and ensure stronger representation of women on company boards (World Bank 2016).

Despite its relatively modest role in explaining the gender wage gap in Georgia, the high degree of industrial and occupational segregation is nevertheless problematic to the extent that it reflects strong gender specialization patterns by subject in tertiary education that can widen gender gaps in the long run, especially as Georgia attempts to strengthen its STEM-trained workforce. According to the UNESCO data, the percentage of tertiary-level female graduates in fields such as arts and humanities, education, health and welfare, is twice the percentage among men. Yet for fields such as engineering, manufacturing and construction, information and communication technologies, and services, the percentage of female graduates is less than half that of male graduates. Hence introducing programs that encourage women to pursue these presently male-dominated fields in tertiary education and ultimately employment should be a policy priority. To complement these efforts, targeted policy should also focus on facilitating the transition from school to work.

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Appendix

Table A1. Inter- and intra- industry breakdown, by industry.

	total	Intra	ag	manuf	utilities	construc	trade	hotels	transport	finance	real est	pub ad	educ	health	culture
2004	0.6361	0.4730	0.0014	0.0313	-0.0014	-0.0004	0.0511	0.0172	0.0272	0.0148	0.0326	0.0436	0.1150	0.0939	0.0467
	(0.0266)	(0.0398)	0.0014	0.0056	0.0026	0.0005	0.0077	0.0043	0.0051	0.0062	0.0065	0.0060	0.0268	0.0230	0.0085
2005	0.6877	0.4723	0.0052	0.0320	-0.0022	-0.0007	0.0415	0.0205	0.0178	0.0164	0.0197	0.0618	0.1057	0.1182	0.0365
	(0.0266)	(0.0377)	0.0019	0.0057	0.0027	0.0007	0.0073	0.0057	0.0062	0.0055	0.0060	0.0082	0.0255	0.0232	0.0100
2006	0.6629	0.4322	0.0050	0.0259	-0.0002	0.0004	0.0825	0.0127	0.0195	0.0218	0.0179	0.0158	0.1039	0.1214	0.0056
	(0.0270)	(0.0382)	0.0016	0.0049	0.0024	0.0010	0.0139	0.0065	0.0046	0.0065	0.0057	0.0062	0.0285	0.0177	0.0058
2007	0.6284	0.3496	0.0036	0.0333	0.0033	0.0060	0.0766	0.0045	-0.0024	0.0005	0.0273	0.0214	0.0932	0.0582	0.0240
	(0.0283)	(0.0372)	0.0017	0.0051	0.0012	0.0045	0.0119	0.0048	0.0034	0.0086	0.0075	0.0048	0.0241	0.0214	0.0058
2008	0.5903	0.4012	0.0052	0.0312	-0.0040	-0.0005	0.0736	0.0071	0.0123	0.0213	0.0061	0.0213	0.1269	0.0723	0.0284
	(0.0219)	(0.0337)	0.0015	0.0051	0.0038	0.0010	0.0075	0.0052	0.0032	0.0054	0.0030	0.0049	0.0203	0.0179	0.0059
2009	0.5406	0.3873	0.0042	0.0220	0.0027	-0.0003	0.0746	0.0177	0.0080	0.0102	0.0046	0.0100	0.1218	0.0909	0.0210
	(0.0176)	(0.0287)	0.0014	0.0035	0.0014	0.0006	0.0073	0.0058	0.0033	0.0037	0.0027	0.0031	0.0211	0.0140	0.0051
2010	0.4830	0.3139	0.0049	0.0298	-0.0004	-0.0010	0.0655	0.0133	0.0032	0.0222	0.0041	0.0236	0.0738	0.0472	0.0277
	(0.0182)	(0.0244)	0.0013	0.0039	0.0013	0.0006	0.0075	0.0040	0.0031	0.0048	0.0030	0.0036	0.0161	0.0128	0.0047
2011	0.4431	0.2725	0.0040	0.0438	0.0001	0.0005	0.0641	0.0194	0.0003	0.0112	0.0077	0.0187	0.0238	0.0381	0.0408
	(0.0240)	(0.0340)	0.0017	0.0063	0.0014	0.0018	0.0098	0.0075	0.0039	0.0051	0.0042	0.0054	0.0221	0.0156	0.0076
2012	0.4368	0.3008	0.0004	0.0512	-0.0012	-0.0034	0.0385	0.0179	0.0003	-0.0026	-0.0020	0.0258	0.0740	0.0626	0.0392
	(0.0252)	(0.0416)	0.0016	0.0065	0.0011	0.0013	0.0082	0.0063	0.0016	0.0062	0.0045	0.0047	0.0321	0.0191	0.0073
2013	0.4354	0.2260	0.0017	0.0446	-0.0029	-0.0016	0.0434	0.0127	-0.0050	0.0129	-0.0004	0.0331	-0.0046	0.0776	0.0145
	(0.0251)	(0.0328)	0.0011	0.0071	0.0021	0.0007	0.0088	0.0053	0.0043	0.0074	0.0041	0.0061	0.0245	0.0142	0.0058
2014	0.3823	0.2654	0.0012	0.0220	-0.0021	0.0013	0.0543	0.0151	-0.0018	0.0130	0.0006	0.0339	0.0555	0.0626	0.0098
	(0.0233)	(0.0316)	0.0009	0.0061	0.0018	0.0009	0.0089	0.0039	0.0031	0.0053	0.0026	0.0050	0.0235	0.0177	0.0060
2015	0.4509	0.3776	0.0040	0.0344	-0.0004	-0.0008	0.0790	0.0329	-0.0033	0.0238	-0.0001	0.0248	0.0797	0.0839	0.0197
	(0.0225)	(0.0304)	0.0029	0.0044	0.0013	0.0015	0.0098	0.0064	0.0034	0.0066	0.0035	0.0049	0.0220	0.0152	0.0076

	Inter	ag	manuf	utilities	construc	trade	hotels	transport	finance	real est	pub ad	educ	health	culture
2004	0.1598	0.1855	0.4074	0.2587	0.3829	0.0367	-0.1098	0.3234	-0.0392	0.0214	0.4481	-1.2944	-0.4802	0.0192
	(0.0308)	0.0206	0.0523	0.0338	0.0345	0.0551	0.0270	0.0418	0.0279	0.0380	0.0542	0.0633	0.0429	0.0369
2005	0.2214	0.1268	0.3678	0.1992	0.3656	0.0723	-0.0713	0.4392	0.0179	0.0915	0.4958	-1.1747	-0.5866	-0.1222
	(0.0287)	0.0211	0.0590	0.0334	0.0325	0.0618	0.0266	0.0476	0.0315	0.0339	0.0585	0.0617	0.0459	0.0400
2006	0.2427	0.2088	0.3422	0.1305	0.5764	-0.1651	-0.1138	0.5829	0.0324	0.0502	0.5633	-1.4610	-0.5080	0.0038
	(0.0277)	0.0237	0.0596	0.0285	0.0417	0.0616	0.0274	0.0468	0.0361	0.0363	0.0654	0.0633	0.0526	0.0376
2007	0.2795	0.1683	0.5963	0.1429	0.7576	-0.1885	-0.1018	0.4626	-0.0556	0.0756	0.5015	-1.3222	-0.7721	0.0147
	(0.0276)	0.0223	0.0642	0.0260	0.0536	0.0640	0.0282	0.0417	0.0415	0.0447	0.0658	0.0655	0.0636	0.0427
2008	0.1924	0.1444	0.4785	0.1308	0.7324	-0.0628	-0.1216	0.4907	-0.0548	0.1176	0.5739	-1.4020	-0.6703	-0.1644
	(0.0249)	0.0175	0.0492	0.0253	0.0379	0.0495	0.0226	0.0392	0.0331	0.0276	0.0509	0.0515	0.0402	0.0380
2009	0.1534	0.1358	0.4422	0.2094	0.5320	-0.1592	-0.1085	0.5029	-0.0791	0.1291	0.7949	-1.5195	-0.6260	-0.1006
	(0.0204)	0.0157	0.0414	0.0245	0.0268	0.0459	0.0226	0.0407	0.0222	0.0300	0.0517	0.0539	0.0383	0.0328
2010	0.1658	0.1460	0.3815	0.2346	0.5976	-0.0815	-0.0830	0.4093	-0.1185	0.0898	0.6315	-1.3915	-0.5879	-0.0620
	(0.0187)	0.0149	0.0408	0.0194	0.0317	0.0451	0.0190	0.0327	0.0304	0.0279	0.0480	0.0482	0.0354	0.0300
2011	0.1718	0.1321	0.3447	0.2650	0.5624	-0.0096	-0.1247	0.3296	0.0723	0.1409	0.5614	-1.3369	-0.5992	-0.1663
	(0.0258)	0.0211	0.0551	0.0293	0.0414	0.0633	0.0288	0.0423	0.0347	0.0349	0.0638	0.0655	0.0489	0.0465
2012	0.1285	0.1380	0.3072	0.2127	0.6416	0.0233	-0.0727	0.6254	-0.0977	0.0591	0.5109	-1.5491	-0.5865	-0.0838
	(0.0330)	0.0185	0.0634	0.0260	0.0432	0.0598	0.0316	0.0432	0.0365	0.0338	0.0666	0.0714	0.0526	0.0486
2013	0.2000	0.1753	0.3273	0.2132	0.5196	0.1021	-0.0968	0.3983	-0.0890	0.1078	0.6538	-1.5454	-0.5733	0.0070
	(0.0251)	0.0197	0.0554	0.0346	0.0394	0.0667	0.0316	0.0467	0.0414	0.0327	0.0738	0.0608	0.0518	0.0448
2014	0.1145	0.1342	0.3304	0.2209	0.4703	-0.0170	-0.0757	0.4710	-0.1131	0.1694	0.5320	-1.4946	-0.5221	0.0090
	(0.0216)	0.0174	0.0517	0.0323	0.0369	0.0626	0.0251	0.0554	0.0454	0.0393	0.0642	0.0716	0.0598	0.0441
2015	0.0707	0.1202	0.4179	0.1401	0.5885	0.0140	-0.1784	0.3355	-0.1764	0.2268	0.6050	-1.2836	-0.5891	-0.1499
	(0.0244)	0.0223	0.0559	0.0218	0.0443	0.0667	0.0363	0.0533	0.0475	0.0365	0.0652	0.0615	0.0537	0.0396

Notes: bootstrapped standard errors in parentheses (200 replications);

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