2.1. Introduction

It is well documented that immigrants earn less than natives in the United States, and various attempts have been made to determine whether these earnings differentials reflect underlying differences in skill or ethnic discrimination in the labor market. However discrimination can be effective at either of two stages in the earnings process – in the assignment of earnings to people within occupational groups (henceforth referred to as wage discrimination) or in the allocation of people to occupations (henceforth referred to as employment or hiring discrimination). Most of the existing literature focuses upon the analysis of earnings differentials between natives and immigrants using the Oaxaca-Blinder decomposition technique, thereby failing to sufficiently distinguish between the extent of inter and intra-occupational discrimination. While the importance of recognizing the difference between wage discrimination and employment discrimination in decomposing wage differentials has been somewhat addressed in studies evaluating gender wage gaps (e.g., see Meng and Miller (1995)), the study of immigrant occupational attainment and earnings remain surprisingly devoid of this treatment.[1] Given the predominance of immigrants in certain low-paying occupations, it becomes meaningful to examine the implications, if any, of segregation in explaining the sectoral ethnic wage gap. While it would be premature to attribute the underlying cause to discriminatory hiring policies practiced by employers, it would be of both social-political and economic interest to investigate this possibility.

[1] The earnings of immigrants and ethnic minorities is an extensively studied research area focusing on the economic integration of immigrants (e.g., Chiswick (1978), Lalonde and Topel (1993), Borjas (1995)). Yet, the role of occupational segregation as a mechanism for discrimination has not been adequately addressed in the literature.

Employment or hiring discrimination based on national origin has been and remains to this day, a disturbing phenomenon that plagues the U.S. justice system. According to the Equal Employment Opportunity Commission (EEOC), in fiscal year 2005, monetary benefits to the tune of $19.4 million were disbursed to settle over 8,000 claims to discrimination based on national origin. Considerable measures have been taken to curb this practice in the last 4 decades - Title VII of The Civil Rights Act, the EEOC and Affirmative Action programs enforced by the U.S Department of Labor, prohibit employment discrimination, among other things, based on national origin. Besides these, the Immigration Reform and Control Act and Fair Labor Standards Act invoke similar statutes for non-citizens having legal authorization to work in the U.S.

A sizeable literature agrees that differences in observable characteristics account for as much as 50% of the total native-immigrant wage gap in the U.S (Long, 1980; Borjas, 1995). However, these estimates are likely to be biased if labor markets are segmented i.e., immigrants are systematically allocated to jobs that undersell their labor market qualifications. Besides, the results in studies that decompose wage differentials into components justified by productivity-differences versus discrimination remain incomplete without discerning between the nature and extent to which immigrants encounter discrimination in terms of unequal earnings vis-à-vis unequal employment opportunities. An attempt to incorporate the latter constitutes the major motivation of the paper.[2]

[2] Constant and Massey (2003) demonstrate that foreign workers in Germany experience significant discrimination in the process of occupational attainment; much of the evidence on direct discrimination in the process of earnings attainment is removed if occupational status is held constant.

Occupational segregation may arise when occupational selection is not determined by labor market qualities. A variety of factors could potentially contribute towards the non-optimal choice of occupation for an immigrant. First, in order to enter the labor force sooner, newly arrived immigrants accept jobs that may not be commensurate with their qualifications (Eckstein and Weiss, 2004). Second, immigrants lack parity in terms of knowledge, work culture and occupation-specific human capital due to their acquisition of educational and vocational skills in a foreign country. The third possibility of occupational segregation arises from taste-based discrimination against the labor market employment of immigrants. The basis for discrimination could emerge from difference in color, race, language, or simply a preference for non-foreign origin.[3] Reasons to expect the prevalence of discriminatory behavior among native employers are also grounded in quantitative studies of the phenomenon which find that ethnic discrimination exists and is extensive (Arai and Vilhelmsson (2004), le Grand and Szulkin (2002), and Rooth (2002)).[4] Although we try to isolate the effect of discrimination by controlling for these potentially 'confounding' factors through various sensitivity tests, we do not preclude the existence of 'unobservables' that are visible to the employer but not the econometrician. In that sense, our estimates suffer from similar shortcomings encountered in audit pair studies where workers are matched on the basis of observed characteristics.[5]

[3] Recently, the existence of implicit discrimination which is unintentional and beyond conscious beliefs has been proposed as yet another channel of discrimination by Bertrand et al. (2005).
[4] However, contrary evidence can be found in Aslund and Rooth (2005), where the unexpected events of 9-11 were not found to have a more detrimental impact on the labor market opportunities of immigrant groups that were exposed to increasingly negative attitudes.
[5] See Heckman (1998) for a discussion of the role of unobservables in detecting discrimination.

In order to assess the separate effects of discrimination in the allocation of occupations and wages, we conceptualize the process of earnings attainment as occurring in two stages: (i) occupational attainment under a non-discriminatory hiring structure, (ii) contingent on the former, earnings attainment under various wage structures. We begin with an extension of the procedure in Brown et al. (1980) that involves predicting the counterfactual distribution of occupational attainment for immigrants when treated similarly to natives in the hiring process. The counterfactual nature of the exercise involves estimating the *predicted* set of immigrants within each occupation, had immigrants with similar observed labor market attributes been treated equivalent to natives in the employment process. Using an elaborate set of observed characteristics we attempt to minimize the related prediction error and the impact of unobservables in predicting occupational choice, such that the extent of unexplained segregation is attributable to employment discrimination.[6] Next, a decomposition strategy is proposed that qualifies differences in the distributions of native and immigrant wages based on four criteria: (a) qualitative differences in the *observed* versus *predicted* set of immigrant workers attributable to segregation, (b) differences in *productivity*, both observed and unobserved, between natives and immigrants, (c) differential *returns* to observed productivity, and (d) differential *returns* to unobserved productivity. Four points that set the paper apart from the existing literature are noteworthy here. The decomposition procedure distinguishes between the presence of two separate forms of employer discrimination explaining the native-immigrant earnings differentials – occupational segregation in conjunction with unequal allocation of occupations, as distinctly different

[6] As in Liu et al. (2005), we abstract from differences in tastes assuming that difference in occupational attainment is determined solely by difference in human capital endowments and unequal access to jobs.

from wage discrimination in terms of unequal returns to skill. It is also, to the best of our knowledge, the first to redefine the productivity gap by identifying two contributing factors - the "explained" productivity gap obtained by controlling for the effects of occupational segregation versus an "unexplained" part that is attributable purely to occupational segregation. Moreover, besides estimating the extent to which immigrant *observed* productivity is rewarded differently from natives, unequal returns to *unobserved* productivity is assessed as an additional channel for discrimination in earnings assignment. The final innovation lies in assessing the role of the four components explaining the wage differential outlined above within a distributional framework, via the estimation of quantile treatment effects (QTE).[7] This approach helps us to achieve two goals: first, it allows one to assess the potential heterogeneity in the magnitude of discrimination across the earnings distribution, enabling one to answer: Do all immigrants face discrimination in the labor market? The answer to this question may be vital for sound policymaking; for instance, if policymakers are interested in improving the outcomes for the least wealthy immigrants, but segregation is more pronounced in the upper tail of the distribution, then restructuring hiring policies for national minorities (e.g., affirmative action and immigration laws) based on the mean earnings differentials may vastly overstate the effects of such programs.[8] Thus, what mean comparisons miss can be captured in a distributional framework of summarizing wage differentials. Second, it allows us to gauge the role of *unobserved* productivity in explaining the native-

[7] Although there exist alternative frameworks for comparing distributions (or portions of distributions), the information content provided by QTEs have led to an increasing number of applications (see, e.g., Bitler et al. 2005; Firpo 2005).

[8] Following the Immigration Reform and Control Act in 1986, James Robb (1996) has argued that immigrants are using Affirmative Action to gain a head start on U.S born minorities and advocates restricting the right to Affirmative Action to U.S. born minorities only.

immigrant wage differential, otherwise made impossible in a simple regression analysis focusing on average differences.

The results are striking in many ways. We find that the wage differential between natives and immigrants in all sectors except Professionals, favors natives, although not uniformly across the distribution. Specifically, the gap is maximum at the bottom tail and diminishes for higher quantiles for Sales, Operatives and Laborers; for Services, the gap increases upto roughly the 25^{th} percentile and is uniform thereafter. Interestingly, natives above the 40^{th} percentile earn significantly *less* than immigrants in the Professional sector. The gap in wages attributable to explained differences in productivity favors natives at every quantile in each occupation, indicating that higher skills, both observed and unobserved contribute significantly towards higher earnings. We find mixed evidence on discrimination in return to productivity – while natives enjoy higher returns to *unobserved* skills virtually across the entire distribution of Professionals, lower returns accrue to the bottom 15% of native Laborers; return to *observed* productivity is consistently higher for natives in Operations and Labor, although not significantly so for the top 20% of Operatives.

Most importantly, segregation based on occupational choice is evident for immigrants in all occupational groups. If discrimination in employment restricts access to jobs for the low-end workers in any occupation then the earnings distribution of the *observed* set of immigrants in any occupation will dominate the distribution of (potential) earnings of the *predicted* set of immigrants, giving rise to negative QTEs. This will hold true for the relatively high-skilled occupation where the predicted set will include some immigrants who could not survive discrimination and had chosen a less suited

occupation; the set of immigrants predicted into the relatively low-skilled occupation will exclude some high-skilled immigrants who were forced to choose the lower occupation. The findings herein imply maximum segregation among Professionals, owing to the largest QTEs at most quantiles when compared to those in other occupations.

The results do not overly change under the sensitivity analysis. For the non-professional sectors, the positive gap between the unconditional wage distributions at most quantiles widens for the more recent cohorts. However, for the Professional sector the negative gap, signifying a premium to immigrants, widens for the older cohorts. Similarly, while differences in wages of naturalized citizens and natives among non-professionals are usually insignificant over the majority of the distribution, the gap is mostly significant when comparing non-citizens. Differential returns to either observed or unobserved productivity is found to increasingly favor natives when compared with the more recent cohorts (non-citizens) than older cohorts (naturalized citizens). However, differences in observed productivity between natives and immigrants in any sector are not found to be systematically more for the recent cohorts or non-citizens. In light of the fact that our analysis evaluates the differentials in a distributional framework and controls for segregation while interpreting the "Explained" gap in productivity, our findings emphasize the importance of moving beyond "averages". Further, the extent of segregation does not vary significantly across cohorts implying that assimilating towards the needs of the labor market for over 30 years does not provide immunity against unequal employment opportunities. On order to further investigate this claim, we conduct the tests on immigrants grouped according to English speaking ability. The main implications of the sensitivity results hold here too, thereby strengthening our findings.

The final set of sensitivity tests conducted by grouping immigrants on the basis of continent of origin yields some interesting results: first, the extent of segregation faced by Europeans and Oceanic immigrants is usually (slightly) higher than Asians and Africans in the lower end of the distribution. Second, the explained gap in productivity between natives and immigrants from South America, Asia and Africa are higher than when compared to the immigrants from North America, Europe and Oceania, wielding some support to the phenomenon of selective migration based on country of origin.

The paper proceeds as follows. The empirical methodology beginning with the model of occupational attainment, followed by the determination of counterfactual wage distributions are described in Section 2. The decomposition strategy and details of the econometric methodology utilizing distributional tests are presented in Sections 3 and 4, respectively. Section 5 outlines and summarizes the data; the main results are reported and discussed in Section 6. Section 7 describes the sensitivity tests and discusses the corresponding results.

2.2. Empirical Methodology

Wage decompositions based on the traditional Oaxaca-Blinder (1973) method are often criticized on the ground that they do not account for differences in occupational attainment between natives and immigrants. An extension of this approach wherein dummy variables are included in the vector of observed characteristics fails to address this problem in the case where selection into occupation is not random. One such instance would arise if occupational choice is at least in part influenced by discriminatory constraints on the recruitment of immigrants. An improved methodology is provided in

Brown et al. (1980) that decomposes the average gender wage differential into within- and between-occupation components. Each component is attributed partly to factors that are `justified' on the basis of productivity differences, and partly to `unjustified' factors that are rooted in discriminatory treatment of women prior to employment and afterwards (see Appendix A for details). Thus, they distinguish between intra-occupational discrimination in terms of differential returns to skills of employed females, and inter-occupational discrimination leading to the segregation of women based on non-labor market characteristics.

We build on their method to first predict the occupational choice of immigrants if they faced the same employment opportunities as native workers, ignoring the demand side of the market and differences in taste. Next we define the counterfactual wages for the predicted set of immigrants in each occupation based on three criteria relying on a combination of the coefficients and residual-distributions from occupation-specific wage regressions for natives and immigrants. Using these counterfactuals, we decompose the differential in occupational wage distributions into four components attributable to:

(i) occupational segregation: within an occupation, earnings potential determined by the productive abilities of the *observed* and *predicted* set of immigrant workers, are different when occupational selection is non-random.

(ii) productivity gap: when comparing natives to the predicted set of immigrants, differences in both observed and unobserved skills account for differential earnings capabilities.

(iii) ‘observed’ wage discrimination: differential returns to *observed* productivity

(iv) ‘unobserved’ wage discrimination: differential returns to *unobserved* productivity.

2.2.1. Occupational Segregation

We estimate the non-discriminatory occupation structure for immigrants from a reduced form multinomial logit model of occupational attainment for natives:

$$P_{ij}^{N} = \frac{\exp\left(\gamma_j^N Z_j^N\right)}{\sum_{j=1}^{N} \exp\left(\gamma_j^N Z_j^N\right)},\ j = 1,\ldots, J$$

where J is the number of occupational groups. This model estimates the probability P_{ij}^{N} of native i working in occupation j as determined by the interaction of exogenous variables affecting demand and supply decisions, Z. Estimates of the parameters of the model for the j^{th} occupation, $\hat{\gamma}_j^N$, are obtained by the method of maximum likelihood, and immigrant characteristics are then substituted into the estimated equations to predict, for every immigrant, a vector of probabilities representing the likelihood of belonging to each occupation:

$$\hat{P}_{ij}^{I} = \frac{\exp\left(\hat{\gamma}_j^N Z_j^N\right)}{\sum_{j=1}^{N} \exp\left(\hat{\gamma}_j^N Z_j^N\right)},\ j = 1,\ldots, J$$

Explicitly modeling occupational choice by this method overcomes the inherent deficiency in the traditional Oaxaca approach that assigns occupational choice a priori to the explained component in wage regressions and hence fails to allow for endogenous occupational selection. To determine a non-discriminatory occupational structure for immigrants, an important consideration pertains to the occupational choice of an immigrant when faced with non-discriminatory hiring preferences of employers. We assume that an immigrant gets employed in the occupational category that exhibits the

highest estimated probability. Thus, based upon the likelihood of entering job type *j* in a non-discriminatory hiring environment, we estimate a counterfactual set of immigrants $\tilde{I}_j$, predicted to be in occupational group *j* in the absence of segregation, such that $\tilde{I}_j = \{i : P_{ij}^I > P_{ij'}^I \forall j \neq j' (j, j' = 1,..., J)\}$. This is reasonable if we believe that observed labor market qualities play a significantly stronger role in occupational attainment than other unobservable productive assets, of which personal tastes and preferences and pre-market discrimination might be important components.[9]

2.2.2. Estimating the Returns to Productivity

As stated in section 2, by attributing part of the distributional wage differential to differences in returns to immigrant productivity, the decomposition technique identifies 'wage discrimination' as a source in addition to employment discrimination. In order to model the returns to observed attributes separate from those accruing to unobserved attributes, we start with a simple model of occupational-wage determination for natives and immigrants:

$$\ln w_{ij}^k = X_{ij}^k \beta_j^k + u_{ij}^k \qquad \text{(w)}$$

where w_{ij}^k is the hourly wage for individual *i* of nativity *k* (*k* = Native (*N*), Immigrant (*I*)) belonging to occupation *j*, X_{ij}^k is a vector of individual and location characteristics, and u_{ij}^k is the random error. We focus on two components of the wage equation – the vector of rewards, $\hat{\beta}_j^k$, denoting return to observed productivity and the residual, $\hat{u}_{ij}^k$. An

[9] To the extent that we are attempting to model the effects of labor market discrimination and that certain observables like educational attainment capture individual tastes to some extent, it seems meaningful to assign a monotonic transformation between the predicted probabilities and occupational choice.

interpretation of the residual reflecting the component of wages not accounted for by observable productivity characteristics is provided in terms of the return to unobserved productivity.

To proceed, we broadly follow the structure in Juhn et al. (1993) to estimate the returns to unobserved skill. Defining the cumulative distribution function of the wage equation residuals as $G_{k,j}()$, the return to unobserved productivity of individual *i* in occupation *j* and nativity *k* is given by:

$$\hat{u}_{ij}^{k} = G_{k,j}^{-1}\left(\theta_{ij}^{k} / X_{ij}^{k}\right)$$

where θ_{ij}^{k} is the percentile rank of individual *i* in the residual distribution of the occupation-specific wage regressions for *k* (*k* = *N*, *I*). In order to find the return to unobserved characteristics for an immigrant in his predicted occupation, j', such that $j' \neq j$, we need to estimate a counterfactual, $G_{k,j'}^{-1}\left(\theta_{ij'}^{\tilde{I}} / X_{ij'}^{\tilde{I}}\right)$. Assuming that the immigrant's percentile rank in his actual occupation, θ_{ij}, is a reasonable approximation of his position in the predicted occupation, i.e., $\theta_{ij'} = \theta_{ij}\left(j' \neq j\right)$, the counterfactual earnings attributable to unobserved productivity is given by $G_{k,j'}^{-1}\left(\theta_{ij}^{\tilde{I}} / X_{ij}^{\tilde{I}}\right)$, where j' denotes predicted occupation and j denotes actual occupation.

In the case where $k \neq k' = \tilde{I}, G_{k,j}^{-1}\left(\theta_{ij}^{k'} / X_{ij}^{k'}\right)$ represent counterfactual measures of wage earnings accruing to immigrants when treated like natives (*k* = *N*) or immigrants (*k* = *I*). More explicitly, $G_{k,j}^{-1}\left(\theta_{ij}^{\tilde{I}} / X_{ij}^{\tilde{I}}\right)$ allows us to evaluate returns to immigrants' unobserved skills under two scenarios - when not being discriminated versus when being discriminated vis-à-vis natives, according as *k* = *N* and *k* = *I*, respectively. For instance,

an immigrant belonging to percentile 'θ' in the residual wage distribution of his observed occupation, *j*' receives the counterfactual return $G_{N,j}^{-1}\left(\theta_{ij}^{\tilde{I}} / X_{ij}^{\tilde{I}}\right)$ when unobserved skills are rewarded similarly to a comparable native in his predicted occupation, *j*. On the other hand, $G_{I,j}^{-1}\left(\theta_{ij}^{\tilde{I}} / X_{ij}^{\tilde{I}}\right)$ accrue when treated similarly to a comparable immigrant in occupation *j*.

2.3. Decomposition Strategy

In this framework, differences in occupation-specific wage distributions of natives and immigrants expressed in terms of the parameters can be explicitly attributed to four underlying sources:

(i) 'Explained Productivity gap' reflecting differences in productivity-related attributes of natives $\left(X_{ij}^{N}\right)$ and immigrants $\left(X_{ij}^{\tilde{I}}\right)$.

(ii) 'Unexplained Productivity gap' reflecting differences in productivity-related attributes of immigrants employed $\left(X_{ij}^{I}\right)$ vis-à-vis those predicted in an occupation $\left(X_{ij}^{\tilde{I}}\right)$.

(iii) 'Observed Wage Discrimination' due to differences in the return to observed characteristics, i.e., $\hat{\beta}_j^N$ versus $\hat{\beta}_j^I$

(iv) 'Unobserved Wage Discrimination' due to differences in the return to unobserved characteristics , i.e., $G_{N.j}^{-1}()$ versus $G_{I,j}^{-1}()$

2.3.1. Counterfactual Wage Earnings

In order to determine the distributions to be compared, for each occupation, we focus on the distributions of five outcomes of interest. Two of these denote actual wages for natives and immigrants (w_j^N and w_j^I), while the remaining three are counterfactuals defined for the predicted set of immigrants under three different scenarios (w_j^D, w_j^{PD} and w_j^{ND}). We define these as:

(i) unconditional native wages, w_j^N

(ii) unconditional immigrant wages, w_j^I

(iii) fully discriminatory wages, w_j^D: counterfactuals earned by immigrants, conditional upon being predicted into occupation *j*, when returns accruing to both observed and unobserved attributes are discriminatory (i.e., $\hat{\beta}_j^I$ and $G_{I,j}^{-1}$).

(iv) partially discriminatory wages, w_j^{PD}: counterfactuals earned by immigrants, conditional upon being predicted into occupation *j*, when return to unobserved attributes are discriminatory (i.e., $G_{I,j}^{-1}$) but those accruing to observable attributes are non-discriminatory (i.e., $\hat{\beta}_j^N$).

(v) non-discriminatory wages, w_j^{ND}: counterfactuals earned by immigrants, conditional upon being predicted into occupation *j* when returns accruing to both observed and unobserved attributes are non-discriminatory (i.e., $\hat{\beta}_j^N$ and $G_{N,j}^{-1}$).

Specifically, these outcomes are estimated as follows:

$$\ln w_{ij}^{k} = X_{ij}^{k}\hat{\beta}_{j}^{k} + G_{k.j}^{-1}\left(\theta_{ij}^{k} \mid X_{ij}^{k}\right), k = N, I \quad \text{(W)}$$

$$\ln w_{ij}^{D} = X_{ij}^{\tilde{I}}\hat{\beta}_{j}^{I} + G_{I,j}^{-1}\left(\theta_{ij}^{\tilde{I}} \mid X_{ij}^{\tilde{I}}\right) \quad \text{(D)}$$

$$\ln w_{ij}^{PD} = X_{ij}^{\tilde{I}}\hat{\beta}_{j}^{N} + G_{I,j}^{-1}\left(\theta_{ij}^{\tilde{I}} \mid X_{ij}^{\tilde{I}}\right) \quad \text{(PD)}$$

$$\ln w_{ij}^{ND} = X_{ij}^{\tilde{I}}\hat{\beta}_{j}^{N} + G_{N,j}^{-1}\left(\theta_{ij}^{\tilde{I}} \mid X_{ij}^{\tilde{I}}\right) \quad \text{(ND)}$$

where *N* and *I* denote, respectively, natives and immigrants employed in occupation *j*, while $\tilde{I}$ denotes immigrants who are predicted to belong to occupation *j* in the absence of occupational segregation. As would be appropriate in any study concerning earnings differentials, we too begin with the unadjusted earnings gap between the distributions of unconditional wages, w^N and w^I. Pairwise comparisons of the distributions of five outcomes defined in equations (W), (D), (PD) and (ND) yield four components measuring the four gaps outlined in the section above. The empirical implementation of the decomposition strategy involves computing the empirical cumulative density functions of logarithms of $w_j^N, w_j^{ND}, w_j^{PD}, w_j^D$, and w_j^I for each occupation *j* and attributing the difference in the unconditional wage distributions, $F\left(\ln w_j^N\right) - F\left(\ln w_j^I\right)$, denoted as the 'Complete Wage Gap', to differences in the distributions of $\ln w_j^N, \ln w_j^{ND}, \ln w_j^{PD}, \ln w_j^D$, and $\ln w_j^I$. The exact distributional decomposition procedure is as follows:

$$
\begin{aligned}
F\left(\ln w_j^N\right) - F\left(\ln w_j^I\right) &= F\left(X_j^N \hat{\beta}_j^N + G_{N,j}^{-1}\left(\theta_j^N \mid X_j^N\right)\right) - F\left(X_j^I \hat{\beta}_j^I + G_{I,j}^{-1}\left(\theta_j^I \mid X_j^I\right)\right) \\
&= \left(\underbrace{F\left(\ln w_j^N\right) - F\left(\ln w_j^{ND}\right)}_{A}\right) + \left(\underbrace{F\left(\ln w_j^{ND}\right) - F\left(\ln w_j^{PD}\right)}_{B}\right) \\
&+ \left(\underbrace{F\left(\ln w_j^{PD}\right) - F\left(\ln w_j^{D}\right)}_{C}\right) + \left(\underbrace{F\left(\ln w_j^{D}\right) - F\left(\ln w_j^{I}\right)}_{D}\right) \\
&= \underbrace{F\left(X_j^N \hat{\beta}_j^N + G_{N,j}^{-1}\left(\theta_j^N \mid X_j^N\right)\right) - F\left(X_j^{\tilde{I}} \hat{\beta}_j^N + G_{N,j}^{-1}\left(\theta_j^{\tilde{I}} \mid X_j^{\tilde{I}}\right)\right)}_{A} \\
&+ \underbrace{F\left(X_j^{\tilde{I}} \hat{\beta}_j^N + G_{N,j}^{-1}\left(\theta_j^{\tilde{I}} \mid X_j^{\tilde{I}}\right)\right) - F\left(X_j^{\tilde{I}} \hat{\beta}_j^N + G_{I,j}^{-1}\left(\theta_j^{\tilde{I}} \mid X_j^{\tilde{I}}\right)\right)}_{B} \\
&+ \underbrace{F\left(X_j^{\tilde{I}} \hat{\beta}_j^N + G_{I,j}^{-1}\left(\theta_j^{\tilde{I}} \mid X_j^{\tilde{I}}\right)\right) - F\left(X_j^{\tilde{I}} \hat{\beta}_j^I + G_{I,j}^{-1}\left(\theta_j^{\tilde{I}} \mid X_j^{\tilde{I}}\right)\right)}_{C} \\
&+ \underbrace{F\left(X_j^{\tilde{I}} \hat{\beta}_j^N + G_{I,j}^{-1}\left(\theta_j^{\tilde{I}} \mid X_j^{\tilde{I}}\right)\right) - F\left(X_j^I \hat{\beta}_j^N + G_{I,j}^{-1}\left(\theta_j^I \mid X_j^I\right)\right)}_{D}
\end{aligned}
$$

where $F(.)$ denotes the empirical cumulative density function. '*A*' denotes the 'explained productivity gap' which attributes the differential in wage distributions to differential productivity of natives when compared to the predicted set of immigrants in an occupation. Since the earnings of the predicted set of immigrants as defined in w_j^{ND} do not reflect any form of discrimination, either wage or employment, this is a measure of the 'true' productivity gap explained completely by individual and labor market characteristics. If discrimination in the allocation of occupations to immigrants is such that only the relatively 'high-skilled' are likely to survive segregation, we would expect immigrants with lesser or even moderate skills to appear in the predicted set that estimate occupational attainment under a non-discriminatory hiring structure. The strength of this effect will be reflected in *A* through either a widening of the entire distributional gap or

only at the lower tail of the distribution.[10] Likewise, the upward bias in productivity due to the presence of certain over-qualified immigrants in a relatively low-skill occupation is expected to diminish when segregational effects are eliminated. '*B*' denotes that part of the wage differential attributable to discrimination in assignment of wages, referred to as 'unobserved wage discrimination', wherein unobserved productivity of immigrants is rewarded differently than natives. Component '*C*' measures the 'observed wage discrimination' attributable to unequal returns to observed productive attributes. Finally, '*D*' reflects differences in the earnings potential of immigrants attributable to discriminatory allocation of occupations by employers. When occupational employment of immigrants is determined differently from natives, the cause underlying the biased assignment of immigrants to occupations cannot be explained by human capital and other labor market characteristics. The earnings differential thus attributable to differential productivity brought about by a non-overlap of employed immigrant workers with those predicted into an occupation under a non-discriminatory hiring structure is referred to as the 'unexplained productivity gap'. Again, similar to the explained productivity gap, the nature of the underlying selection process would be revealed by the difference in quality of immigrants when they are not subject to hiring discrimination by employers. If employers discriminate against immigrants in giving employment, this would lead to an upward bias in the quality of immigrants observed in an occupation. Hence poorer quality of the predicted set of immigrants in terms of lower productivity would be indicative of positive selection; negative selection if vice-versa.

[10] This result follows assuming native skills dominate those of immigrants to begin with, without controlling for the effects of segregation. The gap due to productivity is likely to shrink if the opposite holds.

2.4. Distributional Approach

2.4.1. Quantile Treatment Effects

As noted in the introduction, the regression approach, by focusing on average effects, may mask meaningful and policy relevant, heterogeneity across the distribution. To examine such heterogeneity, we estimate quantile treatment effects (QTE). To begin, let W_{oj} and W_{1j} denote two occupation specific `wage' variables to be compared. For instance, $W_{oj}(W_{1j})$ might denote $w_{ij}^{N}(w_{ij}^{I})$. $\{w_{0ij}\}_{i=1}^{N_{0j}}$ is a vector of N_{oj} observations of W_{oj}; $\{w_{1ij}\}_{i=1}^{N_{1j}}$ is an analogous vector of realizations of W_{1j}. Let $F_{0j}(w) \equiv \Pr[W_{0j} < w]$ represent the cumulative density function (CDF) of W_{oj}; define $F_{1j}(w)$ similarly for W_{1j}. The p^{th} quantile of W_{oj} is given by the smallest value w_{0j}^{p} such that $F_{0j}(w_0^p) = p$; w_{1j}^{p} is defined similarly for F_{1j}. Under this notation, the QTE for quantile p is given by $\Delta p_j = w_{1j}^{p} - w_{0j}^{p}$, which is simply the horizontal difference between the CDFs at probability p.[11] Estimates, Δp_j, are obtained using the sample analogues of $w_{kj}^{p} \equiv \inf\{\Pr[W_{kj} \le w] > p\}, k = 0,1$ and p = 0.05, 0.10,..., 0.95. In the results below, we plot Δp_j, as well as the 95% confidence intervals based on a simple bootstrap technique, similar to Bitler et al. (2005).

2.4.2. Test of Equality

[11] It is important to note that the QTEs do not correspond to quantiles of the distribution of the gap unless the assumption of rank preservation holds (Firpo 2005). Absent this assumption, whereby the ranking of wages would remain unchanged under each of the organizational structures being analyzed, the QTE simply reflects differences in the quantiles of the two marginal distributions.

In addition to examining the QTEs at each of the 20 quantiles, we test the joint null $H_0 : \Delta p_j = 0 \forall p \in (0,1)$, or equivalently $H_0 : F_{0j} = F_{1j}$, utilizing a two-sample Kolmogorov-Smirnov (KS) statistic (see, e.g., Abadie 2002; Bitler et al. 2005). The test is based on the following KS statistic:

$$d_{eq,j} = \sqrt{\frac{N_{0j} N_{1j}}{N_{0j} + N_{1j}}} \sup \left| F_{1j} - F_{0j} \right|$$

Specifically, our procedure calls for:

(i) obtaining the empirical CDF for W_{oj} and W_{1j}, defined as

$$\hat{F}_{mjN_{mj}}(w) = \frac{1}{N_{mj}} \sum_{i=1}^{N_{mj}} I(W_{mj} \le w), m = 0,1$$

by computing the values of $\hat{F}_{ojN_{0j}}(w_k)$ and $\hat{F}_{1jN_{1j}}(w_k)$ where $I(.)$ is an indicator function and $w_k, k = 1,...,K$, denotes points in the support that are utilized (K = 500 in the application),

(ii) and computing

$$\hat{d}_{eq,j} = \sqrt{\frac{N_{0j} N_{1j}}{N_{0j} + N_{1j}}} \max \left\{ \left| \hat{F}_{1jN_{1j}}(w_k) - \hat{F}_{0jN_{0j}}(w_k) \right| \right\}$$

Inference for the test of equality of the distributions is conducted using the bootstrap procedure outlined in Abadie (2002). Specifically, we pool the two samples, resample (with replacement) from the combined sample, split the new sample into two samples, where the first N_{oj} represent W_{oj} and the remainder represent W_{1j}, and compute the KS statistic, $\hat{d}^b_{eq,j}$. This process is repeated B times, and the p-value is given by

$$p-value=\frac{1}{B}\sum_{b=1}^{B} I\left(\hat{d}_{eq,j}^{b} > \hat{d}_{eq,j}\right)$$

The null hypothesis is rejected if the p-value is less than the desired significance level, say 0.10.

A final, necessary comment pertains to inference in the tests that necessarily involve between sample dependence. In the current context, between sample dependence may arise for two reasons. First, some of the distributional comparisons may involve a common set of individuals in both distributions (e.g., the differentials due to wage discrimination is obtained from two sets of comparisons: $\hat{w}_j^{ND}$ versus $\hat{w}_j^{PD}$ and $\hat{w}_j^{PD}$ versus $\hat{w}_j^{D}$). Second, due to the usage of a common set of coefficient estimates in obtaining the distributions being compared, there necessarily exists between sample dependence (e.g., the first productivity differential is obtained by comparing w_j^N with $\hat{w}_j^{ND}$, which utilize the common set of coefficients $\hat{\beta}_j^N$). To handle these two sources of between sample dependence we utilize a nonparametric bootstrap, where resamples of $\left\{w_j^k, X_j^k\right\}, k=N,I,$ are drawn. For each resample, the first-stage multinomial logit model of occupational choice is re-estimated, followed by predicting the set of immigrants in each occupation in the second stage and finally, the re-estimation of the wage equations for natives and immigrants according to equation (D), (PD) and (ND). Specifically, by resampling N_{oj} observations $\left\{w_j^N, X_j^N\right\}$ and N_{1j} observations $\left\{w_j^I, X_j^I\right\}$ nonparametrically, re-estimating $\tilde{I}_j, j=1,...,J,$ and the counterfactual wages, (D) to (ND), we obtain the resampled distributions of $w_j^N, \hat{w}_j^D, \hat{w}_j^{PD}, \hat{w}_j^{ND}, \text{and } w_j^I$. This process, additionally, ensures that in bootstrap comparisons of distributions involving only the

predicted set of immigrants (as in the comparison of, say, $\hat{w}_j^{ND}$ and $\hat{w}_j^{PD}$), an immigrant is allowed to choose the occupation that he is actually in, thereby maintaining the same between sample dependence as in the original sample. Moreover, because the first-stage regressions are re-estimated each time, between sample dependence arising from a common set of coefficients is also maintained given that a common set of coefficients unique to each resample is used within each bootstrap repetition.

2.5. Data

The data employed for this study is the U.S Census 5% Integrated Public Use Microdata Sample for the year 2000. This dataset is ideal for the current study because it contains detailed individual characteristics (e.g., age, education, year of arrival, region, SMSA), ethnicity variables (e.g., place of birth) and labor market outcomes (e.g., wages, employment status, occupation, class of worker) and the large sample size allows us to obtain sufficient representation from different ethnic origin groups. At the same time, the native sample is significantly large in size, thereby making it extremely time-consuming to implement the bootstrapping mechanism. Thus, we restrict the native sample to a 1% random sampling stratified on the basis of occupation.[12] The sample inclusion criteria were chosen so as to represent workers with reasonably strong labor force attachment. The sample is restricted to males between the ages 25 and 65 who earned positive wages in 1999. Individuals earning less than $1 per hour or greater than $100 per hour are excluded from the sample. Further, individuals who were unemployed or self-employed

[12] The stratification is done to preserve the distribution of workers across occupational groups. Since our entire analysis is based upon intra-occupational comparisons of immigrant and native outcomes, the stratification is done with respect to occupation.

in 1999, had work disability, were enrolled in school or the military, or worked in the agricultural sector are excluded from the sample. However, since immigrants are likely to face limited employment opportunities, we include both part time and full time workers. In addition to the forestated exclusions, immigrants whose parents were born in the U.S are excluded from the sample because economic outcomes for these individuals are determined differently from both natives and individuals of foreign origin and ancestry.

Since the objective of our analysis is to compare outcomes of immigrants in the U.S to natives of U.S origin, we use country of birth to determine ethnic origin. Besides nativity, the other attribute used to categorize individuals was occupational category, for which the Census classifications of occupational groups were condensed to create 5 broad occupational categories: Professionals, Services, Sales, Operatives and Laborers. The set of covariates used to predict occupational choice in the first stage multinomial logit include a set of individual-level attributes denoting age, age squared, a dummy for marital status, three dummies for educational attainment (less than high school, some college, and college graduate), four dummies for race (White, Black, Asian, Other), and the number of own children in household, as well as a set of location variables denoting region (dummies for 4 major geographic regions – Northeast, Midwest, South, and West) and a dummy for urban metropolitan status. Subsequently, the same sets of covariates are used in the wage regressions and decomposition analysis to compute the various measures depicting counterfactual earnings. These variables have been standard in almost all studies related to discrimination that predict occupational attainment based on labor market qualities (e.g., see Brown et al. (1980)).

Columns two and three in Table A1 present descriptive statistics for natives and immigrants across the five occupations. In general, average hourly wage for Professionals are highest followed by Sales, Operatives, Laborers, and Services. While natives in all occupations are found to earn more 15 – 27% more than immigrants, the opposite holds in the Professional sector with immigrants earning being 5% higher than natives ($26.48 versus $25.21). Although greater average *hours* of labor are supplied by *older* native workers employed in any occupation, the difference is less than 3% and 6%, respectively.

Professionals are more likely to be college graduates and least likely to not have a high school degree; however, immigrant Professionals are more likely to have a college degree than their native counterparts (73% versus 63%). Both native and immigrants workers in Sales are more likely to have a high school degree (65% and 52%) while only natives employed as Operatives (78%), Laborers (76%) and Service workers (72%) are most likely to be high school educated; most immigrants in Services (52%), Operatives (54%), and Laborers (52%) are not likely to have a high school degree. Except for Services, at least 60% (70%) of natives (immigrants) are married; natives have fewer children in the household than immigrants. Majority of natives in any occupation reside in the South (approximately 35%) while most immigrants hail from the West (approximately 36%). Immigrants are almost twice, and sometimes more than twice as likely to reside in urban areas compared to natives. Finally the native sample is twice as much likely to have white workers (approximately 90% versus 45%); Asians are predominate among the non-white immigrants with those in Professionals being almost equal to the proportion of white workers.

2.6. Results

The QTEs plotting the values of Δp in each of the five occupations are displayed in Figures 1 (Professionals), 2 (Services), 3 (Sales), 4(Operatives), and 5 (Laborers). Within each figure, the first column displays the Complete Wage Gap based on the comparison of unconditional wage distributions of natives and immigrants, treating occupational choice as exogenous. The decomposition results denoting the four components are displayed in the next four columns following the complete wage gap. Panels A, B, C, D and E, of Table 1 gives the results from the tests for equality of distributions as well as corresponding QTE estimates at the 20, 40, 60 and 80th percentiles, for each of the five occupations, respectively.[13]

We find that the point estimates of the QTEs evaluating the Complete Wage Gap for Professionals workers are negative for the top 75 percent, while the QTE estimates are positive at *every* quantile for all other occupations. These estimates are consonant with a premium to *all comparable* natives over immigrants in all occupations except Professional, where instead, barring the bottom 25 percent, a *premium* accrues to immigrants. According to the 95 percent confidence bounds, the unconditional wage distribution for natives differs *significantly* from that of immigrants in the top 60 percent of the Professional sector; for all other occupations native earnings are dominant over the entire distribution. From the results in Panel A of Table 1, the premium to Professionals of foreign origin is found to be gradually increasing for higher quantiles, the QTEs bounded between -0.127 and 0.138. The presence of an earnings premium for immigrants among the high-end Professionals as evident from the QTE estimates, can be explained

[13] The QTEs at all 19 quantiles are available from the author upon request; estimates for only four percentiles are reported to due to space considerations.

by a bias for high skilled immigrant who are likely to be employed as professionals, and/or the lack of relatively low-skilled workers who fail to secure employment in this occupation. However, without conditional analysis, the true nature of underlying selection that is not attributable to individual and labor market related factors, cannot be inferred. According to the first graph in Figure 2 and results in Panel B of Table 1, the QTEs for the Service sector gradually increase for most of the distribution (QTE = 0.238, 0.279, 0.301, 0.320 at quantiles 0.2, 0.4, 0.6 and 0.8, respectively) never exceeding 0.321. The estimates for Sales, Operatives, and Laborers demonstrate a slight declining trend and are relatively similar in magnitude (QTEs at quantiles 0.2, 0.4, 0.6, 0.8 are 0.248, 0.171, 0.197, 0.145 for Sales, and 0.286, 0.262, 0.237, 0.185 for Labor, from Panels C and E, respectively) and (Sales: maximum QTE = 0.279, minimum QTE = 0.020; Laborers: maximum QTE = 0.284, minimum QTE = 0.093). The Complete Wage Gap declines more steadily for Operatives from a maximum of 0.319 to minimum of -0.006 (QTEs at 0.2, 0.4, 0.6, 0.8 quantiles are 0.317, 0.274, 0.224, 0.123, respectively), as can be seen from Figure 4 and Panel D (Table 1).

In terms of the statistical tests provided in Table 1, we easily reject the null of equality of the unconditional wage distributions in all sectors (p = 0.000). Thus without controlling for human capital and other supply-side factors affecting wages, *all* natives are found to enjoy higher wages vis-à-vis immigrants in all occupations except Professionals, where *most* immigrants earn significantly more.

We now turn to the decomposition results for each occupation. It is evident from the QTEs in Figure 1 that the Explained Productivity Gap is positive everywhere, exhibits a U-shape across the distribution of Professionals, such that the minimum QTE equals

1.309 at the 40th percentile while the maximum QTE equals 1.6 at the 95th percentile. While the confidence bands indicate otherwise, the statistical test does not reject the equality of earnings based on observed productive characteristics (p-value = 0.755). The QTEs measuring the next component, the Unobserved Wage Discrimination, are relatively constant above quantile 0.20 (0.319, 0.302, 0.268, 0.248 at quantile 0.20, 0.40, 0.60, 0.80, respectively). Both the confidence bands and the p-value (0.000) find the gap significant, thereby lending strong support for lower returns to unobserved productivity of immigrants than natives. The next finding is somewhat surprising: differentials in earnings distributions attributable to higher returns to observed characteristics, referred to as Observed Wage Discrimination, is found to uniformly *favor* immigrants across the distribution (minimum QTE = -0.049, maximum QTE = -0.073); however, the gap is significant only according to the test results (p-value = 0.010). The final component referred to as the Unexplained Productivity Gap denoting the portion attributable to segregation is negative and generally increasing across the distribution. Qualitative difference in the attributes of actual and predicted set of immigrants in the Professional sector leads to an increase in earnings potential of 1.31 (0.92) standard deviations at the lowest (highest) quantile. The treatment effects lend strong evidence demonstrating the presence of positive selection in Professional employment. While the bootstrap results used to generate confidence intervals support this finding, the tests (p-value = 0.180) do not reject the equality of distributions.

With the exception of Services, treatment effects for the Explained Productivity Gap follow similar patterns in the remaining three sectors, as can be seen in Figures 3, 4, and 5. In the Service sector, QTEs are slightly increasing and also exhibit higher

magnitudes than in other occupations (minimum QTE = 1.179, maximum QTE = 2.250). While both the confidence intervals and test results are consonant with significantly higher earnings capabilities of natives in Operations (p-value = 0.000) and Labor (p-value = 0.040), statistical significance of the Explained Productivity Gap is established only by the bootstrapped confidence bands in Services and Sales occupations. The results for Unobserved Wage Discrimination are mixed and vary across occupations. The QTEs for Services, Sales, and Laborers are similar in sign and differ only slightly in magnitude. Of notable mention would be the observed reversal of employer behavior in rewarding immigrant unobservables more than natives indicating higher, although insignificant, returns to immigrant unobservables for majority of the distribution. For Services, we find such reversal in returns only for the bottom one-fourth, the gap being significant according to the test statistics at the 9% level of significance (p-value = 0.086). The results for Observed Wage Discrimination are not striking. Similar to Professionals, *all* immigrant Service workers are rewarded more than natives. Natives are rewarded more in Sales, Operations, and Labor; however, the QTEs are small in magnitude for the former. Although the tests confirm significant differences in return to observed productivity across all occupations (respective p-values: 0.010, 0.061, 0.000, 0.000) except Sales, the confidence bands assert the same for Operatives and Laborers only. Finally, the existence of the Unexplained Productivity Gap is virtually established for the entire distribution across every occupation, and displays larger QTEs at higher quantiles (largest QTEs measuring -1.820, -2.021, -1.709, -1.709, for Service, Sales, Operatives, Laborers, respectively, are observed at the last quantile). The test results however

confirm the significance of higher earnings potential of the predicted set of immigrants in Operations only (p-value = 0.065).

2.7. Sensitivity Tests

A vast literature relates the segregation of immigrants to their disadvantage in terms of communication skills, lack of knowledge of foreign work environment and other obstacles encountered upon arrival in a foreign country. The strategy used in this paper to predict immigrant occupational attainment in the presence of a non-discriminatory hiring structure might be subject to the criticism that it fails to incorporate the effects of these factors that are observed by the employer but not the econometrician. The occupational segregation of immigrants would then reflect such disadvantage rather than be the outcome of employer discrimination. In order to overcome this potential drawback, we test for the robustness of the results under various conditions that control for these confounding factors. First, we divide the immigrant sample into four cohorts according to their 'years of presence in the U.S': cohort 1 consists of immigrants who have been in the U.S for more than 30 years; cohort 2, 3 and 4 contain immigrants present for 16-30, 6-15, and less than 5 years, respectively. The results for cohort 1 are of particular importance to our purpose since these immigrants are expected to have sufficiently assimilated having spent over three decades in the U.S labor market. Hence the labor market disadvantages that might be confounding the results are likely to disappear for this cohort. In addition, Borjas (1985) attributes the failure of recent immigrants in adequately assimilating towards the outcomes of natives to declining average skills of the recent cohorts. Thus, using immigrants in cohort 1 to compare the distributions of native outcomes would

control for skill and other productivity-related differentials, thereby reducing the role of potentially confounding factors and consequently enabling us to attribute the presence of segregation more strongly to employment discrimination. At the same time, comparisons using the more recent immigrant cohorts (3 and 4) would shed light on the role of explained versus unexplained factors in explaining the differential in wage distributions.

Since job offers are contingent on the legal authorization to work in the U.S, we also divide the immigrant sample into three groups on the basis of 'citizenship status': naturalized citizens, non-citizens, and citizenship status not applicable. Similar to the argument made in favor of using cohort 1 in assigning differences in occupational attainment to explained causes versus discrimination, naturalized citizens are more comparable to natives by dint of both, having assimilated to a greater degree, and possessing unconditional authority to work in the U.S. Hence the error in predicting occupational attainment using the human capital model and related error in estimating counterfactual wages for the predicted set of immigrants are minimized when using cohort 1 or naturalized citizens instead of the full sample of immigrants. The reduction in error is tied to minimizing the scope of unobservable characteristics that make an immigrant less attractive to the employer and is not attributable to hiring discrimination. In fact, we also use a third criterion to control for the effects of such unobservables: based on the ability to speak English, immigrants are grouped into one of three categories – does not speak English, speaks very well or only English, does not speak well. Here, fluency in the English language is treated as an indicator of the attractiveness or desirability of the immigrant to an employer. Finally, immigrants from certain countries of origin that are perceived to have advantage in particular skills might be more (less)

attractive to employers depending on the occupation under consideration. Also, varying strengths of discrimination faced by different ethnic groups might confound the results when immigrants for the pooled sample containing all ethnic groups are used to detect the extent of segregation. To address this problem, we re-estimate our results using immigrants grouped under broad definitions of ethnic origin: North America, South America, Europe, Asia, Africa, Oceania.[14]

Summary statistics for each of the cohorts grouped according to years since migration and citizenship status are presented alongside the results for the full sample of immigrants in Table A1. As can be expected, the older the period of residency of an immigrant cohort, the higher are hourly wages in any occupation. Similarly, an average naturalized citizen earns higher wages than a non-citizen. However, while all cohorts (both grouped according to years in U.S and citizenship status) earn higher average wages than natives in the Professional sector, in contrast, earnings of all cohorts are lower than natives in the Service sector. For the three remaining sectors, wages accruing to only the oldest cohort (years in U.S more than 30) exceed those of natives in the respective sector; naturalized citizens in only Operations earn marginally more than natives. The trend for average age is somewhat similar – natives are no older than the oldest cohort, an exception being Services where cohort 2 is also older than the average native service worker. However, unlike that suggested by Borjas (1985), we find that recent immigrants are more likely to be college graduates in any occupation. At the same time, they are also more likely to lack a high school degree.

[14] Although creating groups of immigrants by country of birth seems more appropriate, we use broader definitions of ethnic origin since the former strategy becomes too cumbersome due to the huge diversity of immigrant groups in the U.S.

In general, sensitivity results for each occupation will be analyzed with respect to the full sample results. The QTEs for Professionals using immigrant cohorts 1, 2, 3, and 4 are displayed in Figures 1.a.1, 1.a.2, 1.a.3, 1.a.4, respectively; Figures 1.b.1 and 1.b.2 display the QTEs using immigrant cohorts classified by citizenship status. Corresponding results for Services, Sales, Operatives, and Laborers, using cohorts classified according to years in the U.S (citizenship status) are displayed in Figures 2.a.1-2.a.4 (2.b.1-2.b.2), 3.a.1-3.a.4 (3.b.1-3.b.2), 4.a.1-4.a.4 (4.b.1-4.b.2), and 5.a.1-5.a.4 (5.b.1-5.b.2), respectively. Panels A to D in Tables 2 (Professionals), 3 (Services), 4 (Sales), 5 (Operatives), and 6 (Laborers) give the results for cohorts classified by years in the U.S, while Panels E and F give the results for cohorts classified by citizenship status.

2.7.1. Immigrant Cohort by Years in U.S

2.7.1.1. Professionals

To begin, the graphs for the Complete Wage Gap in the Professional sector using immigrant Cohort 1 (Figure 1.a.1) display the least similarity compared to those for the other three cohorts. The dissimilarity pertains to both the magnitude of the gap across the distribution as well as the premium accruing to immigrants in the bottom 25%. Unlike the results obtained using the full sample of immigrants wherein the QTEs were negative for only the top 75%, *all* immigrants earn higher wages compared to natives. Higher average age of immigrants could possibly be a factor contributing to higher wages; the exact cause can be identified when we look at the decomposition results using conditional analysis. Moreover, the magnitude of QTEs are higher for most of the quantiles (-0.111, -0.154, -0.157 at 0.20, 0.40, 0.60 quantiles, respectively) and the gap itself is U-shaped

(QTEs measure approximately -0.1 at the 17th and 85th percentiles, and -0.179 at the median) implying greatest wage differences at the middle. For the other three cohorts, as can be seen in Figures 1.a.2, 1.a.3, 1.a.4, QTEs in the bottom tail are positive, although the relevant section of the tail shrinks as the cohort grows older. The p-values for the Complete Wage Gap in Table 2 are 0.000 (or close to zero) for all the cohorts, thus rejecting the equality of unconditional wage distributions of natives vis-à-vis immigrants belonging to any cohort.

The Explained Productivity Gap across the four cohorts is similar in nature and magnitude to that observed for the results using the full immigrant sample, such that cohort 1 (4) displays the least (most) similarity in QTEs measuring 1.208, 1.100, 1.153, 1.287 (1.408, 1.345, 1.365, 1.477) at the 4 quantiles displayed in Table 2. P-values from the tests of equality do not reject the equality of distributions for any cohort. Next, results for Unobserved Wage Discrimination using cohorts 1, 2 and 4 do not differ much except in magnitude from the full sample. Both the confidence bands and test results validate the significance of the gap for cohorts 1 (p-value = 0.010) and 4 (p-value = 0.010), while not so according to the test results for cohort 2. Although not significant according to the p-value (0.235) or confidence bands, the QTEs for cohort 3 are negative for, approximately, the bottom 45%, indicating a reversal of returns to unobserved productivity in favor of immigrants at the low-end of the distribution. The next component denoting Observed Wage Discrimination is significant only according to test results for cohorts 1 and 4 (p-values = 0.005 for both). The corresponding values for cohorts 1 and 3 are 0.165 and 0.280 respectively. Interestingly, unlike the full sample results, QTEs are positive for cohort 2, and for most of the distribution using cohort 3. Also, the QTEs are close to zero

for cohort 1 which voids any claim towards unequal returns to observed productivity when immigrants have sufficiently assimilated. Finally, QTEs for the Unexplained Wage Discrimination denoting differences in productivity between the actual and predicted set of immigrants are relatively stable for the older cohorts (Cohort 1: maximum QTE = -1.513, minimum QTE = -1.792; Cohort 2: maximum QTE = -1.471, minimum QTE = -1.796) compared to the full sample. Further, their significance is established by both tests (p-values equal 0.015, 0.025, for cohort 1 and 2, respectively). As in the full sample, the gap increases at the upper tail for cohort 3 (maximum QTE = -1.217, minimum QTE = -1.824) and cohort 4 (maximum QTE = -2.095, minimum QTE = -2.265) and is only significant by confidence interval tests.

2.7.1.2. Services

From Figures 2.a.2, 2.a.3, 2.a.4, we find the Complete Wage Gap is similar in nature to that observed in Figure 2 with some variation in the magnitudes of QTEs. When compared to the full sample, the QTEs for cohorts 3 (0.261, 0.336, 0.390, 0.400) and 4 (0.390, 0.488, 0.524, 0.531) are systematically higher while those observed for cohort 2 are lower (0.208, 0.245, 0.196, 0.194), although their significance is established by both the test of equality (p-value = 0.000 for each cohort) and confidence intervals. O the contrary, the gap is almost always negative for cohort 1 (-0.026, -0.019, -0.034, -0.012) and not significant according to either test (p-value = 0.925).

The Explained Productivity Gap for all four cohorts is similar in nature to that observed for the full sample in that the QTEs are positive and increasing throughout. The 95% confidence bands do not contain zero at any quantile, thus establishing significantly

higher earnings potential of natives; additionally, the p-values for cohorts 2 (0.087) and 3 (0.000) render the gap significant. The findings for the next component are consonant with those obtained for the full sample: the extent of Unobserved Wage Discrimination is negative throughout the distribution for cohorts 1, 2, 4, and turns slightly positive above the 65% percentile for cohort 3 (QTEs in Table 3 equal -0.099, -0.029, -0.011, 0.004). Moreover, the gap is significant only for cohort 3 according to the test of equality (p-value = 0.010). The next set of results estimating the Observed Wage Discrimination are somewhat striking. Compared to the full sample, only cohort 1 displays some similarity in finding negative QTEs for most of the distribution, the only exception being observed between the 50 and 60th percentiles. The QTEs show a reversal in sign for the majority of the distribution comprising of more recent immigrants in cohort 2. Here the only exception lies between the 25 to 45th percentile (QTEs = 0.058, -0.011, 0.068, 0.098). Finally, for cohorts 3 and 4, the gap is positive for the entire distribution. Although it is interesting to find a reversal in returns to natives, the findings are supported by only the test results for cohort 3 (p-value = =0.051). Lastly, the effects of segregation are visible in the Service sector irrespective of the cohort under consideration. The QTEs are similar in magnitude, being closest to those in cohort 3. The gap is always significant according to the graphs, but only for cohort 3 when relying on the test result (p-value = 0.000).

2.7.1.3. Sales

The Complete Wage Gap is positive across the distribution for cohorts 2 (from Figure 3.a.2, QTEs: 0.112, 0.074, 0.131, 0.135) and 3 (from Figure 3.a.3, QTEs: 0.206, 0.244, 0.229, 0.222), and turns negative for the upper two-third when using cohort 1

(QTEs: 0.034, -0.035, -0.051, -0.041) and the upper 15% for cohort 4 (QTEs: 0.441, 0.336, 0.400, -0.112). The p-values are significant at least at the 0.005 level for each cohort, but the confidence bands are significant only for the bottom one-fifth for cohort 1 and throughout for the other cohorts. Thus the wage differential between natives are immigrants are found to be significant only for the more recent cohorts and suggest a possible premium to immigrants when they are more comparable to natives through greater assimilation.

In terms of sign, magnitude or significance, the results for the gap attributable to Explained Productivity differences do not vary much from those obtained using the full sample. To summarize, the QTEs are positive, steadily increasing and significant according to the test results. The results for the next component attributable to Unobserved Wage Discrimination are more striking in demonstrating either complete or strong tendency to suggest the opposite of those implied by the full sample. For the oldest cohort, although not significant, the QTEs are positive for the top 70% (-0.100, 0.050, 0.086, 0.086). This phenomenon is established more strongly for the newest cohort where the QTEs are always positive (0.127, 0.225, 0.236, 0.270) and also significant for the top 50%. However, as observed for the full sample, the QTEs are negative for cohorts 2 and 3, although significant only for the bottom 70% using cohort 2. The QTEs for the Observed Discrimination Gap suggest higher return to immigrants for the majority of cohort 2 (-0.129, -0.123, -0.079, -0.017) contrary to the findings for the full sample. The results for the other cohorts generally conform to those for the full sample with variations in the magnitude of the gap. While the QTEs are mostly significant for cohort 4, the test for equality is rejected for cohort 1 (p-value = 0.035) and cohort 2 (p-value = 0.080).

Finally the difference in distributions of earnings for the actual and predicted set of immigrants is not significant according to the p–values; however, the QTEs for cohorts 2 and 3 are significant and very close to the estimates for the full sample, while those for cohorts 1 and 4 are significant and higher in magnitude.

2.7.1.4. Operatives

The Complete Wage Gap for cohort 1 is negative for the majority of the distribution as opposed to the full sample results. The QTEs in Figure 4.a.1 are significant above the 30th percentile thereby indicating higher wage earnings accruing to the oldest cohort of immigrants as compared to natives. The test for equality reinforce this finding (p-value = = 0.000, from Table 5). The nature of the gap for the other three cohorts conforms to the full sample: the QTEs are positive and significant according to both tests (p-value = 0.000 for all three cohorts).

The Explained Productivity Gap is consonant with significantly higher earnings attributable to productive characteristics of natives across the distribution. The QTEs are progressively higher for newer cohorts, such that the difference between the estimates for cohort 3 and the full sample is less than 1.5% at any quantile. Equality of distributions is rejected for cohort 3 at 100% level of confidence. The full sample results for the Unobserved Wage Discrimination do not resemble the findings for any cohort, except perhaps in the bottom third of the distribution for cohorts 3 and 4. The gap is negative for cohort 4, diminishes for the high-end of the distribution and significant below the 60th percentile. It becomes positive for the top 25% in cohort 3, positive everywhere for cohort 2 and mostly positive or negligible for cohort 1. While the QTEs for the three

older cohorts are never significant, the difference between distributions is significant (p-value = 0.060) for cohort 3. We find robust support for higher return to natives' observed productivity across all cohorts, the only exception being observed for the top 30% in cohort 1. The QTEs are significant for cohorts 3 and 4; however, the p-values strongly reject equality for all cohorts (p-value = 0.000). As in the full sample, the last component denoting the Unexplained Productivity Gap supports positive selection into Operations as can be inferred from the positive and significant QTEs. Moreover, the gap is significant according to the tests for cohort 2 (p-value = 0.020) and cohort 3 (p-value = 0.005).

2.7.1.5. Laborers

The Complete Wage Gap is significant according to the test results as well as the QTEs. The QTEs are positive for the three recent cohorts, highest in the middle of the distribution and grow progressively higher the more recent the cohort. The most noteworthy would be the graph for cohort 1 (Figure 5.a.1) where the QTEs are relatively small in magnitude and become negative above the 40^{th} percentile (QTEs in Table 6: 0.051, 0.000, -0.049, -0.058). Thus, as has been noticed for every other occupation, the earnings differential favors immigrants or at least does so for the upper end of the distribution when focusing on the immigrant cohort that can be reasonably assumed the closest match to natives.

Unlike that found for any other occupation, the Explained Productivity Gap for Laborers is significant at less than the 6% level for all cohorts according to the test results. Although, in general, the QTEs are increasing for most of the distribution in any cohort, the estimates for cohort 2 bear closest resemblance to the full sample QTEs

(1.133, 1.149,. 1.239, 1.368). Unlike the full sample results, return to unobserved productivity favors natives when compared to the older immigrant cohorts (1 and 2) and the upper tail of cohort 4. However, the gap is significant according to the test for equality (p-value = 0.025) thus lending little support to higher unjustified rewards to unobserved skills of native. Evidence supporting higher reward to observed productivity is robust: the QTEs are significant in comparisons involving cohort 2, top 70% using cohort 3, and top 45% using cohort 4. The test statistics strongly support these findings, rejecting equality at 100% confidence levels for cohorts 2, 3, and 4. Finally, QTEs measuring the unexplained portion of the gap attributable to segregation are significant and do not vary across cohorts. In addition, the p-values for cohort 1 and 4 are 0.045 and 0.000, respectively, thus establishing substantive qualitative disparity among immigrant laborers when selection into occupations is not determined by human capital or supply-side factors.

2.7.2. Immigrant Cohort by Citizenship Status

2.7.2.1. Professionals

The QTEs in figure 1.b.1 signify higher wages earned by natives when comparing them to immigrants who do not have U.S citizenship. The greatest wage premium accrues to natives in the lowest quintile, thereafter diminishing for higher percentiles and eventually turning to a penalty for the top 45% (QTEs: -0.135, -0.025, 0.021, 0.077). The same trend is observed in Figure 1.b.2 where the immigrant sample comprises of naturalized citizens only: natives earn significantly lower wages than immigrants who

have both the skills and experience to be treated like natives by employers (QTEs: -0.038, -0.080, -0.114, -0.103).

The Explained Productivity Gap reflects larger differences in productivity for non-citizens than naturalized citizens. The smallest gap (minimum QTE = 1.411 at the median) when comparing natives to non-citizens is 4.5 percentage points higher than the gap for the bottom 70% naturalized citizens. However, its significance is not verified for either naturalized citizens or non-citizens by the test results. There is some evidence for discrimination in rewarding unobserved productivity. While the extent of Unobserved Wage Discrimination is higher in magnitude for non-citizens, the QTEs are significant for the top 30% in the latter cohort. The QTEs for naturalized citizens are not significant, yet the distributions are not equal according to the p-value (0.000). There is little evidence to support employer discrimination in rewarding native observable productivity more than either naturalized citizens or non-citizen immigrants. The test p-values are not significant and the gap, albeit implying higher returns to immigrants (QTEs: -0.035, -0.034, -0.023, -0.051 for naturalized citizens; -0.028, -0.037, -0.005, -0.004 for non-citizens), is not significant either. The overall segregation of non-citizen immigrants exceeds that faced by naturalized citizens as the QTEs are systematically higher for the latter at any quantile.

2.7.2.2. Services

We present the results for the Complete Wage Gap as well its components in brief for the Service occupation. The Complete Wage Gap is positive and significant for comparisons involving both naturalized citizens and non-citizens, although the QTEs are

100 to 300 percentage points higher across the distribution when native earnings are compared to non-citizen immigrants. For either cohorts, the QTEs for the Explained Productivity Gap are positive and significant, thus attributing higher earnings to better productivity of natives. In addition, the distribution of earnings explained by productive ability of natives significantly differ from that of naturalized citizens (p-value = 0.085). Neither the QTEs, nor p-values imply significant differences in return to observed or unobserved productivity of natives vis-à-vis immigrants irrespective of their citizenship status. Segregational issues affect immigrants in either cohort in the same way (QTEs for naturalized citizens: -1.226, -1.239, -1.315, -1.475; for non-citizens: -0.955, -0.974, -1.038, -1.294); however the gap is (barely) significant according to the test for equality only for naturalized citizens (p-value = 0.095).

2.7.2.3. Sales

Similar to the findings for Services, the Complete Wage Gap is significant in comparisons involving either type of immigrant based on citizenship status although the QTE estimates are more than double for non-citizens at any quantile. However contrary to that found in the Service occupation, Productivity differentials explain the gap to a greater extent for naturalized citizens. This result is further supported by the test statistic for the immigrant cohort holding naturalized citizenship (p-value = 0.085). Neither QTEs nor test statistics find significant differences attributable to differential return to unobserved productivity for either cohort. However it is interesting to note that discrimination in the form of higher returns to observed characteristics assume opposite directions for the two cohorts: while naturalized citizens receive higher rewards, non-

citizens are penalized vis-à-vis natives in the evaluation of observed skills by employers. This finding is not supported by the QTEs which are, although of sizeable magnitude, not significant. Nevertheless, the p-values (0.000 for each cohort) strongly reject the equality of earnings based on differential return to observed skills. Finally, QTEs for the Unexplained Productivity Gap imply significant differences in immigrant quality when occupational selection is non-random, finding further supported by the test which rejects the equality of distributions for naturalized citizens at less than 5% significance (p-value = 0.030).

2.7.2.4. Operatives

The Complete Wage Gap between natives and naturalized immigrant citizens, as seen in Figures 4.b.1, is positive and significant for the bottom half of the distribution, negative and insignificant for a majority of the upper half. When comparing non-citizens to natives (in Figure 4.b.2), the latter always earn significantly more. These findings, in combination with the test results in Table 5 (p-values for naturalized and non-citizens are less than 0.005), overall indicate higher wages of natives. QTEs measuring Explained productivity differences are slightly higher for non-citizens, yet significant for both cohorts of immigrants. Probably the result worth noting here relates to the estimates of Unobserved Wage Discrimination which reflects lower (higher) returns to unobserved productivity of naturalized (non-citizen) immigrants compared to natives. Moreover the QTEs are significant for the upper 60% of the naturalized cohort while the test p-values (Naturalized citizen: 0.025; non-citizen: 0.095) validate the significance of the gap for both types of immigrants. Discrimination in the form of higher returns to observed

productivity of natives is negligible when compared to naturalized citizens, but substantially higher and significant for the upper 75% when compared to non-citizens. Additionally, the p-values for the latter case are significant (0.000). Lastly, effects of segregation closely match one another for the two types of immigrants, QTEs being -1.285, -1.398, -1.538 and -1.227, -1.352, -1.591 for naturalized and non-citizens, respectively.

2.7.2.5. Laborers

From Figures 5.b.1 and 5.b.2, we find significantly higher wages accruing to natives, the gap between natives and non-citizens being thrice as high compared to naturalized citizens. The tests reinforce the strength of these findings for the non-citizen cohort with the p-value being 0.000. Differences in productivity explain the gap in distributions of unconditional wages to a large extent: the QTEs for naturalized citizens (1.240, 1.215, 1.253, 1.389) are significant but smaller than the QTEs for non-citizens (1.341, 1.366, 1.406, 1.500). The p-values for both types render the gap significant at 100% confidence levels. The estimates of treatment effects for Unobserved Wage Discrimination are at best negligible and insignificant. Evidence for discrimination in terms of higher returns to observed productivity does exist. The QTEs are positive and significant for the top 70% (third) of the distribution for naturalized (non) citizens. The equality test easily rejects the null at 100% level of confidence when comparing natives to non-citizen immigrants. Finally unexplained differences in productivity denoting unequal abilities of immigrants observed versus predicted in Sales are significant

according to the confidence bands for QTEs. Additionally, for non-citizens, the equality of distributions is strongly rejected (p-value = 0.000).

2.7.3. Immigrant Cohort by English-Speaking Ability

The QTEs obtained using immigrant cohorts classified according to English speaking ability are displayed in Figures 1.c.1-1.c.3, 2.c.1-2.c.3, 3.c.1-3.c.3, 4.c.1-4.c.3, and 5.c.1-5.c.3, for Professionals, Services, Sales, Operatives and Laborers, respectively; Tables 7-11 give the results from the test of equality and estimates of QTEs at the 4 quantiles (20, 40, 60, and 80 percentiles) for the respective occupations.

2.7.3.1. Professionals

The positive QTEs in Figures 1.c.1 and 1.c.2 imply that natives earn significantly more than immigrants who do not speak English very well such that the gap is largest at the bottom tail and diminishes progressively at higher quantiles. Moreover, the gap is smaller at every quantile when the immigrant group under comparison speaks better English than those who do not speak at all. In fact immigrants who speak only English or very well earn significantly more than natives for a majority of the distribution. The test results strongly support the findings for all three groups of immigrants (p-value = 0.000 in all cases). These findings indicate that ability to speak English is instrumental in explaining the wage differential between natives and immigrants, specially in the lower tail of the distribution.

The gap in productivity displays strikingly similar patterns across the three groups, the QTEs exhibiting a positive U-shape across the distribution. The test results

are significant at the 9% level for only the most fluent group. The QTEs denoting discriminatory returns to unobserved productivity favor natives when compared to either group and are significant above the 40th percentile, although the equality of distributions is rejected only for the most fluent group. While natives reap higher returns to observed productivity vis-à-vis immigrants who speak less than perfect English, the reverse is observed when comparing natives to the most fluent group. These differences are also supported by the test results at less than the 0.07 p-value. Finally, it is likely that discrimination in employment exists and the segregation of immigrants cannot be attributed to English speaking ability since the most fluent group shows the highest magnitude of QTEs measuring the Unexplained Productivity Gap; the rejection of equality at the 1% level for this group further reinforces the presence of this phenomenon.

2.7.3.2. Services

Similar to the results for Professionals, the Complete Wage Gap is positive and significant for the two less fluent groups. *Unlike* the results for Professionals, the gap increases for the higher quantiles; in addition, natives in the middle 15 to 75th percentiles earn more than the most fluent group of immigrants. The test results imply significant differences in the distributions of unconditional wages for all group compared to natives (p-value = 0.000). The explained Productivity Gap is more or less uniform across the distribution, the QTEs always significant while the tests significant only for the somewhat fluent and very fluent groups at less than the 1% level. Surprisingly, return to unobserved skills *favor* immigrants in the bottom third when comparing natives to the

two less fluent groups. Although not significant, the most fluent group also receives higher returns to such productivity, a finding also supported by the test results (p-value = 0.056). The only evidence for discrimination in terms of higher return to observed skills of natives is found in the upper 20% tail when using the group that does not speak English, to compare; the test results also strongly reject equality for this group (p-value = 0.000). Finally the extent of segregation is felt most among the group that does not speak English which shows the highest values of QTEs; however the test does not reject equality.

2.7.3.3. Sales

Unlike either Professionals or Service workers, the wage gap between natives and immigrants (of any fluency level) employed in the Sales sector are uniform across the distribution, the gap being smaller as English speaking ability of the immigrant group under consideration gets better. The explained gap in productivity is significant according to the QTEs and further reinforced for the two relatively fluent groups by the test results at less than the 2% level of significance. Higher returns to unobserved skills accrue to the medium fluent group and the test rejects equality for the same with p-value = 0.000. There is minimal evidence of higher returns to observed skills of natives when comparing them to the top 20% immigrants who don't speak English. Finally, unlike Service sector and similar to Professional sector, the most fluent immigrants are more segregated than less fluent and non-English speaking ones since the QTEs are highest at every quantile. The test fails to reject equality for the non-English speaking group.

2.7.3.4. Operatives

The QTEs denoting positive wage gaps are significant across the entire distribution for the two less fluent groups and below the 60th percentile for the most fluent group. Once again, the magnitude diminishes with increasing fluency of the group, indicating a strong role of language in determining the distributional wage gap. Equality is rejected for all three groups at the 0% level. The explained gap in productivity is similar in magnitude across the distribution for the three groups. While the QTEs are always significant, test for equality is rejected only for the least fluent group. Discrimination in terms of higher returns to native unobserved skills is significant above the 40th percentile when compared to the least fluent immigrants, and barely significant in the uppermost tail for the most fluent group. Additionally the p-values are rejected at 0.000 and 0,085, respectively. Higher return to observed skills is evident for the two less fluent groups, across the distribution for the least fluent and above the median for the more fluent ones. The p-values from the tests are however significant at the 0% level for both groups. As observed for Professionals and Sales occupations, owing to higher QTEs at every quantile, the most fluent group is likely to experience the most segregation. The test however finds significant differences in distributions for the least fluent group only.

2.7.3.5. Laborers

The nature of dominance by native wages, as implied by both the QTes and test results, are similar to that observed in the Operative sector, except that higher wages preside over the entire distribution even when using the most fluent group. The gap in explained productivity, as implied by the test results, are significant for only the mediocre

fluency group. Higher returns to unobserved productivity accrue to immigrants in the bottom end (50%) of the distribution when comparing natives to the least (medium) fluent categories; the test statistics support only the finding for the latter group (p-value = 0.045). In contrast, return to observed productivity favor immigrants across the entire (upper third of) distribution for the least (medium) fluent groups; the test for equality is also strongly rejected for comparisons involving these groups. Again, similar to the experience of Operatives, Laborers in the most fluent group face the most segregation. While this implication is derived from the QTEs, the test results imply the same for the medium fluent group only (p-value = 0.000).

2.7.4. Immigrant Cohort by Region of Origin

The QTEs obtained using immigrant cohorts classified according to country of origin are displayed in Figures 1.d.1-1.d.6, 2.d.1-2.d.6, 3.d.1-3.d.6, 4.d.1-4.d.6, and 5.d.1-5.d.6, for Professionals, Services, Sales, Operatives and Laborers, respectively; Tables 12-15 give the results from the test of equality and estimates of QTEs at the 4 quantiles (20, 40, 60, and 80 percentiles) for the respective occupations.

2.7.4.1. Professionals

The Complete Wage Gap is positive throughout the distribution only when comparing unconditional wages of natives to immigrants born in South America as can be seen in the first column of Figure 1.d.2. Thus natives across the distribution earn *significantly* more than immigrants from South America; this advantage is also evident when comparing natives to immigrants from Africa, although only roughly below the 40th

percentile. In fact natives in the upper tail (top 30%) of the distribution earn significantly less than immigrants from North America and Oceanic countries; the disadvantage is more stark when comparing natives to immigrants from Europe and Asia, displaying negative QTEs for the entire distribution barring the bottom 15%. These findings are supported by the test results that reject equality for any immigrant group at at least the 0.095 level.

The Explained Productivity Gap is positive and significant for all immigrant groups; the QTEs are highest in magnitude when using immigrants from Asia. However the equality of distributions is not rejected when comparing native productive ability to immigrants from North America (p-value = 0.935) and South America (p-value = 1.000). Return to unobserved productivity always favors natives, except for the bottom third when using immigrants from North America; however significantly so only when compared to immigrants from Europe and the top 40% of Asians. The test results also support this finding (p-values = 0.005 and 0.055 for European and Asian immigrants respectively). Return to observed productivity significantly favors natives when compared to immigrants from South America above the 30^{th} percentile, and *all* Africans. However, North Americans, Europeans and Asians receive higher returns to observed productivity vis-à-vis natives above roughly the 80^{th} percentile; the test results support this finding (p-values = 0.100, 0.030, 0.000, respectively). The Unexplained Productivity Gap between natives and immigrants from Europe contributes the most to the total wage differential, showing highest QTEs in the upper tail and generally higher QTEs in other parts of the distribution; while the QTEs are significant for all groups, the p-values do not reject equality for North and South Americans.

2.7.4.2. Services

The Complete Wage Gap is positive and favors natives when compared to immigrants from any country of origin; the QTEs are however not significant when comparing natives to immigrants from Europe and Oceania. The test results are consonant with these findings, strongly rejecting equality for North American, South Americans, Asians, and Africans at less than 4% levels. Natives are found to have better productive skills when compared to any group. Discrimination in terms of higher returns to unobserved productivity of natives is found only when comparing them to North Americans above the 25^{th} percentile; the reverse is observed and supported by test results (p-value = 0.000) when comparing natives to South Americans. We find no significant QTEs denoting discrimination in returns to observed productivity although the equality of distributions are rejected for tests using Asians and Africans (p-value = 0.000). Gap in unexplained productivity across the distribution implies that segregation is more or less similar when using any immigrants group; the test, however, does not reject equality for Europe and Oceania.

2.7.4.3. Sales

When compared to immigrants from North America, South America, Asia, and Africa, native wages are higher, although not uniformly so across the distribution using North American, Asians, and Africans; the QTEs are largest at the bottom tail. On the other hand, Europeans earn significantly more while the gap for Oceanic immigrants are not significant; the test results support these findings and reject equality (p-value = 0.000)

for all groups except Oceania. The explained gap in productivity reflects higher skills of natives as demonstrated by positive and significant QTEs across all home country groups with highest QTEs for Africans over the majority of the distribution; the results from the test of equality is significant only when using South American immigrants. We find no evidence of discrimination in terms of return to either observed or unobserved productivity according to the QTE estimates, except between the 10^{th} and 25^{th} percentiles when comparing European immigrants. The test results however indicate differential returns to both observed and unobserved productivity for North Americans and Africans, and only observed productivity for South Americans and Asians. As seen from the last column in Figures 3.d.1-3.d.6, segregation is most evident at the upper tails for any group and greatest for Europeans.

2.7.4.4. Operatives

The QTEs depicting the Complete Wage Gap are very similar to those obtained for any group in the Sales occupation. The only exceptions being Asians and Africans - the QTEs for Asians (Africans) are much lower in magnitude and significant only for the bottom 50 percent (always insignificant) as against the entire distributions for Sales. The explained gap in productivity, although always found to significantly favor natives, is largest for South Americans in the middle 30% of the distributions; the test rejects equality only for South Americans, Asians, and Oceanic immigrants. Discrimination in terms of higher returns to unobserved (observed) skills of natives are observed to be significant only for North American (South Americans) in the upper half (entire)of the distribution. The test results support these findings (p-values = 0.045 and 0.000

respectively); in addition the tests reject equality of return to unobserved (observed) skills for Europeans and Oceanics (North Americans and Asians). Immigrants from Asia and Africa are found to be most segregated; while the QTEs are significant across all groups, the test results reject equality of skill between the predicted and actual set of immigrants employed as Operatives only for South America, Asia and Oceania.

2.7.4.5. Laborers

Laborers from North America, South America, Asia, and Africa earn significantly less than their natives counterparts, although the gap is highest at the bottom tail and diminishes towards the upper end of the distribution. However, Europeans in the upper 50 percent earn significantly more than natives; the p-values support these findings for these groups at less than the 5% level of significance. While the QTEs denoting the gap in explained productivity are significant for all groups, the gap is maximum among natives and South Americans. This is further supported by the test results (p-value = 0.000). Additionally the equality between distributions reflecting differential productive ability of North Americans are also rejected at the 5% level. The higher concentration of low skilled immigrant workers from continental Americas in the 'Labor' sector is likely given their relatively easy access to the markets in the United States. The QTEs provide some evidence of higher returns to unobserved productivity when comparing natives to European immigrants in the upper 50%; discrimination in terms of higher returns to observed productivity is evident for both South Americans in the upper 70% and Africans across the entire distribution. The test results also support these findings (p-values = 0.000and 0.005 for South Americans and Africans, respectively. Finally immigrants from

Africa are found to be most segregated since the QTEs are usually higher than those obtained from other groups. However, the QTEs are always negative, although much lower in magnitude when compared to the corresponding values in other occupations indicating that in the absence of segregation, some immigrants with better skills would be employed in another occupation. In light of the fact that Labor is a low wage occupation, significant differences in 'Unexplained productivity' arising from such segregation provides modest evidence of discrimination in employment by employers, irrespective of origin.

Fig 1. Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals

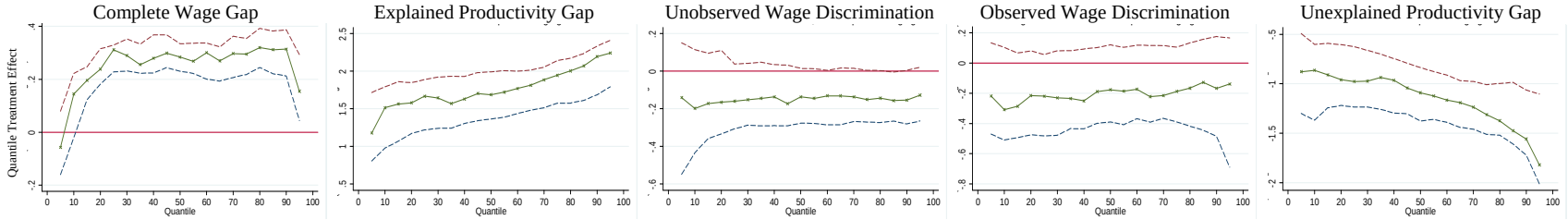

Fig 2. Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services

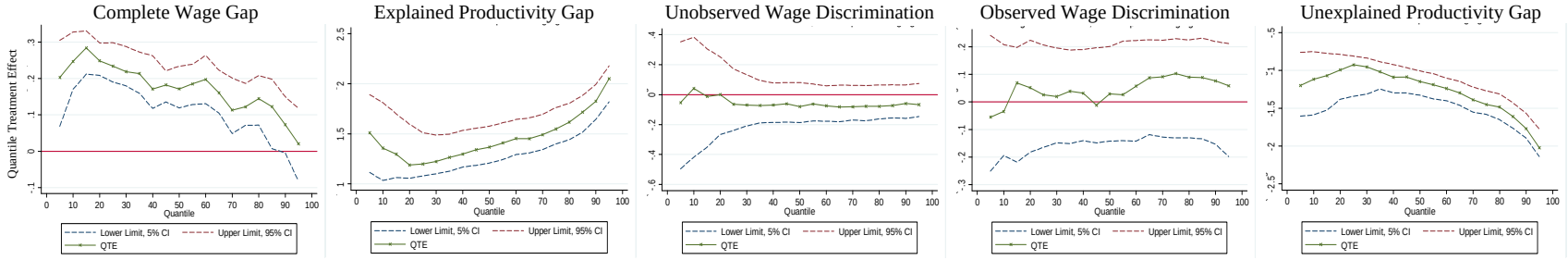

Fig 3. Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

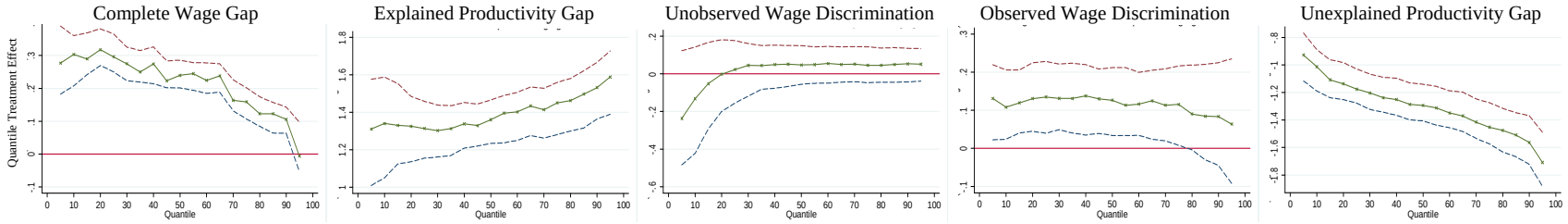

Fig 4. Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives

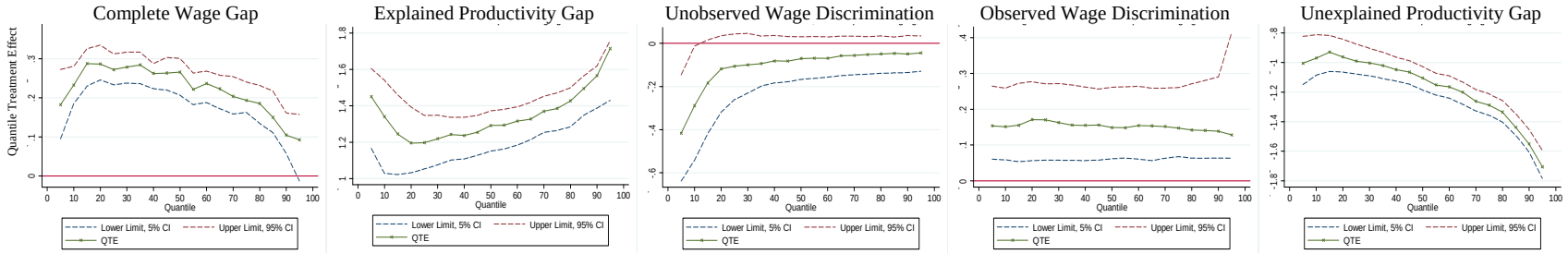

Fig 5. Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

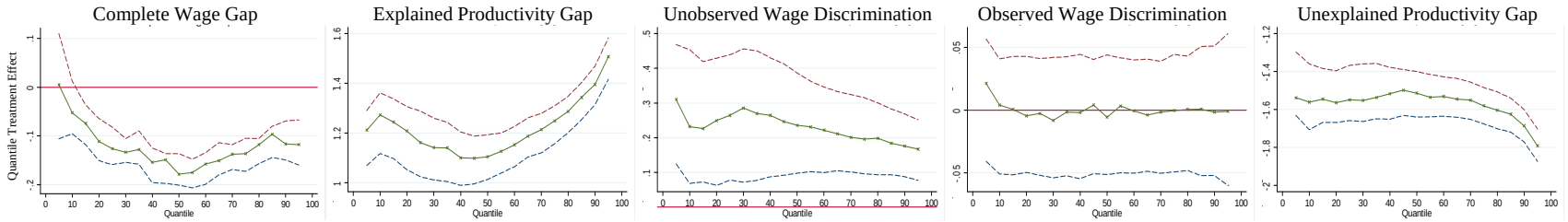

Fig 1.a.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants belong to Cohort 1: residing in the U.S for more than 30 years)

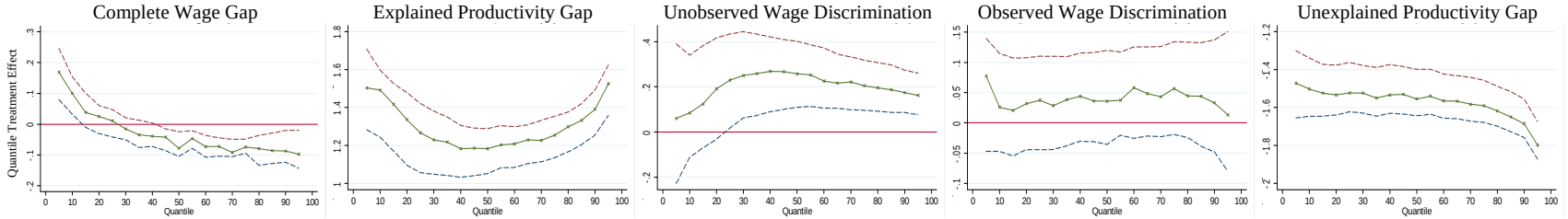

Fig 1.a.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants belong to Cohort 2: residing in the U.S for 16 - 30 years)

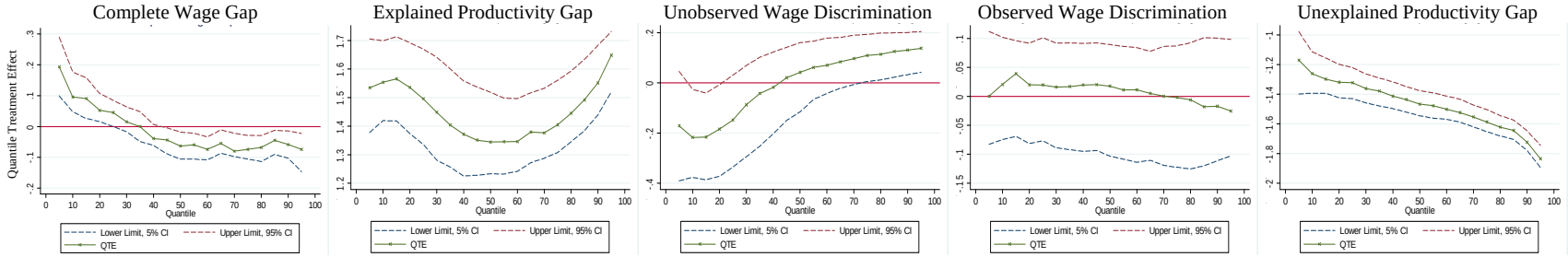

Fig 1.a.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants belong to Cohort 3: residing in the U.S for 6 - 15 years)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

Fig 1.a.4 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants belong to Cohort 4: residing in the U.S for less than 6 years)

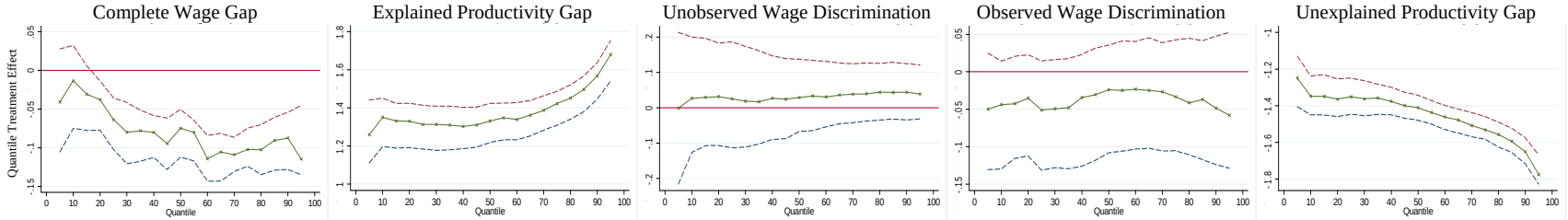

Fig 1.b.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants who are naturalized citizens)

Fig 1.b.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants who are not citizens)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

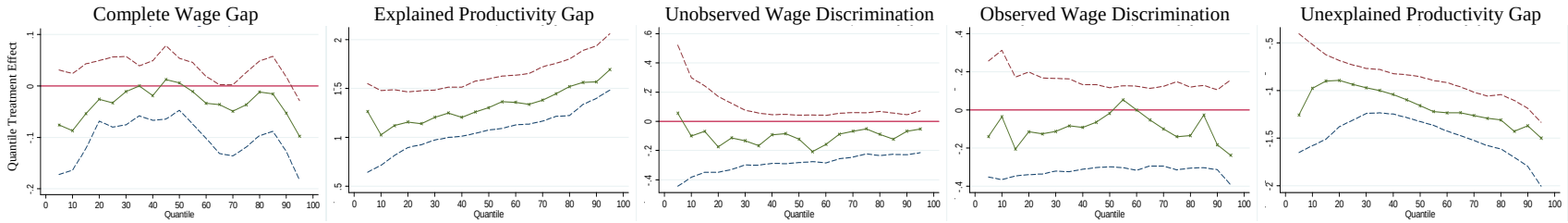

Fig 2.a.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants belong to Cohort 1: residing in the U.S for more than 30 years)

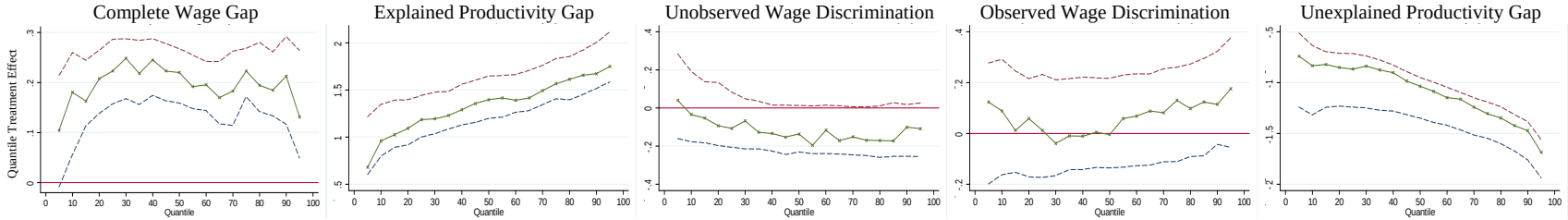

Fig 2.a.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants belong to Cohort 2: residing in the U.S for 16 - 30 years)

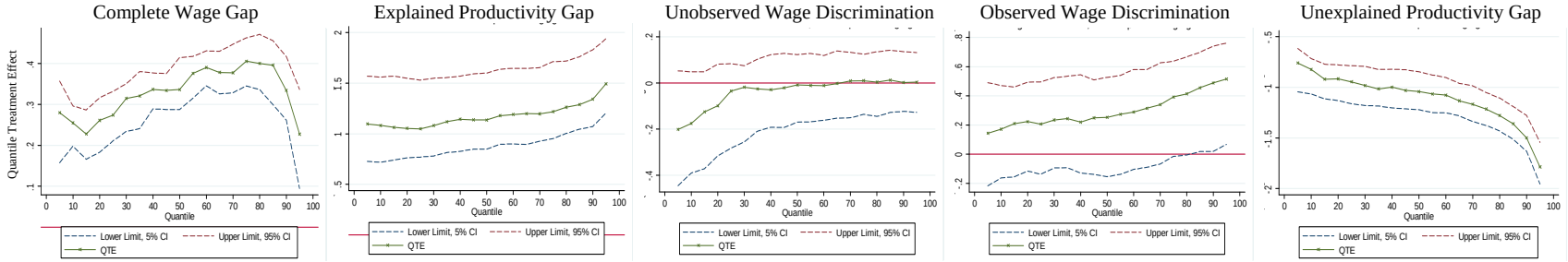

Fig 2.a.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants belong to Cohort 3: residing in the U.S for 6 - 15 years)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

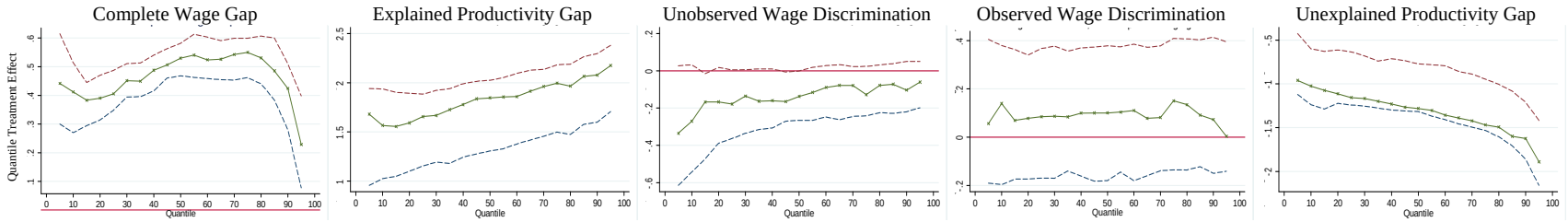

Fig 2.a.4 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants belong to Cohort 4: residing in the U.S for less than 6 years)

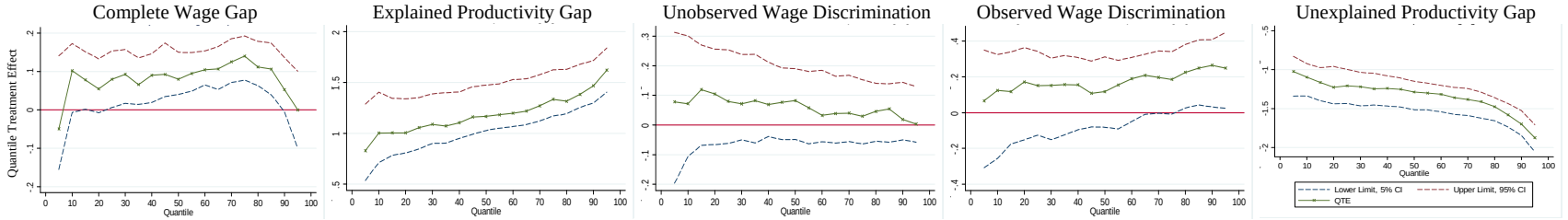

Fig 2.b.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants who are naturalized citizens)

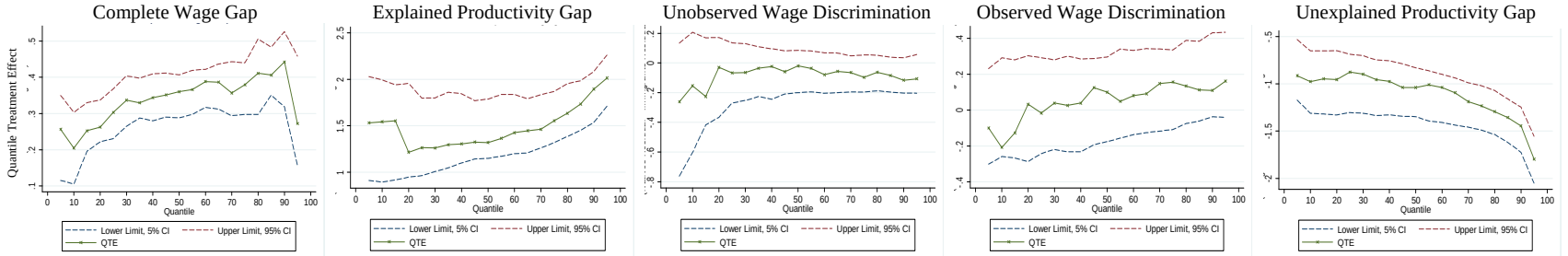

Fig 2.b.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants who are not citizens)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

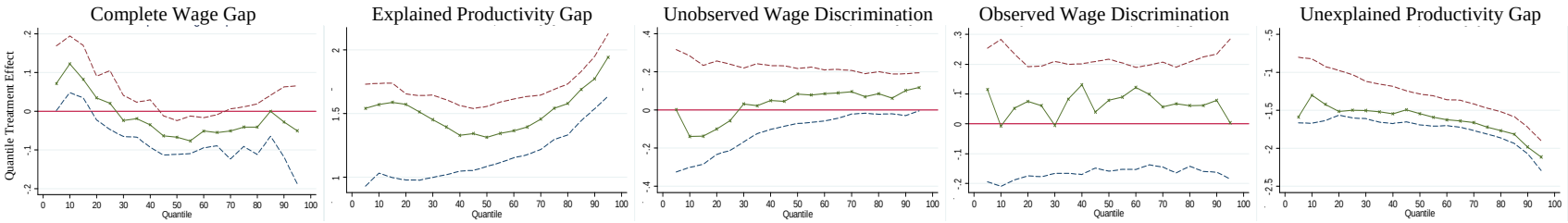

Fig 3.a.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants belong to Cohort 1: residing in the U.S for more than 30 years)

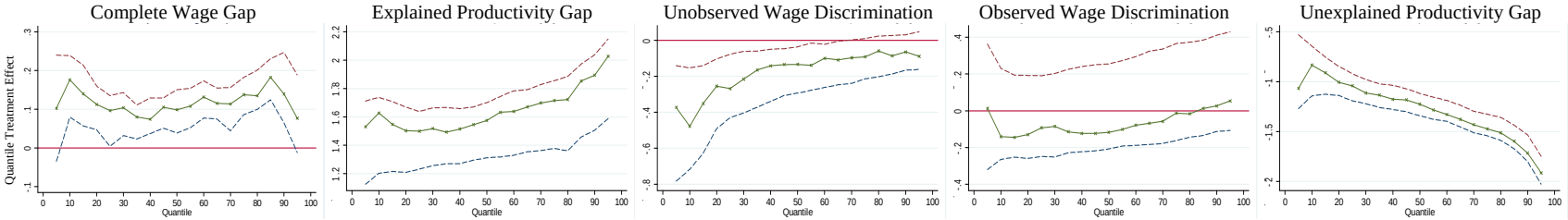

Fig 3.a.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants belong to Cohort 2: residing in the U.S for 16 - 30 years)

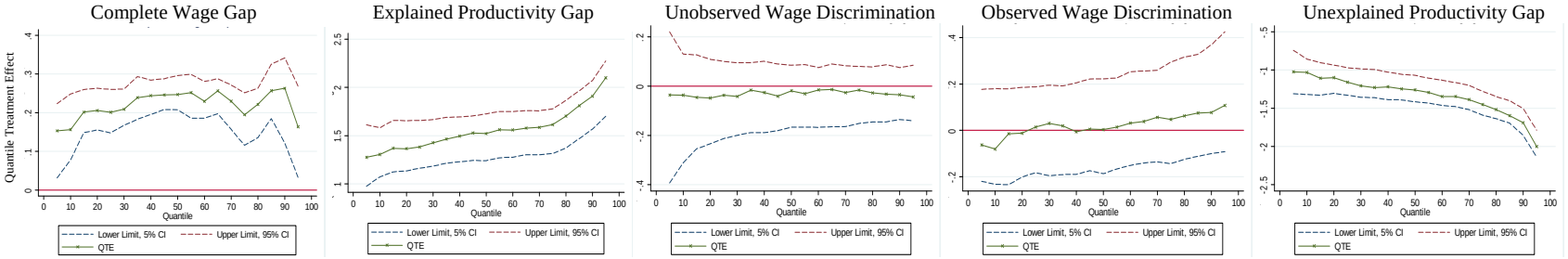

Fig 3.a.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants belong to Cohort 3: residing in the U.S for 6 - 15 years)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

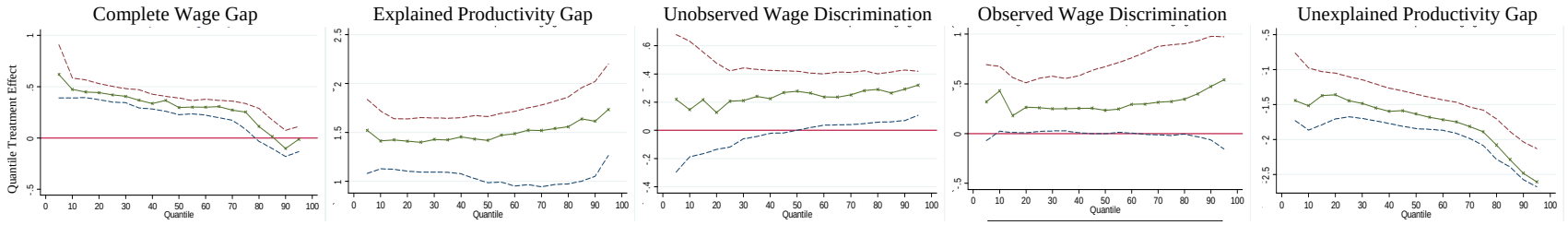

Fig 3.a.4 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants belong to Cohort 4: residing in the U.S for less than 6 years)

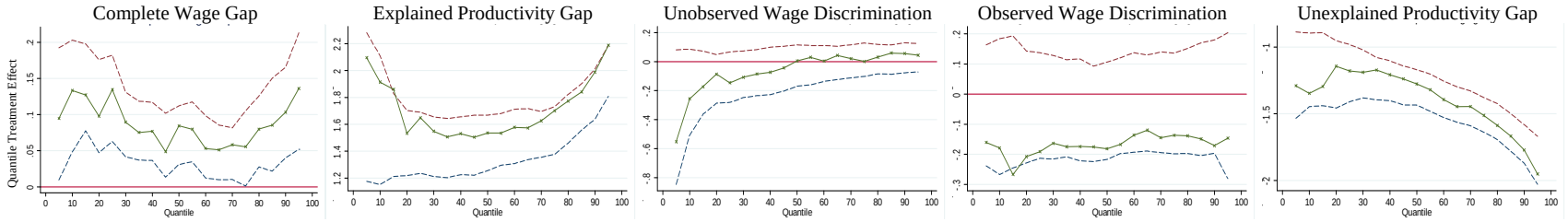

Fig 3.b.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants who are naturalized citizens)

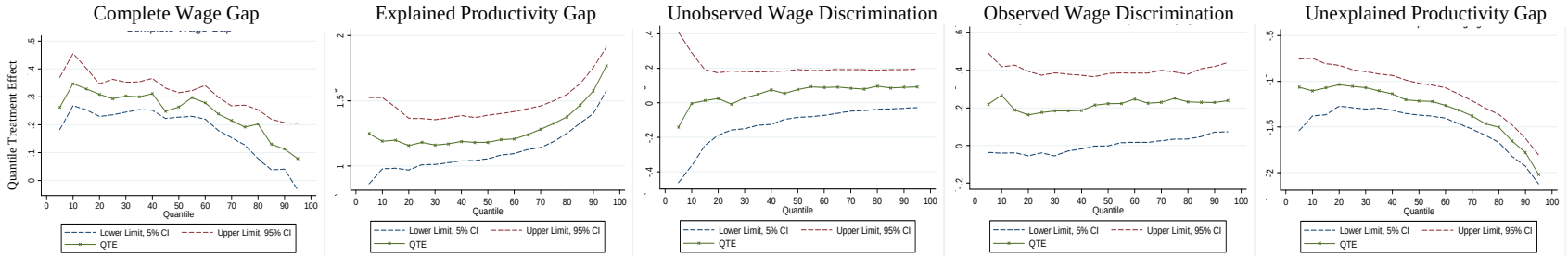

Fig 3.b.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants who are not citizens)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

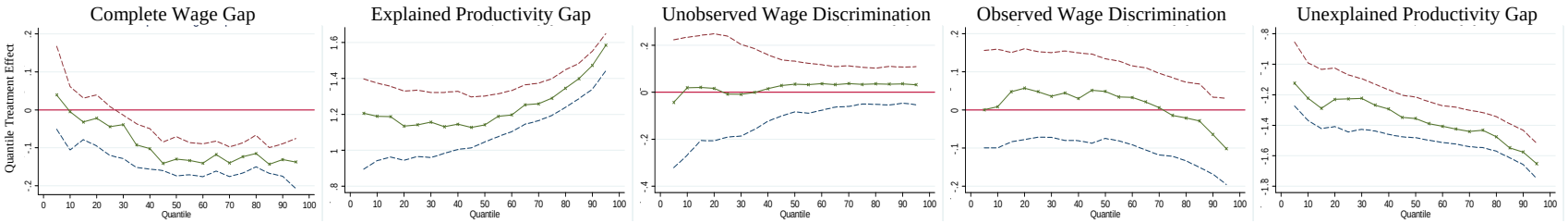

Fig 4.a.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants belong to Cohort 1: residing in the U.S for more than 30 years)

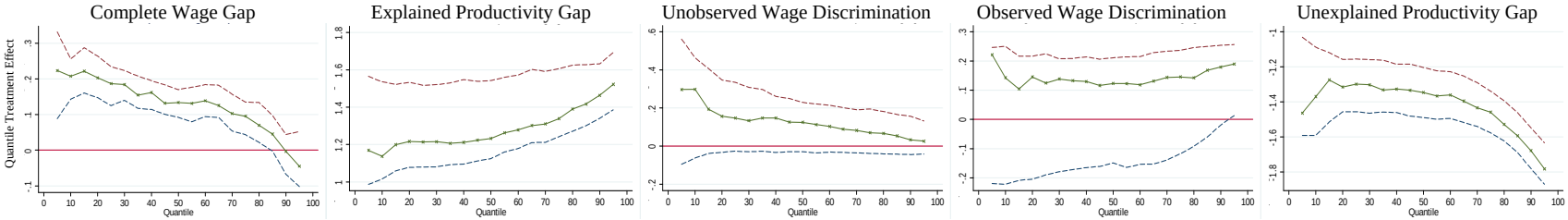

Fig 4.a.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants belong to Cohort 2: residing in the U.S for 16 - 30 years)

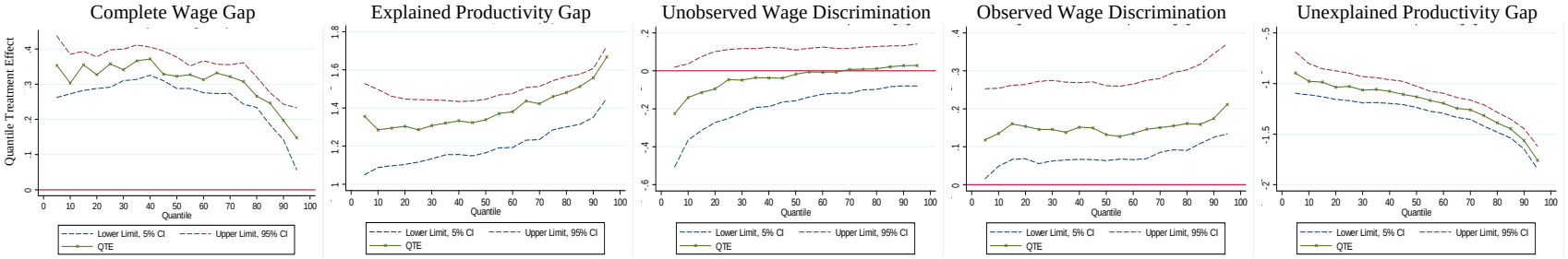

Fig 4.a.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants belong to Cohort 3: residing in the U.S for 6 - 15 years)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

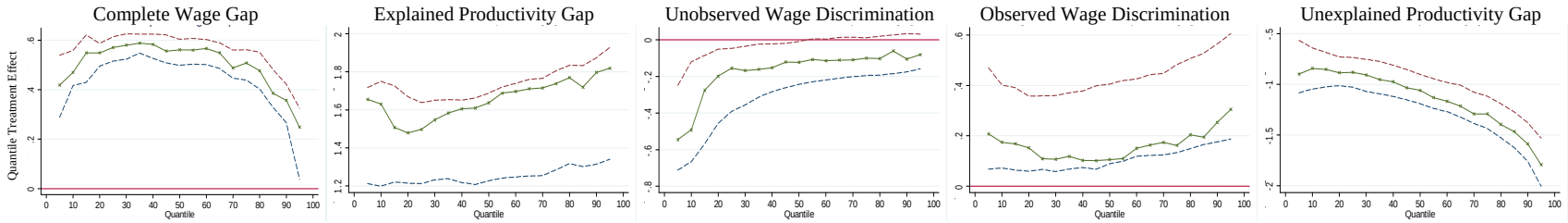

Fig 4.a.4 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants belong to Cohort 4: residing in the U.S for less than 6 years)

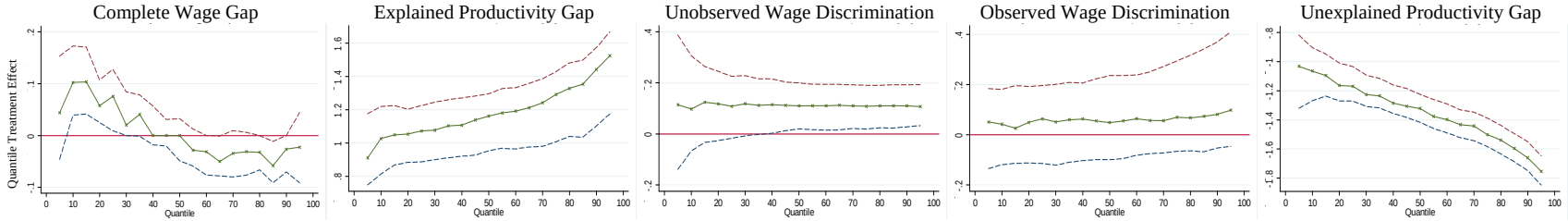

Fig 4.b.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants who are naturalized citizens)

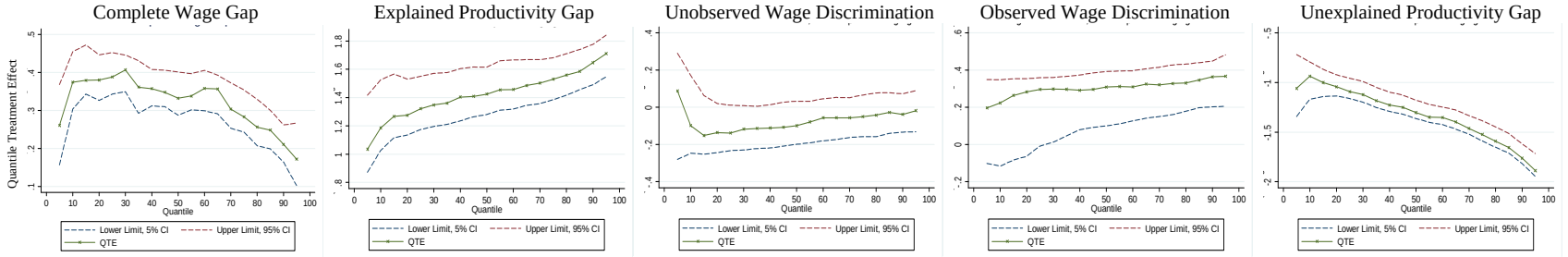

Fig 4.b.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants who are not citizens)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

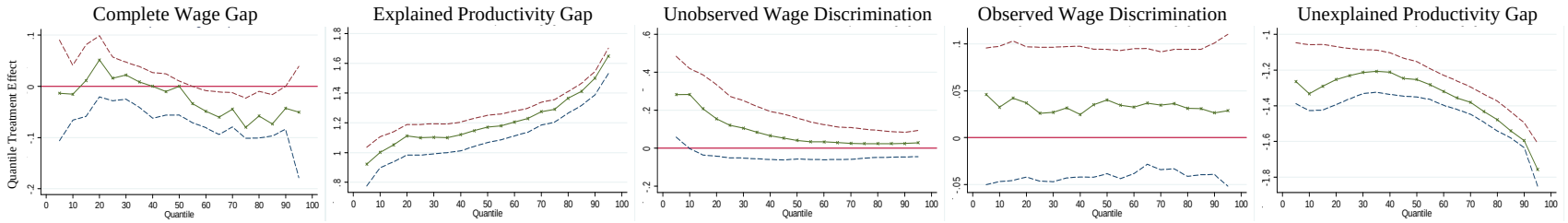

Fig 5.a.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants belong to Cohort 1: residing in the U.S for less than 6 years)

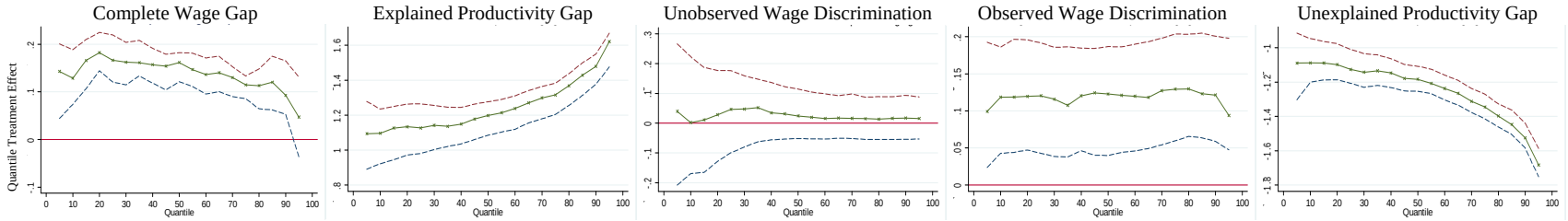

Fig 5.a.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants belong to Cohort 2: residing in the U.S for 16 - 30 years)

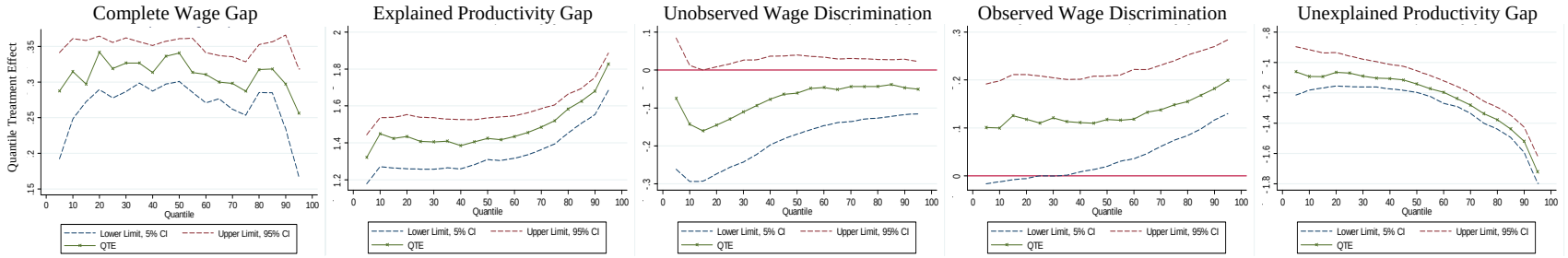

Fig 5.a.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants belong to Cohort 3: residing in the U.S for 6 - 15 years)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

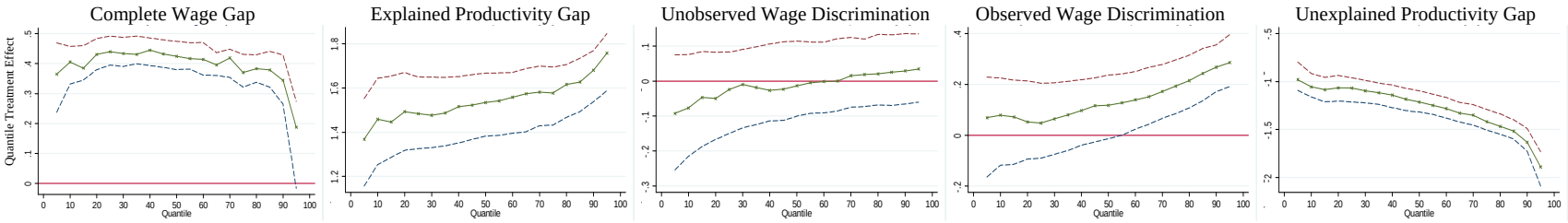

Fig 5.a.4 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants belong to Cohort 4: residing in the U.S for less than 6 years)

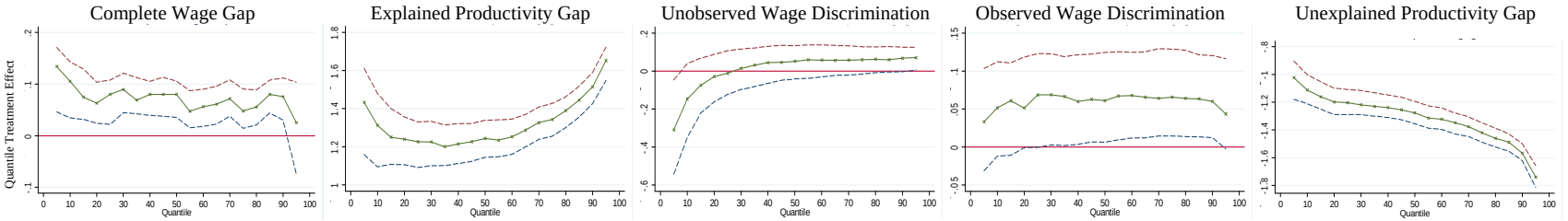

Fig 5.b.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants who are naturalized citizens)

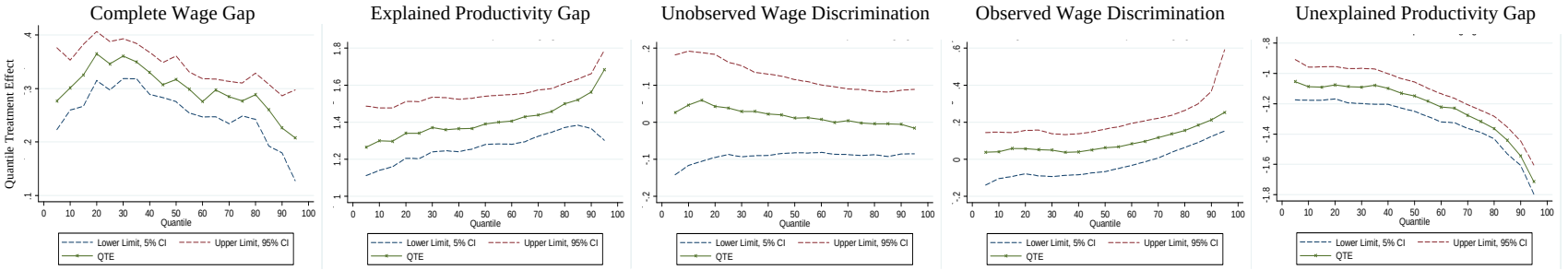

Fig 5.b.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants who are not citizens)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

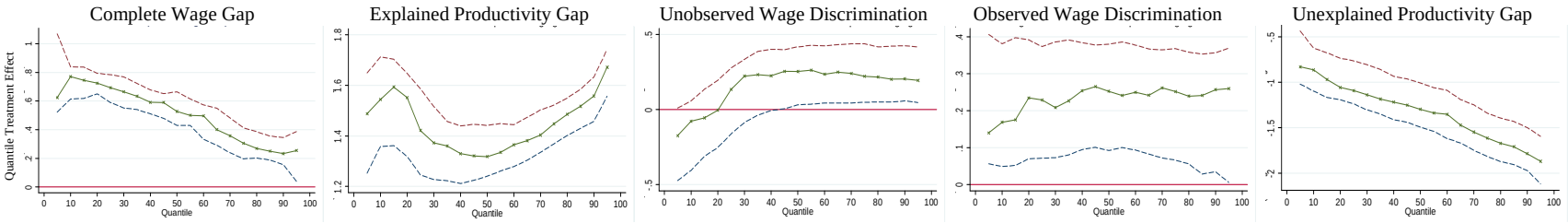

Fig 1.c.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants do not speak English)

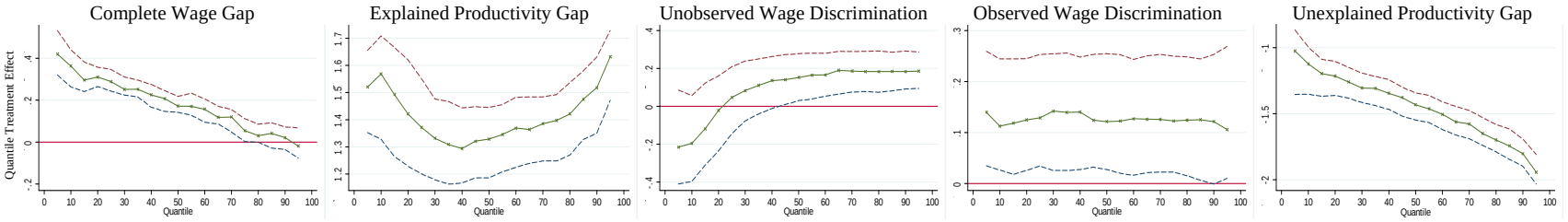

Fig 1.c.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants do not speak English well)

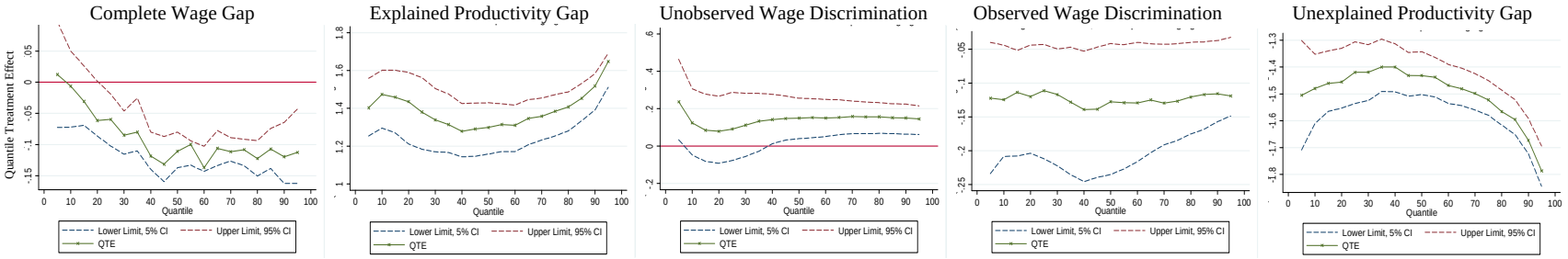

Fig 1.c.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants speak English only or very well)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

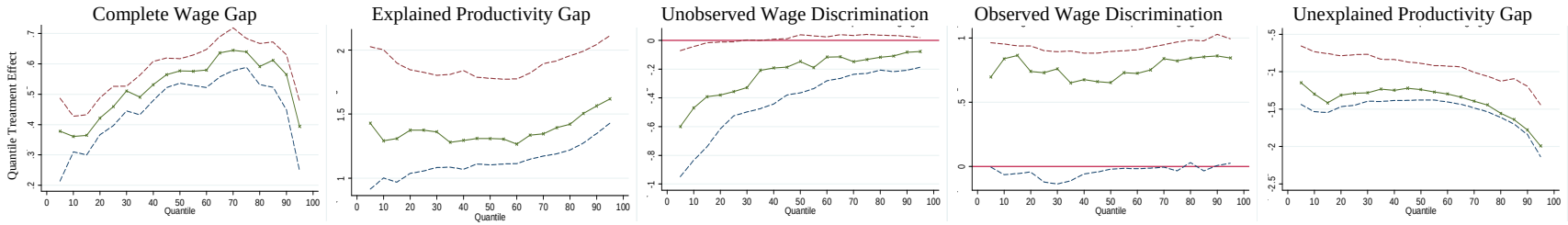

Fig 2.c.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants do not speak English)

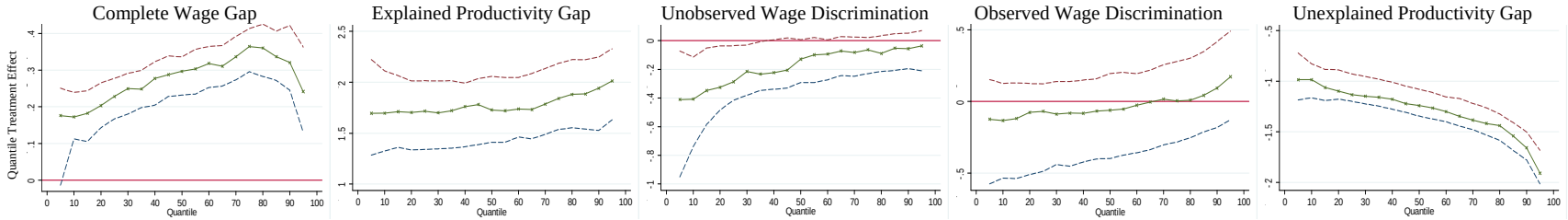

Fig 2.c.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants do not speak English well)

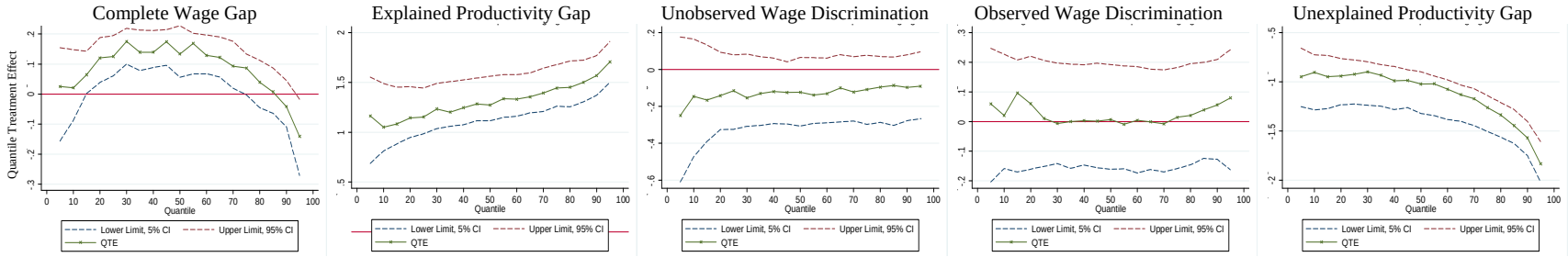

Fig 2.c.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants speak English only or very well)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

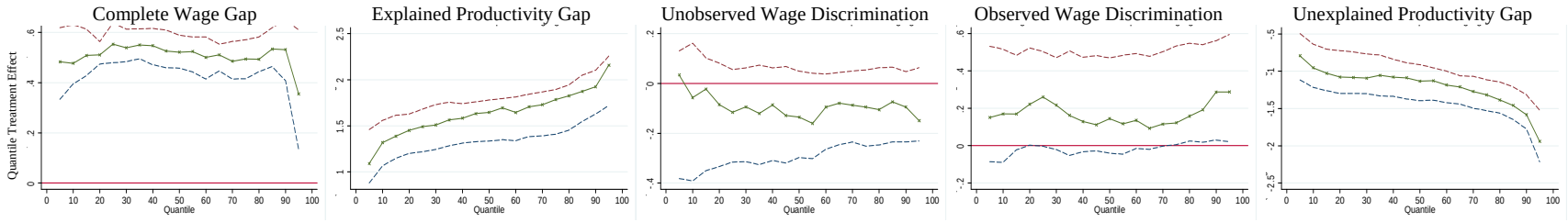

Fig 3.c.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants do not speak English)

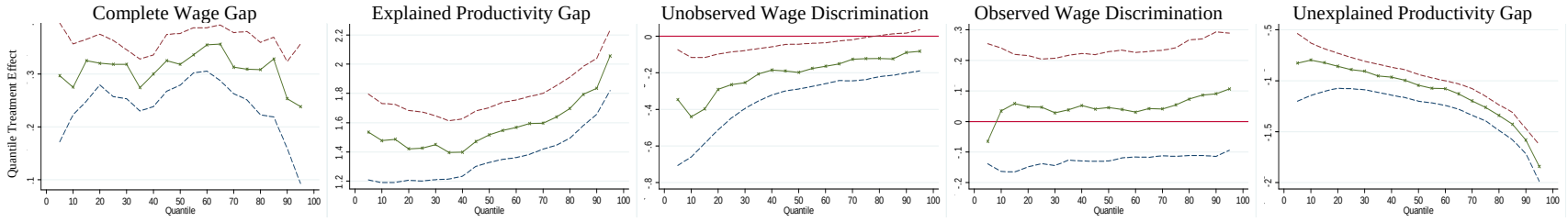

Fig 3.c.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants do not speak English well)

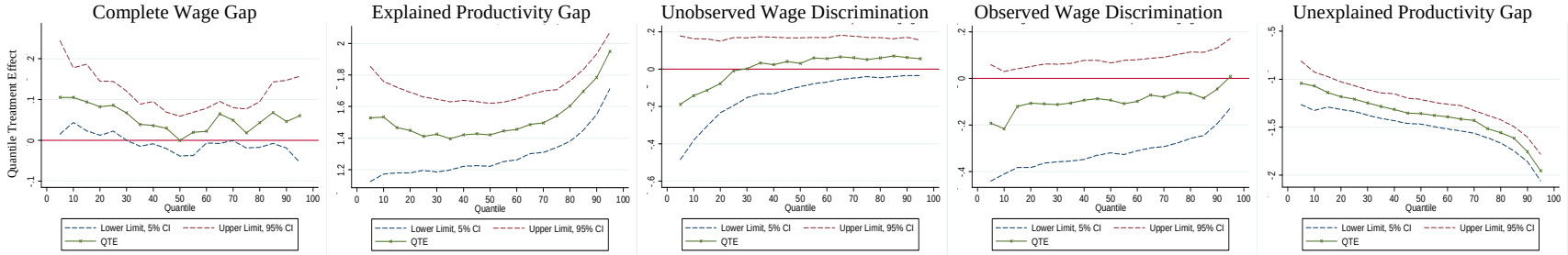

Fig 3.c.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants speak English only or very well)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

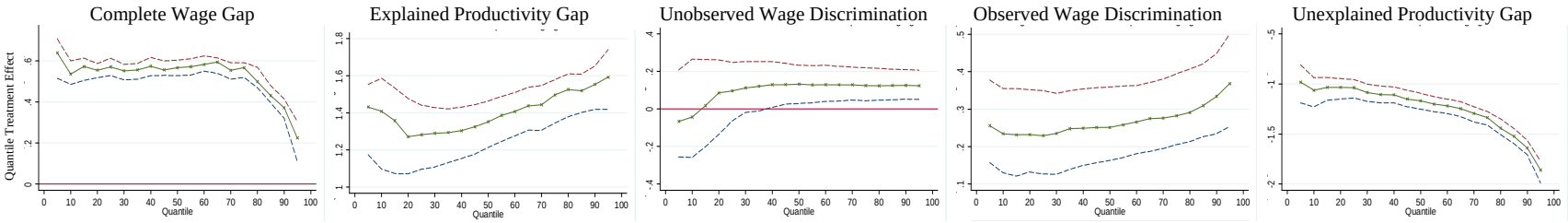

Fig 4.c.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants do not speak English)

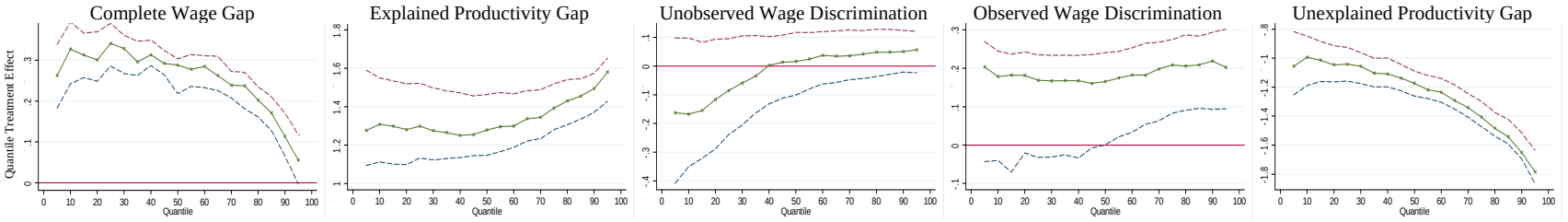

Fig 4.c.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants do not speak English well)

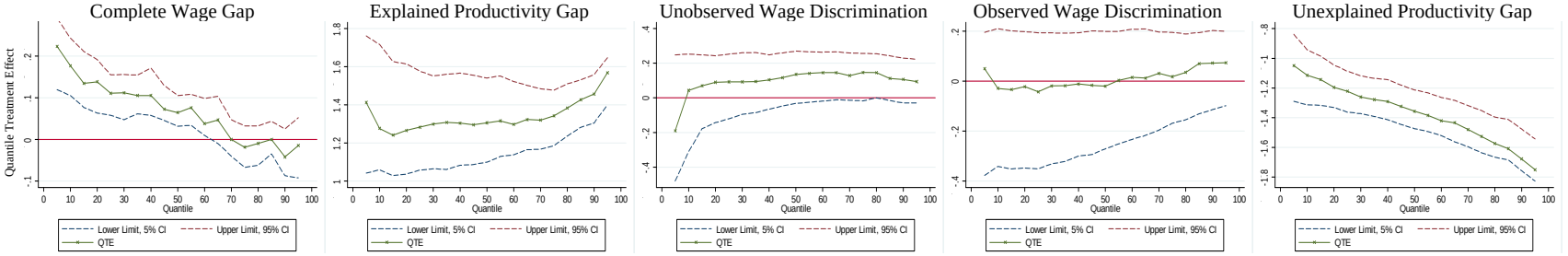

Fig 4.c.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants speak English only or very well)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

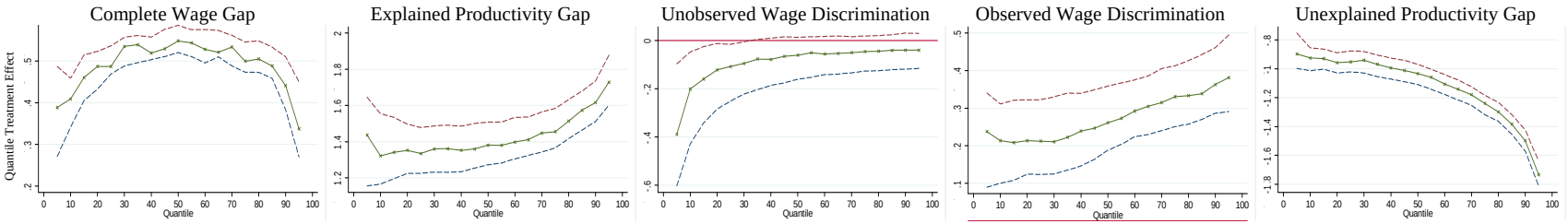

Fig 5.c.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants do not speak English)

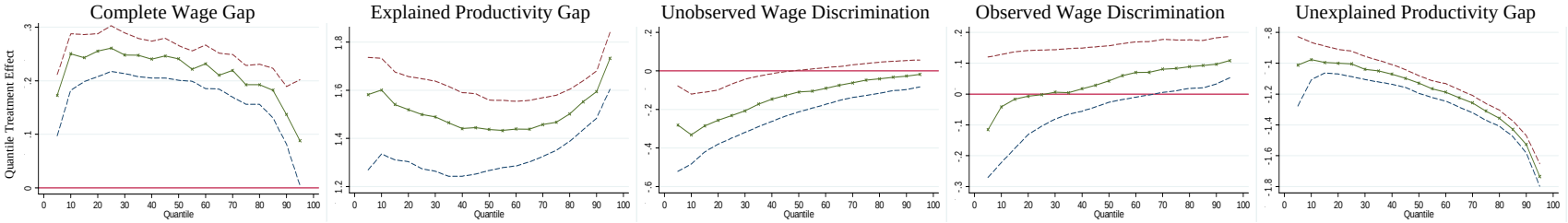

Fig 5.c.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants do not speak English well)

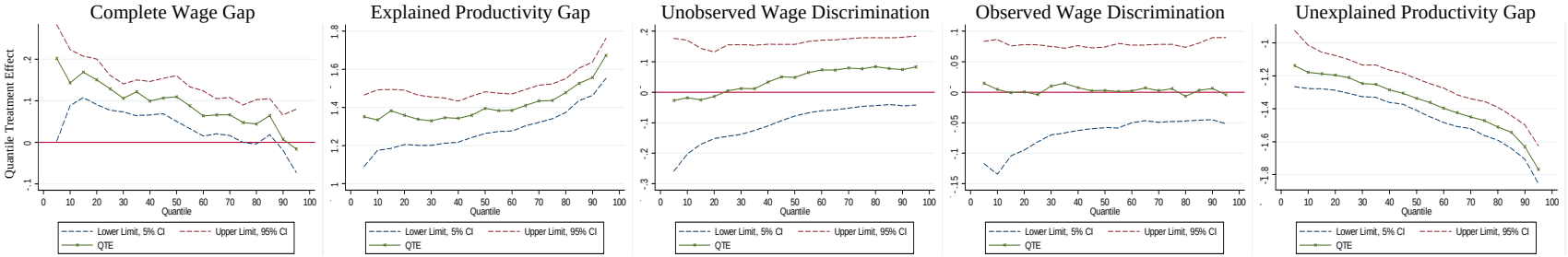

Fig 5.c.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants speak English only or very well)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

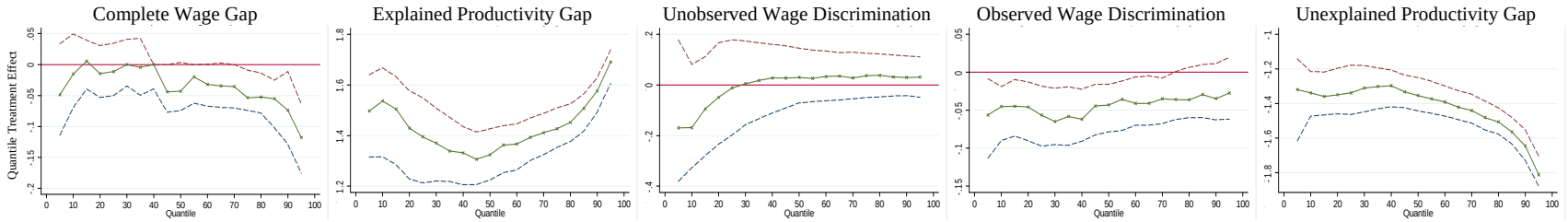

Fig 1.d.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants born in North America)

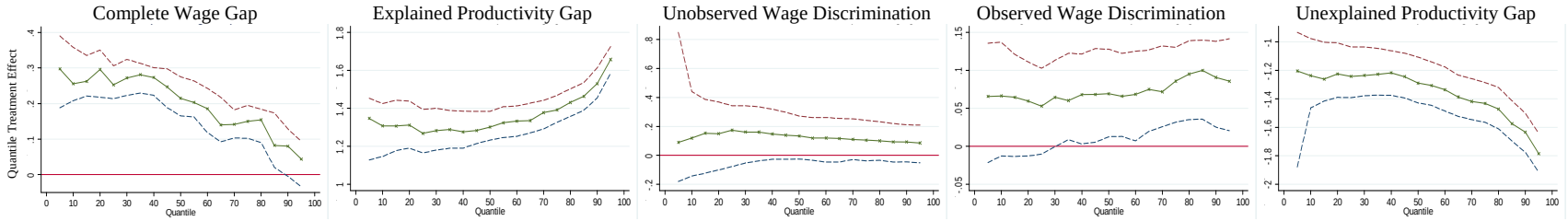

Fig 1.d.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants born in South America)

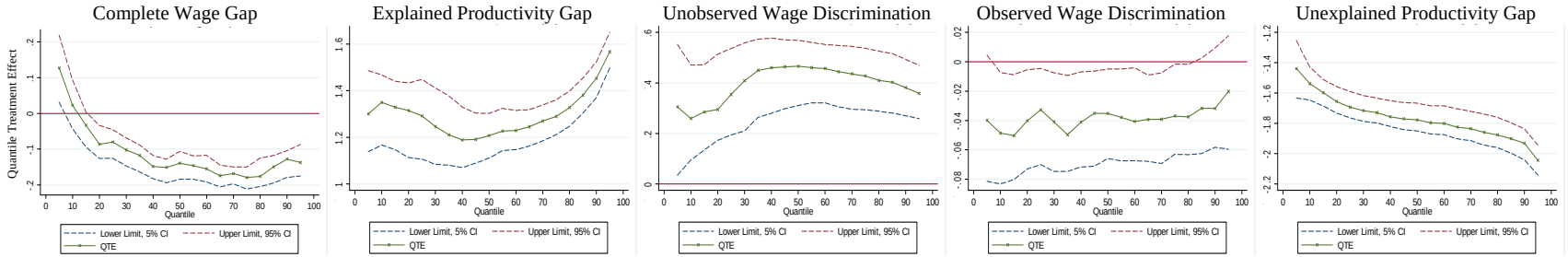

Fig 1.d.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants born in Europe)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

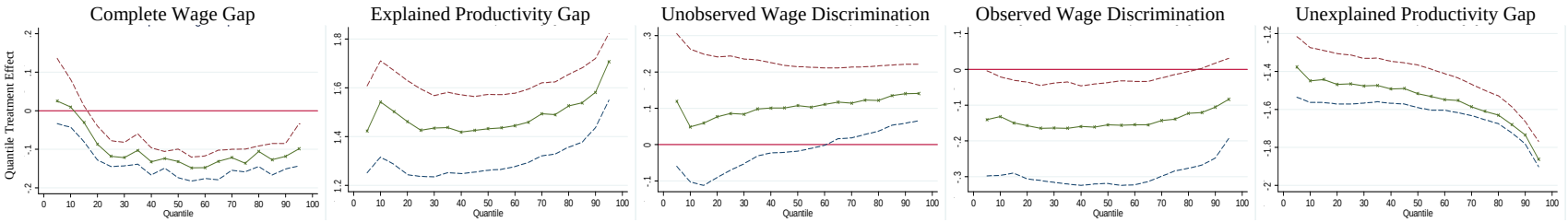

Fig 1.d.4 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants born in Asia)

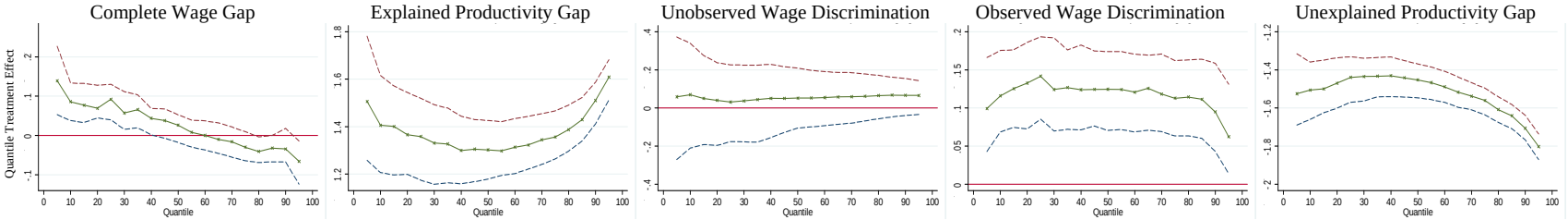

Fig 1.d.5 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants born in Africa)

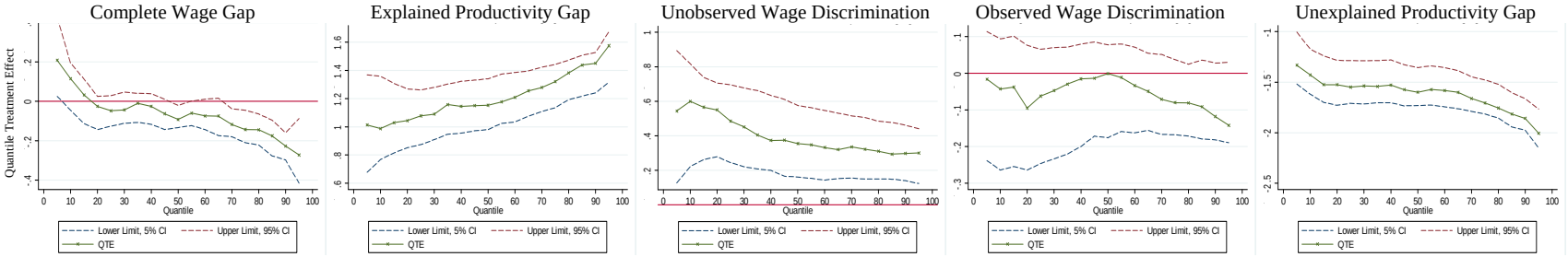

Fig 1.d.6 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Professionals (Immigrants born in Oceania)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

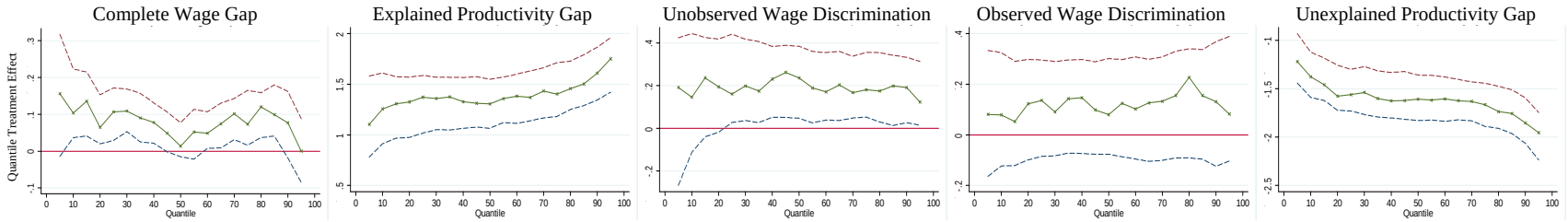

Fig 2.d.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants born in North America)

Fig 2.d.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants born in South America)

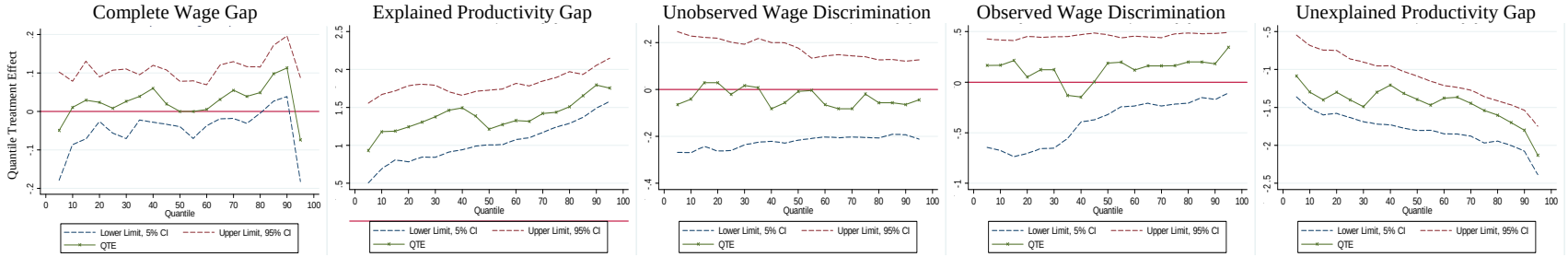

Fig 2.d.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants born in Europe)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

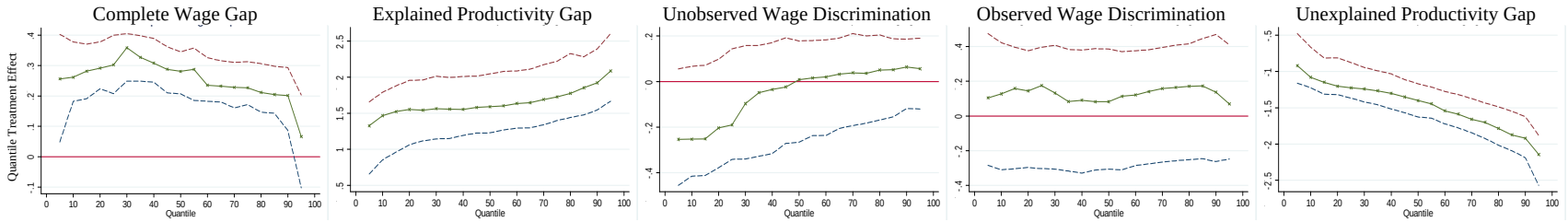

Fig 2.d.4 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants born in Asia)

Fig 2.d.5 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants born in Africa)

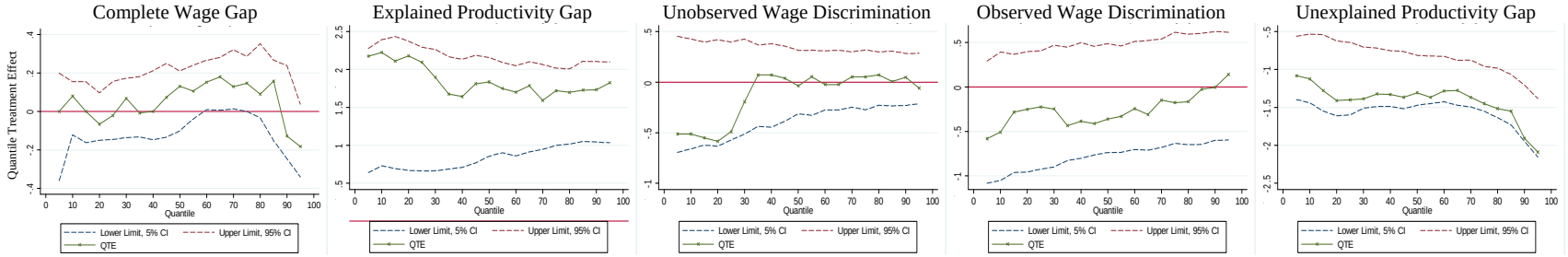

Fig 2.d.6 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Services (Immigrants born in Oceania)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

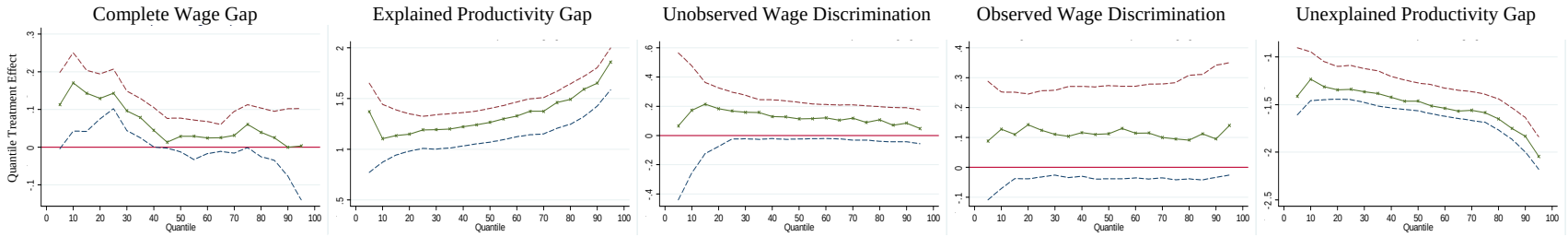

Fig 3.d.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants born in North America)

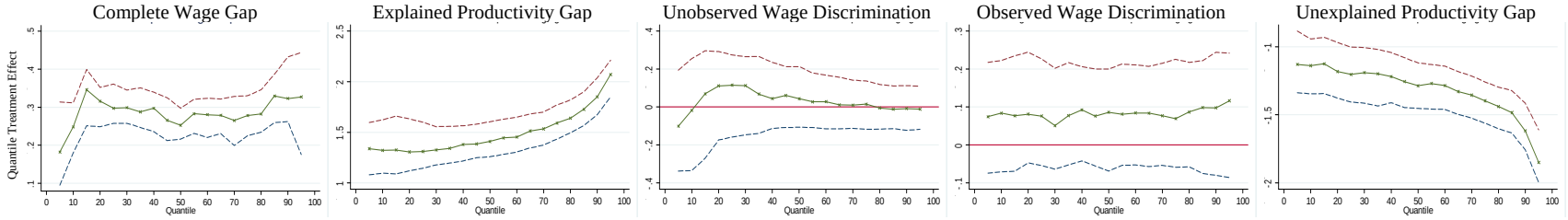

Fig 3.d.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants born in South America)

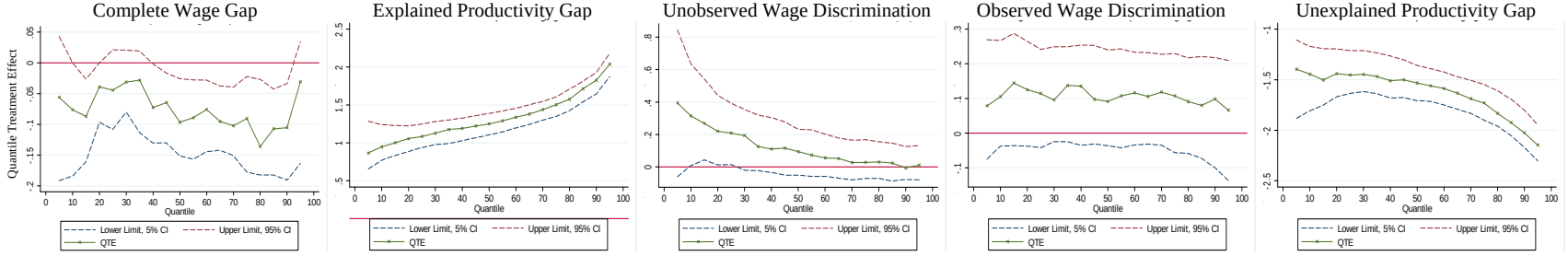

Fig 3.d.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants born in Europe)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

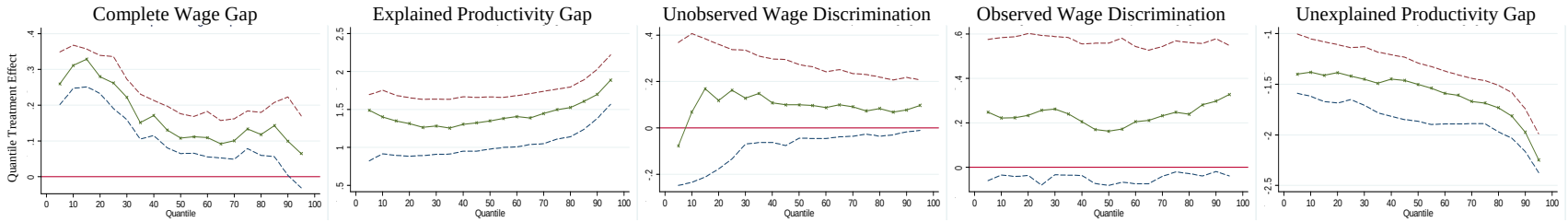

Fig 3.d.4 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants born in Asia)

Fig 3.d.5 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants born in Africa)

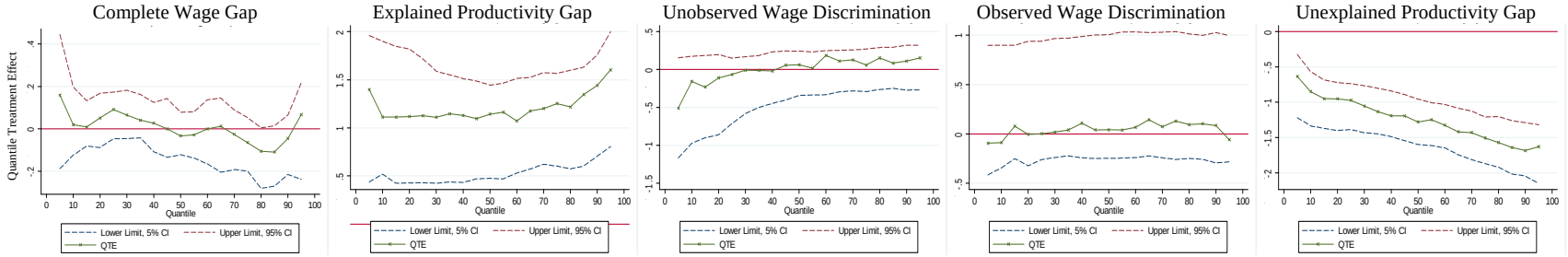

Fig 3.d.6 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Sales (Immigrants born in Oceania)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

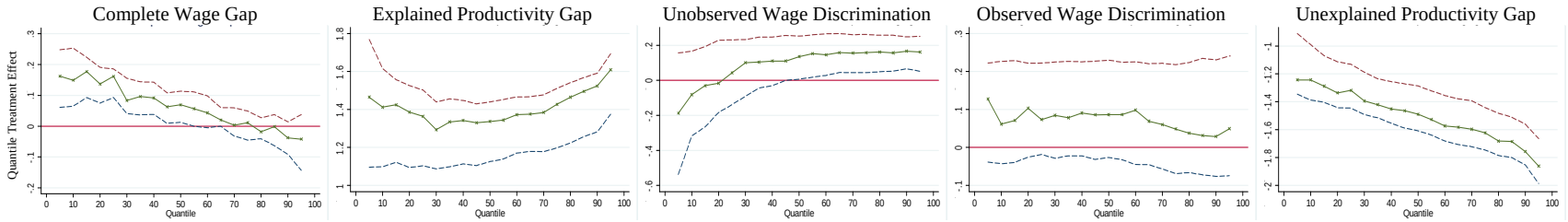

Fig 4.d.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants born in North America)

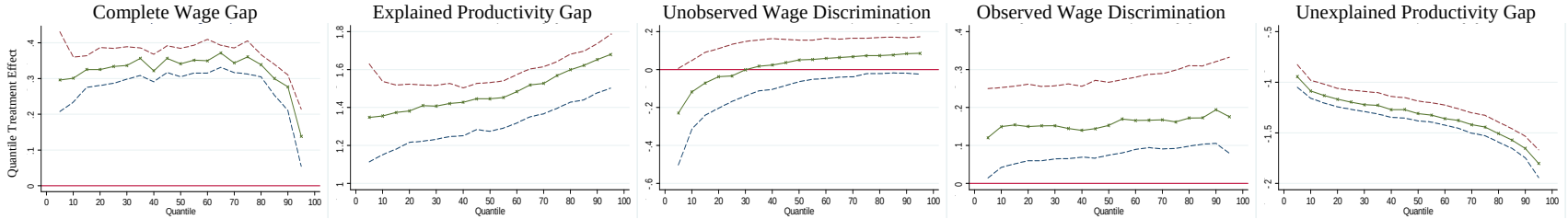

Fig 4.d.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants born in South America)

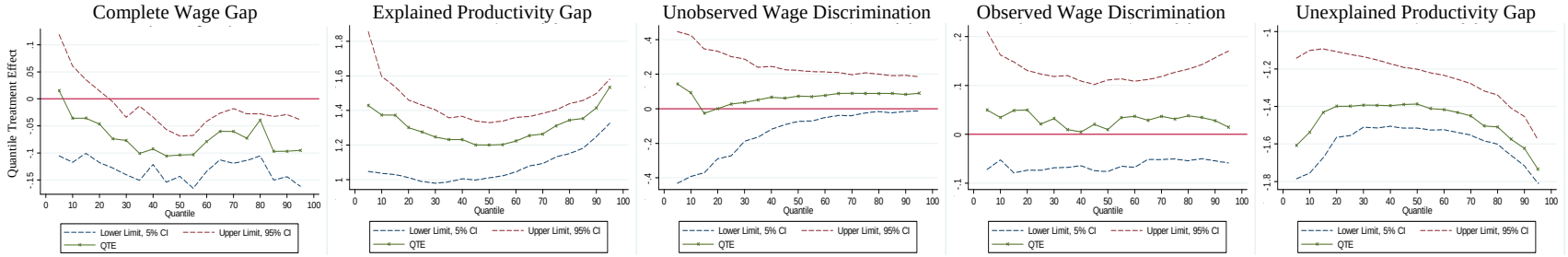

Fig 4.d.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants born in Europe)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

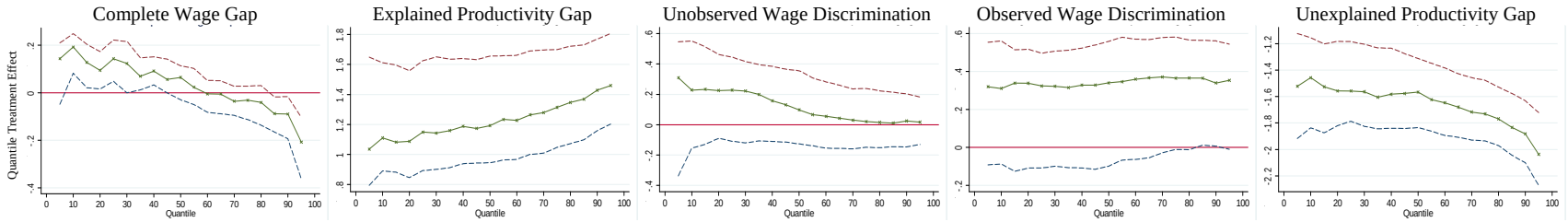

Fig 4.d.4 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants born in Asia)

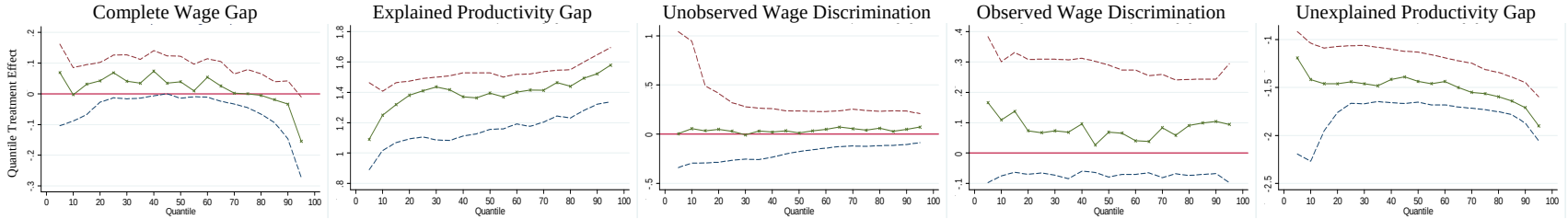

Fig 4.d.5 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants born in Africa)

Fig 4.d.6 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Operatives (Immigrants born in Oceania)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

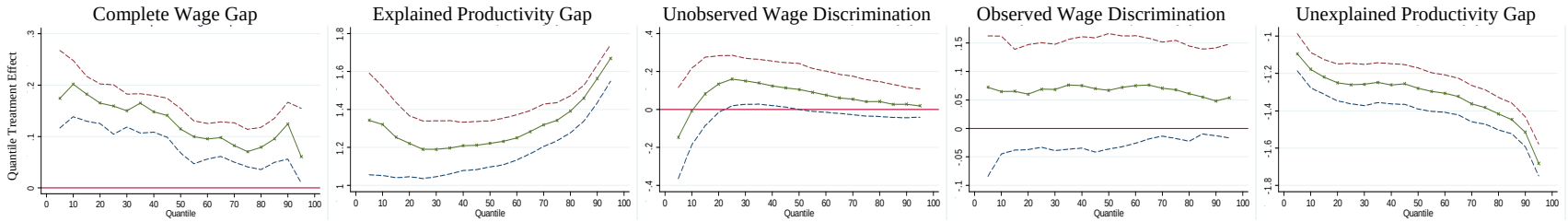

Fig 5.d.1 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants born in North America)

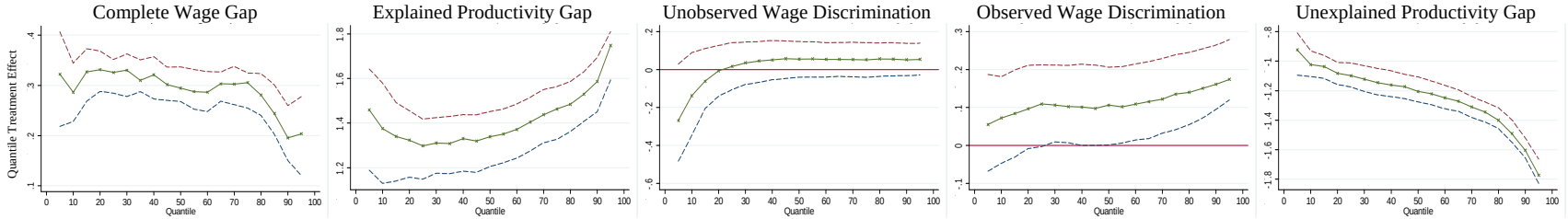

Fig 5.d.2 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants born in South America)

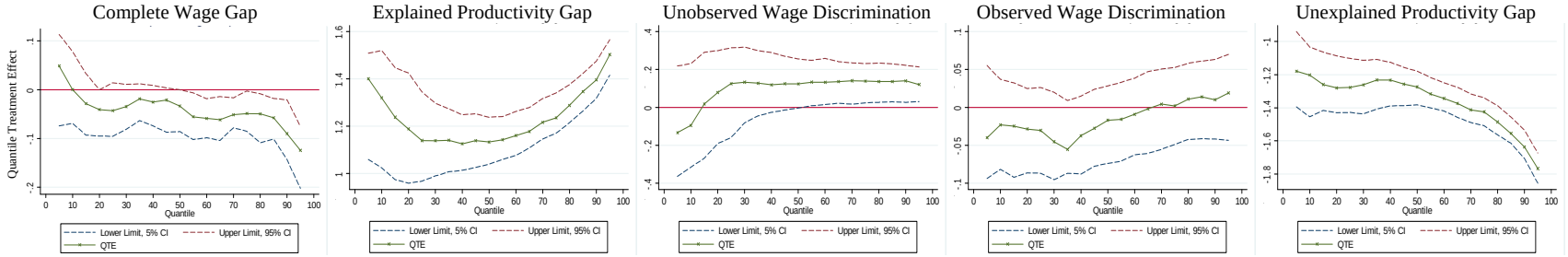

Fig 5.d.3 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants born in Europe)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

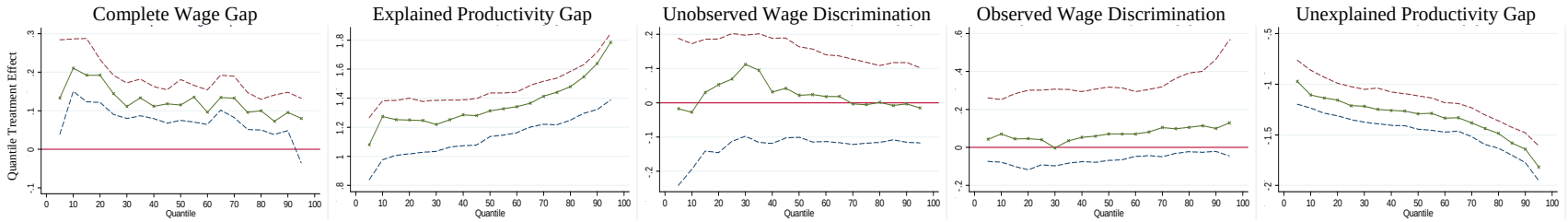

Fig 5.d.4 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants born in Asia)

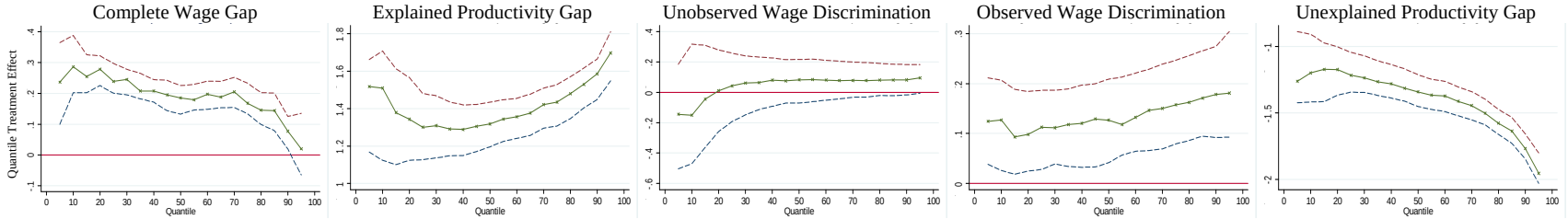

Fig 5.d.5 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants born in Africa)

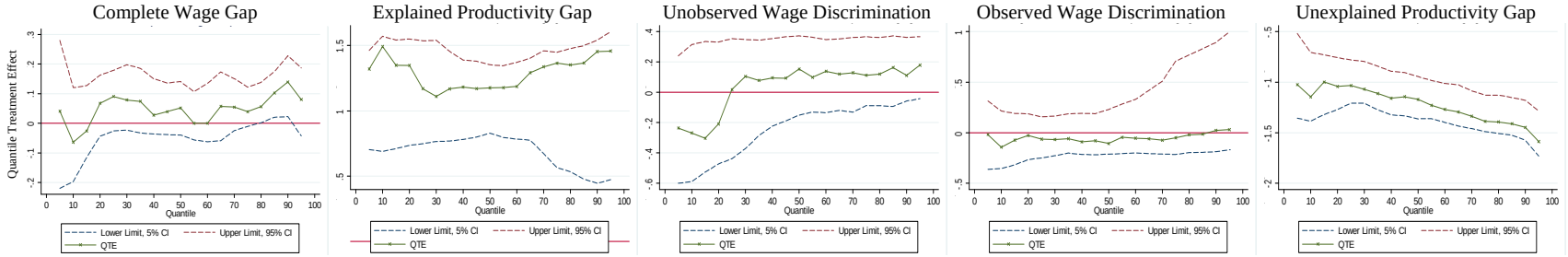

Fig 5.d.6 Quantile Treatment Effects Measuring the Complete Wage Gap and its Components for Laborers (Immigrants born in Oceania)

Notes: QTEs corresponding to 19 quantiles are measured on the vertical axis in each graph. The legend is presented at the bottom of the graphs in the last row.

Table 1. Quantile Treatment Effects: Full Sample of Immigrants

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Professionals						
p-values		**p = 0.000**	p = 0.755	**p = 0.000**	**p = 0.010**	p = 0.180
Quantiles	20	0.029 [-0.022, 0.084]	1.406 [1.252, 1.528]*	0.319 [0.135, 0.472]*	-0.055 [-0.121, 0.019]	-1.640 [-1.739, -1.461]*
	40	-0.055 [-0.085, 0.000]	1.309 [1.189, 1.438]*	0.302 [0.100, 0.459]*	-0.073 [-0.127, 0.012]	-1.593 [-1.761, -1.445]*
	60	-0.109 [-0.137, -0.057]*	1.323 [1.210, 1.428]*	0.268 [0.134, 0.389]*	-0.063 [-0.119, 0.006]	-1.638 [-1.762, -1.511]*
	80	-0.119 [-0.140, -0.075]*	1.437 [1.328, 1.509]*	0.248 [0.148, 0.342]*	-0.054 [-0.109, 0.007]	-1.750 [-1.830, -1.634]*
Panel B. Services						
p-values		**p = 0.000**	p = 0.157	**p = 0.086**	**p = 0.061**	p = 0.264
Quantiles	20	0.238 [0.182, 0.315]*	1.580 [1.172, 1.847]*	-0.165 [-0.333, 0.110]	-0.216 [-0.475, 0.081]	-0.960 [-1.219, -0.604]*
	40	0.279 [0.224, 0.367]*	1.630 [1.304, 1.930]*	-0.137 [-0.290, 0.035]	-0.250 [-0.435, 0.093]	-0.964 [-1.297, -0.745]*
	60	0.301 [0.201, 0.337]*	1.770 [1.436, 2.000]*	-0.131 [-0.286, 0.004]	-0.173 [-0.368, 0.119]	-1.165 [-1.390, -0.912]*
	80	0.320 [0.244, 0.392]*	2.004 [1.576, 2.173]*	-0.144 [-0.273, 0.003]	-0.166 [-0.418, 0.134]	-1.374 [-1.520, -0.997]*
Panel C. Sales						
p-values		**p = 0.000**	p = 0.835	p = 0.510	p = 0.260	p = 0.900
Quantiles	20	0.248 [0.208, 0.298]*	1.189 [1.056, 1.596]*	0.000 [-0.265, 0.252]*	0.051 [-0.182, 0.224]	-0.992 [-1.381, -0.787]*
	40	0.171 [0.118, 0.262]*	1.298 [1.169, 1.534]*	-0.070 [-0.186, 0.078]*	0.032 [-0.140, 0.190]	-1.089 [-1.296, -0.923]*
	60	0.197 [0.131, 0.263]*	1.453 [1.293, 1.643]*	-0.075 [-0.177, 0.059]*	0.057 [-0.142, 0.223]	-1.238 [-1.400, -1.099]*
	80	0.145 [0.072, 0.208]*	1.616 [1.441, 1.804]*	-0.078 [-0.162, 0.065]*	0.090 [-0.130, 0.225]	-1.483 [-1.650, -1.310]*
Panel D. Operatives						
p-values		**p = 0.000**	**p = 0.000**	p = 0.605	**p = 0.000**	**p = 0.065**
Quantiles	20	0.317 [0.269, 0.381]*	1.325 [1.136, 1.485]*	-0.002 [-0.200, 0.181]	0.131 [0.045, 0.225]*	-1.137 [-1.252, -0.983]*
	40	0.274 [0.214, 0.326]*	1.338 [1.209, 1.452]*	0.049 [-0.076, 0.152]	0.138 [0.035, 0.220]*	-1.251 [-1.365, -1.096]*
	60	0.224 [0.185, 0.277]*	1.402 [1.250, 1.507]*	0.054 [-0.049, 0.146]	0.117 [0.034, 0.200]*	-1.349 [-1.456, -1.188]*
	80	0.123 [0.084, 0.174]*	1.463 [1.300, 1.581]*	0.045 [-0.045, 0.137]	0.090 [-0.004, 0.219]	-1.476 [-1.632, -1.316]*
Panel E. Laborers						
p-values		**p = 0.000**	**p = 0.040**	p = 0.165	**p = 0.000**	p = 0.860
Quantiles	20	0.286 [0.246, 0.335]*	1.196 [1.032, 1.393]*	-0.118 [-0.319, 0.035]	0.171 [0.057, 0.277]*	-0.962 [-1.065, -0.842]*
	40	0.262 [0.223, 0.288]*	1.237 [1.108, 1.337]*	-0.082 [-0.184, 0.036]	0.155 [0.057, 0.262]*	-1.048 [-1.125, -0.964]*
	60	0.237 [0.188, 0.268]*	1.316 [1.184, 1.394]*	-0.070 [-0.157, 0.030]	0.154 [0.060, 0.264]*	-1.165 [-1.241, -1.090]*
	80	0.185 [0.135, 0.232]*	1.428 [1.285, 1.499]*	-0.049 [-0.139, 0.034]	0.142 [[0.063, 0.271]*	-1.335 [-1.403, -1.258]*

Notes: p-values in bold denote significance at conventional levels (<10%).
Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QT

Table 2. Quantile Treatment Effects for Professionals:Cohort by Years in U.S and Citizenship Status

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant Cohort 1						
p-values		**p = 0.000**	p = 0.955	**p = 0.010**	**p = 0.005**	**p = 0.015**
Quantiles	20	-0.111 [-0.151, -0.065]*	1.208 [1.052, 1.306]*	0.249 [0.062, 0.429]*	-0.005 [-0.050, 0.043]	-1.564 [-1.668, -1.396]*
	40	-0.154 [-0.196, -0.125]*	1.100 [0.989, 1.204]*	0.264 [0.087, 0.430]*	-0.002 [-0.055, 0.045]	-1.517 [-1.668, -1.396]*
	60	-0.157 [-0.199, -0.134]*	1.153 [1.065, 1.226]*	0.222 [0.100, 0.346]*	-0.000 [-0.050, 0.040]	-1.531 [-1.635, -1.428]*
	80	-0.118 [-0.157, -0.105]*	1.287 [1.202, 1.348]*	0.198 [0.093, 0.300]*	0.001 [-0.048, 0.043]	-1.604 [-1.701, -1.506]*
Panel B. Immigrant Cohort 2						
p-values		**p = 0.000**	p = 0.985	p = 0.350	p = 0.165	p = 0.960
Quantiles	20	0.025 [-0.031, 0.061]	1.336 [1.096, 1.478]*	0.191 [-0.032, 0.417]	0.032 [-0.044, 0.108]	-1.534 [-1.639, -1.376]*
	40	-0.039 [-0.072, 0.004]	1.183 [1.033, 1.306]*	0.268 [0.090, 0.421]*	0.044 [-0.030, 0.115]	-1.534 [-1.630, -1.373]*
	60	-0.073 [-0.107, -0.036]*	1.209 [1.085, 1.299]*	0.225 [0.106, 0.372]*	0.058 [-0.025, 0.126]	-1.565 [-1.656, -1.423]*
	80	-0.079 [-0.134, -0.036]*	1.299 [1.166, 1.377]*	0.196 [0.092, 0.307]*	0.045 [-0.024, 0.133]	-1.618 [-1.698, -1.488]*
Panel C. Immigrant Cohort 3						
p-values		**p = 0.000**	p = 0.995	p = 0.235	p = 0.280	p = 0.935
Quantiles	20	0.052 [0.016, 0.107]*	1.535 [1.374, 1.692]*	-0.184 [-0.372, -0.007]*	0.020 [-0.082, 0.092]	-1.319 [-1.425, -1.199]*
	40	-0.039 [-0.061, 0.007]	1.372 [1.225, 1.558]*	-0.017 [-0.202, 0.123]	0.020 [-0.095, 0.092]	-1.413 [-1.497, -1.317]*
	60	-0.074 [-0.108, -0.034]*	1.346 [1.242, 1.496]*	0.070 [-0.041, 0.179]	0.011 [-0.114, 0.084]	-1.502 [-1.569, -1.413]*
	80	-0.068 [-0.114, -0.029]*	1.445 [1.346, 1.593]*	0.115 [0.012, 0.199]*	-0.006 [-0.125, 0.093]	-1.622 [-1.681, -1.544]*
Panel D. Immigrant Cohort 4						
p-values		**p = 0.015**	p = 0.305	**p = 0.010**	**p = 0.005**	**p = 0.025**
Quantiles	20	0.126 [0.285, 0.353]*	1.408 [1.192, 1.561]*	0.290 [0.080, 0.510]*	-0.003 [-0.120, 0.066]	-1.570 [-1.679, -1.383]*
	40	0.000 [-0.045, 0.030]	1.345 [1.176, 1.465]*	0.378 [0.210, 0.546]*	-0.048 [-0.143, 0.048]	-1.675 [-1.787, -1.523]*
	60	-0.056 [-0.114, -0.016]*	1.365 [1.238, 1.488]*	0.388 [0.242, 0.512]*	-0.047 [-0.149, 0.041]	-1.761 [-1.852, -1.618]*
	80	-0.056 [-0.108, -0.012]*	1.477 [1.359, 1.589]*	0.392 [0.240, 0.490]*	-0.046 [-0.126, 0.063]	-1.879 [-1.966, -1.740]*
Panel E. Immigrant naturalized citizens						
p-values		**p = 0.000**	p = 0.955	**p = 0.000**	p = 0.750	p = 0.210
Quantiles	20	-0.038 [-0.077, -0.013]*	1.330 [1.191, 1.425]*	0.032 [-0.106, 0.183]	-0.035 [-0.112, 0.023]	-1.364 [-1.460, -1.254]*
	40	-0.080 [-0.112, -0.058]*	1.303 [1.186, 1.403]*	0.027 [-0.089, 0.147]	-0.034 [-0.126, 0.023]	-1.376 [-1.449, -1.300]*
	60	-0.114 [-0.143, -0.084]*	1.339 [1.232, 1.428]*	0.031 [-0.054, 0.131]	-0,023 [-0.103, 0.040]	-1.461 [-1.530, -1.398]*
	80	-0.103 [-0.135, -0.070]*	1.452 [1.341, 1.521]*	0.044 [-0.035, 0.126]	-0.041 [-0.111, 0.045]	-1.557 [-1.625, -1.489]*
Panel F. Immigrant non-citizens						
p-values		**p = 0.000**	p = 1.000	p = 0.260	p = 0.360	p = 0.910
Quantiles	20	0.135 [0.083, 0.179]*	1.523 [1.355, 1.681]*	0.029 [-0.170, 0.233]	-0.028 [-0.091, 0.023]	-1.388 [-1.553, -1.205]*
	40	0.025 [-0.007, 0.072]	1.434 [1.274, 1.543]*	0.077 [-0.078, 0.239]	-0.037 [-0.092, 0.028]	-1.450 [-1.551, -1.299]*
	60	-0.021 [-0.064, 0.023]	1.428 [1.295, 1.523]*	0.112 [-0.015, 0.236]	-0.005 [-0.069, 0.044]	-1.555 [-1.639, -1.412]*
	80	-0.077 [-0.113, -0.035]*	1.500 [1.376, 1.580]*	0.124 [0.002, 0.222]*	-0.004 [-0.054, 0.060]	-1.696 [-1.776, -1.568]*

Notes: p-values in bold denote significance at conventional levels (<10%
Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QT

Table 3. Quantile Treatment Effects for Services: Cohort by Years in U.S and Citizenship Status

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant Cohort 1						
p-values		p = 0.925	p = 0.675	p = 0.985	p = 0.395	p = 0.625
Quantiles	20	-0.026 [-0.068, 0.049]	1.158 [0.896, 1.466]*	-0.175 [-0.348, 0.171]	-0.115 [-0.339, 0.199]	-0.894 [-1.380, -0.684]*
	40	-0.019 [-0.067, 0.049]	1.206 [1.012, 1.512]*	-0.092 [-0.288, 0.046]	-0.091 [-0.311, 0.133]	-1.042 [-1.247, -0.822]*
	60	-0.034 [-0.102, 0.018]	1.359 [1.129, 1.636]*	-0.159 [-0.285, 0.041]	0.000 [-0.316, 0.125]	-1.234 [-1.426, -0.915]*
	80	-0.012 [-0.097, 0.048]	1.519 [1.222, 1.801]*	-0.088 [-0.234, 0.068]	-0.134 [-0.305, 0.120]	-1.309 [-1.614, -1.043]*
Panel B. Immigrant Cohort 2						
p-values		**p = 0.000**	**p = 0.087**	p = 0.296	p = 0.607	p = 0.122
Quantiles	20	0.208 [0.138, 0.264]*	1.093 [0.917, 1.396]*	-0.093 [-0.197, 0.134]	0.058 [-0.171, 0.216]	-0.851 [-1.230, -0.710]*
	40	0.245 [0.175, 0.288]*	1.290 [1.129, 1.562]*	-0.133 [-0.225, 0.015]	-0.011 [-0.142, 0.222]	-0.901 [-1.281, -0.828]*
	60	0.196 [0.144, 0.242]*	1.391 [1.263, 1.663]*	-0.116 [-0.239, 0.016]	0.068 [-0.127, 0.235]	-1.148 [-1.419, -1.046]*
	80	0.194 [0.142, 0.280]*	1.613 [1.396, 1.854]*	-0.170 [-0.259, 0.011]	0.098 [-0.091, 0.273]	-1.347 [-1.600, -1.236]*
Panel C. Immigrant Cohort 3						
p-values		**p = 0.000**	**p = 0.000**	**p = 0.010**	**p = 0.051**	**p = 0.000**
Quantiles	20	0.261 [0.183, 0.316]*	1.053 [0.763, 1.548]*	-0.099 [-0.316, 0.082]	0.223 [-0.116, 0.493]	-0.916 [-1.131, -0.778]*
	40	0.336 [0.289, 0.377]*	1.144 [0.826, 1.570]*	-0.029 [-0.191, 0.123]	0.220 [-0.130, 0.544]	-0.998 [-1.204, -0.821]*
	60	0.390 [0.345, 0.431]*	1.191 [0.898, 1.647]*	-0.011 [-0.161, 0.119]	-0.288 [-0.105, 0.581]	-1.078 [-1.252, -0.902]*
	80	0.400 [0.336, 0.471]*	1.262 [1.004, 1.718]*	0.004 [-0.145, 0.135]	-0.413 [-0.006, 0.667]	-1.279 [-1.432, -1.105]*
Panel D. Immigrant Cohort 4						
p-values		**p = 0.000**	p = 0.615	p = 0.830	**p = 0.085**	p = 0.625
Quantiles	20	0.390 [0.314, 0.470]*	1.592 [1.101, 1.894]*	-0.167 [-0.388, 0.018]	0.078 [-0.173, 0.340]	-1.113 [-1.221, -0.614]*
	40	0.488 [0.416, 0.540]*	1.778 [1.245, 1.990]*	-0.160 [-0.306, 0.010]	0.100 [-0.161, 0.370]	-1.230 [-1.298, -0.713]*
	60	0.524 [0.459, 0.603]*	1.860 [1.377, 2.094]*	-0.089 [-0.247, 0.028]	0.111 [-0.180, 0.385]	-1.357 [-1.409, -0.793]*
	80	0.531 [0.440, 0.607]*	1.967 [1.474, 2.190]*	-0.078 [-0.224, 0.032]	0.134 [-0.135, 0.407]	-1.493 [-1.605, -1.004]*
Panel E. Immigrant naturalized citizens						
p-values		**p = 0.000**	**p = 0.085**	p = 0.146	p = 0.116	**p = 0.095**
Quantiles	20	0.055 [-0.007, 0.133]	1.004 [0.806, 1.339]*	0.105 [-0.066, 0.256]	0.171 [-0.152, 0.364]	-1.226 [-1.437, -0.959]*
	40	0.090 [0.019, 0.146]*	1.105 [0.951, 1.407]*	0.069 [-0.039, 0.212]	0.155 [-0.096, 0.308]	-1.239 [-1.468, -1.079]*
	60	0.104 [0.065, 0.154]*	1.198 [1.066, 1.529]*	-0.033 [-0.057, 0.185]	0.190 [-0.050, 0.309]	-1.315 [-1.542, -1.202]*
	80	0.112 [0.064, 0.178]*	1.315 [1.191, 1.630]*	0.046 [-0.055, 0.141]	0.225 [0.026, 0.381]*	-1.475 [-1.654, -1.359]*
Panel E. Immigrant non-citizens						
p-values		**p = 0.000**	p = 0.221	p = 0.410	p = 0.385	p = 0.221
Quantiles	20	0.262 [0.222, 0.337]*	1.215 [0.945, 1.957]*	-0.029 [-0.366, 0.172]	0.032 [-0.286, 0.303]	-0.955 [-1.329, -0.648]*
	40	0.344 [0.280, 0.410]*	1.304 [1.099, 1.845]*	-0.024 [-0.244, 0.096]	0.039 [-0.233, 0.285]	-0.975 [-1.327, -0.755]*
	60	0.388 [0.317, 0.422]*	1.425 [1.198, 1.836]*	-0.079 [-0.204, 0.068]	0.081 [-0.137, 0.333]	-1.038 [-1.408, -0.899]*
	80	0.411 [0.297, 0.506]*	1.634 [1.383, 1.955]*	-0.063 [-0.187, 0.052]	0.134 [-0.075, 0.389]	-1.294 [-1.536, -1.071]*

Notes: p-values in bold denote significance at conventional levels (<10%). Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QTEs.

Table 4. Quantile Treatment Effects for Sales: Cohort by Years in U.S and Citizenship Status

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant Cohort 1						
p-values		**p = 0.000**	p = 0.940	p = 0.750	**p = 0.035**	p = 0.935
Quantiles	20	0.034 [-0.022, 0.091]	1.573 [0.979, 1.655]*	-0.100 [-0.233, 0.257]	0.075 [-0.175, 0.192]	-1.514 [-1.563, -0.973]*
	40	-0.035 [-0.093, 0.030]	1.329 [1.049, 1.563]*	0.050 [-0.102, 0.233]	0.131 [-0.170, 0.202]	-1.545 [-1.672, -1.183]*
	60	-0.051 [-0.094, -0.016]*	1.366 [1.153, 1.614]*	0.086 [-0.057, 0.211]	0.122 [-0.153, 0.189]	-1.625 [-1.701, -1.358]*
	80	-0.041 [-0.112, 0.019]	1.579 [1.332, 1.732]*	0.086 [-0.022, 0.202]	0.061 [-0.142, 0.208]	-1.767 [-1.861, -1.517]*
Panel B. Immigrant Cohort 2						
p-values		**p = 0.005**	p = 0.945	p = 0.600	**p = 0.080**	p = 0.895
Quantiles	20	0.112 [0.047, 0.160]*	1.503 [1.209, 1.670]*	-0.255 [-0.490, -0.103]	-0.129 [-0.259, 0.192]	-1.006 [-1.138, -0.846]*
	40	0.074 [0.037, 0.129]*	1.515 [1.271, 1.659]*	-0.142 [-0.339, -0.049]	-0.123 [-0.223, 0.241]	-1.176 [-1.278, -1.037]*
	60	0.131 [0.077, 0.173]*	1.638 [1.330, 1.784]*	-0.100 [-0.262, -0.022]	-0.079 [-0.188, 0.294]	-1.328 [-1.397, -1.188]*
	80	0.135 [0.100, 0.201]*	1.723 [1.361, 1.885]*	-0.059 [-0.203, 0.024]	-0.017 [-0.143, 0.373]	-1.513 [-1.588, -1.357]*
Panel C. Immigrant Cohort 3						
p-values		**p = 0.000**	p = 0.935	p = 0.435	p = 0.375	p = 0.940
Quantiles	20	0.206 [0.156, 0.263]*	1.364 [1.135, 1.656]*	-0.048 [-0.234, 0.109]	-0.012 [-0.201, 0.185]	-1.098 [-1.303, -0.935]*
	40	0.244 [0.195, 0.284]*	1.495 [1.230, 1.695]*	-0.026 [-0.189, 0.101]	-0.006 [-0.190, 0.205]	-1.219 [-1.387, -1.026]*
	60	0.229 [0.186, 0.281]*	1.559 [1.278, 1.749]*	-0.015 [-0.167, 0.075]	0.031 [-0.150, 0.252]	-1.346 [-1.463, -1.132]*
	80	0.222 [0.135, 0.263]*	1.704 [1.371, 1.865]*	-0.027 [-0.146, 0.078]	0.063 [-0.125, 0.315]	-1.517 [-1.636, -1.345]*
Panel D. Immigrant Cohort 4						
p-values		**p = 0.000**	p = 0.465	p = 0.170	p = 0.245	p = 0.585
Quantiles	20	0.441 [0.374, 0.530]*	1.410 [1.103, 1.638]*	0.127 [-0.136, 0.477]	0.264 [0.007, 0.512]*	-1.361 [-1.707, -1.051]*
	40	0.336 [0.282, 0.426]*	1.455 [1.077, 1.650]*	0.225 [-0.020, 0.426]	0.254 [0.008, 0.582]*	-1.598 [-1.773, -1.267]*
	60	0.300 [0.222, 0.379]*	1.487 [0.951, 1.714]*	0.236 [0.037, 0.401]*	0.294 [0.005, 0.761]*	-1.717 [-1.869, -1.434]*
	80	-0.112 [-0.032, 0.288]	1.558 [0.973, 1.863]*	0.290 [0.058, 0.401]*	0.346 [-0.005, 0.904]	-2.082 [-2.283, -1.707]*
Panel E. Immigrant naturalized citizens						
p-values		**p = 0.000**	**p = 0.085**	p = 0.480	**p = 0.000**	**p = 0.030**
Quantiles	20	0.098 [0.047, 0.176]*	1.534 [1.218, 1.704]*	-0.086 [-0.286, 0.049]	-0.207 [-0.228, 0.143]	-1.142 [-1.456, -0.951]*
	40	0.077 [0.037, 0.117]*	1.530 [1.225, 1.656]*	-0.073 [-0.227, 0.099]	-0.174 [-0.221, 0.117]	-1.207 [-1.400, -1.102]*
	60	0.053 [0.012, 0.099]*	1.578 [1.308, 1.713]*	0.004 [-0.136, 0.111]	-0.136 [-0.193, 0.137]	-1.393 [-1.527, -1.254]*
	80	0.080 [0.028, 0.126]*	1.774 [1.460, 1.823]*	0.031 [-0.083, 0.119]	-0.139 [-0.197, 0.152]	-1.586 [-1.693, -1.422]*
Panel F. Immigrant non-citizens						
p-values		**p = 0.000**	p = 0.640	p = 0.570	**p = 0.000**	p = 0.585
Quantiles	20	0.309 [0.230, 0.347]*	1.156 [0.969, 1.365]*	0.024 [-0.188, 0.174]	0.163 [-0.056, 0.395]	-1.035 [-1.272, -0.825]*
	40	0.312 [0.252, 0.366]*	1.187 [1.039, 1.387]*	0.075 [-0.126, 0.182]	0.186 [-0.018, 0.374]	-1.136 [-1.317, -0.936]*
	60	0.279 [0.220, 0.341]*	1.206 [1.094, 1.417]*	0.088 [-0.073, 0.188]	0.247 [0.016, 0.386]*	-1.263 [-1.403, -1.071]*
	80	0.203 [0.079, 0.254]*	1.376 [1.250, 1.549]*	-0.096 [-0.038, 0.189]	0.232 [0.035, 0.379]*	-1.502 [-1.668, -1.361]*

Notes: p-values in bold denote significance at conventional levels (<10%).
Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QTEs.

Table 5. Quantile Treatment Effects for Operatives: Cohort by Years in U.S and Citizenship Status

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant Cohort 1						
p-values		**p = 0.000**	p = 0.915	p = 0.355	**p = 0.060**	p = 0.805
Quantiles	20	-0.022 [-0.095, 0.039]	1.135 [0.944, 1.329]*	0.016 [-0.206, 0.249]	0.057 [-0.078, 0.161]	-1.230 [-1.408, -1.026]*
	40	-0.102 [-0.156, -0.050]*	1.145 [1.005, 1.328]*	0.016 [-0.124, 0.159]	0.030 [-0.080, 0.150]	-1.293 [-1.460, -1.167]*
	60	-0.141 [-0.176, -0.090]*	1.198 [1.104, 1.333]*	0.037 [-0.076, 0.117]	0.033 [-0.091, 0.116]	-1.407 [-1.513, -1.271]*
	80	-0.115 [-0.150, -0.067]*	1.345 [1.239, 1.448]*	0.036 [-0.051, 0.103]	-0.021 [-0.133, 0.073]	-1.476 [-1.570, -1.344]*
Panel B. Immigrant Cohort 2						
p-values		**p = 0.000**	p = 0.315	p = 0.415	**p = 0.000**	**p = 0.020**
Quantiles	20	0.203 [0.147, 0.264]*	1.217 [1.078, 1.534]*	0.157 [-0.033, 0.347]	0.146 [-0.205, 0.217]	-1.316 [-1.457, -1.158]*
	40	0.162 [0.114, 0.195]*	1.212 [1.095, 1.548]*	0.148 [-0.033, 0.261]	0.130 [-0.165, 0.214]	-1.327 [-1.461, -1.186]*
	60	0.139 [0.094, 0.184]*	1.278 [1.178, 1.572]*	0.103 [-0.031, 0.215]	0.118 [-0.154, 0.215]	-1.361 [-1.495, -1.228]*
	80	0.070 [0.022, 0.134]*	1.390 [1.272, 1.625]*	0.067 [-0.040, 0.182]	0.142 [-0.092, 0.246]	-1.530 [-1.623, -1.394]*
Panel C. Immigrant Cohort 3						
p-values		**p = 0.000**	**p = 0.000**	**p = 0.060**	**p = 0.000**	**p = 0.005**
Quantiles	20	0.327 [0.288, 0.378]*	1.305 [1.105, 1.447]*	-0.095 [-0.272, 0.102]	0.154 [0.068, 0.264]*	-1.036 [-1.157, -0.874]*
	40	0.372 [0.325, 0.405]*	1.334 [1.157, 1.434]*	-0.037 [-0.189, 0.124]	0.152 [0.067, 0.269]*	-1.077 [-1.197, -0.961]*
	60	0.313 [0.276, 0.367]*	1.381 [1.192, 1.476]*	-0.007 [-0.123, 0.126]	0.135 [0.066, 0.265]*	-1.196 [-1.294, -1.096]*
	80	0.266 [0.234, 0.320]*	1.481 [1.301, 1.565]*	0.012 [-0.097, 0.128]	0.161 [0.090, 0.303]*	-1.389 [-1.480, -1.284]*
Panel D. Immigrant Cohort 4						
p-values		**p = 0.000**	p = 0.345	p = 0.160	**p = 0.000**	p = 0.330
Quantiles	20	0.549 [0.495, 0.587]*	1.479 [1.214, 1.669]*	-0.199 [-0.455, -0.051]*	0.153 [0.060, 0.358]*	-0.884 [-1.013, -0.728]*
	40	0.583 [0.526, 0.624]*	1.605 [1.218, 1.651]*	-0.152 [-0.283, -0.022]*	0.103 [0.075, 0.378]*	-0.973 [-1.119, -0.811]*
	60	0.566 [0.502, 0.603]*	1.697 [1.247, 1.739]*	-0.115 [-0.219, 0.004]	0.151 [0.119, 0.426]*	-1.167 [-1.269, -0.982]*
	80	0.476 [0.403, 0.551]*	1.769 [1.318, 1.835]*	-0.103 [-0.193, 0.020]	0.204 [0.150, 0.507]*	-1.395 [-1.527, -1.192]*
Panel E. Immigrant naturalized citizens						
p-values		**p = 0.005**	p = 0.990	**p = 0.025**	p = 0.425	p = 0.990
Quantiles	20	0.058 [0.025, 0.107]*	1.054 [0.884, 1.204]*	0.117 [-0.026, 0.245]	0.049 [-0.113, 0.192]	-1.164 [-1.269, -1.010]*
	40	0.000 [-0.018, 0.057]	1.107 [0.921, 1.271]*	0.115 [0.002, 0.215]*	0.063 [-0.103, 0.206]	-1.285 [-1.355, -1.160]*
	60	-0.031 [-0.076, 0.000]	1.192 [0.965, 1.334]*	0.110 [0.015, 0.195]*	0.064 [-0.082, 0.238]	-1.398 [-1.489, -1.290]*
	80	-0.033 [-0.066, 0.000]	1.329 [1.040, 1.483]*	0.110 [0.024, 0.191]*	0.068 [-0.064, 0.317]	-1.538 [-1.634, -1.438]*
Panel F. Immigrant non-citizens						
p-values		**p = 0.000**	p = 0.410	**p = 0.095**	**p = 0.000**	p = 0.375
Quantiles	20	0.380 [0.327, 0.447]*	1.275 [1.135, 1.531]*	-0.136 [-0.244, 0.020]	0.283 [-0.063, 0.355]	-1.043 [-1.135, -0.922]*
	40	0.358 [0.312, 0.408]*	1.404 [1.235, 1.605]*	-0.111 [-0.219, 0.014]	0.292 [0.080, 0.374]*	-1.227 [-1.290, -1.096]*
	60	0.358 [0.299, 0.406]*	1.457 [1.319, 1.667]*	-0.056 [-0.180, 0.046]	0.310 [0.127, 0.397]*	-1.352 [-1.425, -1.246]*
	80	0.256 [0.208, 0.330]*	1.559 [1.417, 1.710]*	-0.042 [-0.158, 0.078]	0.331 [0.179, 0.432]*	-1.591 [-1.653, -1.447]*

Notes: p-values in bold denote significance at conventional levels (<10%).

Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QT

Table 6. Quantile Treatment Effects for Laborers: Cohort by Years in U.S and Citizenship Status

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant Cohort 1						
p-values		**p = 0.030**	**p = 0.020**	p = 0.390	p = 0.250	**p = 0.045**
Quantiles	20	0.051 [-0.021, 0.099]	1.112 [0.984, 1.190]*	0.155 [-0.042, 0.335]	0.037 [-0.042, 0.097]	-1.253 [-1.393, -1.069]*
	40	0.000 [-0.062, 0.027]	1.121 [1.012, 1.205]*	0.066 [-0.059, 0.194]	0.025 [-0.042, 0.097]	-1.212 [-1.336, -1.103]*
	60	-0.049 [-0.081, -0.009]*	1.205 [1.112, 1.280]*	0.033 [-0.060, 0.125]	0.033 [-0.038, 0.095]	-1.320 [-1.398, -1.229]*
	80	-0.058 [-0.101, -0.010]*	1.365 [1.265, 1.410]*	0.024 [-0.048, 0.094]	0.031 [-0.041, 0.094]	-1.478 [-1.541, -1.374]*
Panel B. Immigrant Cohort 2						
p-values		**p = 0.000**	**p = 0.060**	p = 0.205	**p = 0.000**	p = 0.160
Quantiles	20	0.182 [0.145, 0.225]*	1.133 [0.971, 1.263]*	0.028 [-0.128, 0.177]	0.120 [0.047, 0.196]*	-1.099 [-1.186, -0.977]*
	40	0.157 [0.118, 0.191]*	1.149 [1.035, 1.244]*	0.035 [0.046, 0.185]*	0.120 [0.046, 0.185]*	-1.147 [-1.232, -1.064]*
	60	0.137 [0.095, 0.171]*	1.239 [1.119, 1.310]*	0.016 [-0.053, 0.099]	0.120 [0.046, 0.190]*	-1.238 [-1.304, -1.160]*
	80	0.113 [0.065, 0.148]*	1.368 [1.256, 1.438]*	0.013 [-0.055, 0.089]	0.130 [0.065, 0.203]*	-1.398 [-1.462, -1.327]*
Panel C. Immigrant Cohort 3						
p-values		**p = 0.000**	**p = 0.000**	**p = 0.025**	**p = 0.000**	p = 0.125
Quantiles	20	0.342 [0.290, 0.365]*	1.434 [1.259, 1.553]*	-0.145 [-0.274, 0.009]	0.118 [-0.006, 0.212]	-1.065 [-1.154, -0.935]*
	40	0.314 [0.288, 0.351]*	1.385 [1.259, 1.526]*	-0.077 [-0.197, 0.037]	0.111 [0.008, 0.202]*	-1.106 [-1.174, -1.013]*
	60	0.311 [0.271, 0.342]*	1.434 [1.316, 1.546]*	-0.046 [-0.147, 0.034]	0.118 [0.036, 0.222]*	-1.196 [-1.269, -1.120]*
	80	0.318 [0.285, 0.353]*	1.584 [1.454, 1.664]*	-0.043 [-0.127, 0.028]	0.155 [0.084, 0.252]*	-1.378 [-1.439, -1.295]*
Panel D. Immigrant Cohort 4						
p-values		**p = 0.000**	**p = 0.000**	p = 0.780	**p = 0.000**	**p = 0.000**
Quantiles	20	0.431 [0.379, 0.483]*	1.493 [1.318, 1.669]*	-0.050 [-0.167, 0.083]	0.053 [-0.094, 0.214]	-1.065 [-1.203, -0.936]*
	40	0.445 [0.394, 0.486]*	1.516 [1.351, 1.651]*	-0.027 [-0.114, 0.106]	0.097 [-0.039, 0.219]	-1.141 [-1.271, -1.036]*
	60	0.414 [0.361, 0.471]*	1.558 [1.395, 1.670]*	-0.001 [-0.091, 0.111]	0.140 [0.024, 0.250]*	-1.282 [-1.381, -1.166]*
	80	0.383 [0.338, 0.429]*	1.616 [1.467, 1.705]*	0.021 [-0.068, 0.133]	0.215 [0.108, 0.315]*	-1.468 [-1.548, -1.336]*
Panel E. Immigrant naturalized citizens						
p-values		p = 0.275	**p = 0.000**	p = 0.270	p = 0.695	p = 0.235
Quantiles	20	0.063 [0.024, 0.104]*	1.240 [1.106, 1.356]*	-0.029 [-0.162, 0.088]	0.051 [-0.001, 0.119]	-1.199 [-1.290, -1.100]*
	40	0.080 [0.039, 0.105]*	1.215 [1.112, 1.322]*	0.044 [-0.065, 0.131]	0.060 [0.004, 0.122]*	-1.239 [-1.310, -1.148]*
	60	0.056 [0.018, 0.090]*	1.253 [1.160, 1.345]*	0.058 [-0.030, 0.139]	0.068 [0.012, 0.125]*	-1.322 [-1.397, -1.242]*
	80	0.056 [0.021, 0.089]*	1.389 [1.301, 1.462]*	0.063 [-0.008, 0.128]	0.064 [0.014, 0.127]*	-1.461 [-1.523, -1.388]*
Panel F. Immigrant non-citizens						
p-values		**p = 0.000**	**p = 0.000**	p = 0.805	**p = 0.000**	**p = 0.000**
Quantiles	20	0.365 [0.315, 0.406]*	1.341 [1.206, 1.512]*	0.043 [-0.095, 0.183]	0.057 [-0.078, 0.156]	-1.076 [-1.167, -0.954]*
	40	0.330 [0.289, 0.368]*	1.366 [1.242, 1.524]*	0.022 [-0.090, 0.130]	0.040 [-0.083, 0.138]	-1.098 [-1.203, -1.001]*
	60	0.276 [0.247, 0.318]*	1.406 [1.282, 1.550]*	0.008 [-0.081, 0.101]	0.084 [-0.033, 0.195]	-1.222 [-1.319, -1.134]*
	80	0.289 [0.243, 0.329]*	1.500 [1.372, 1.609]*	-0.004 [-0.087, 0.084]	0.156 [0.065, 0.264]*	-1.364 [-1.431, -1.282]*

Notes: p-values in bold denote significance at conventional levels (<10%).
Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QT

Table 7. Quantile Treatment Effects for Professionals: Cohort by English-speaking Ability

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant Does Not Speak English						
p-values		**p = 0.000**	p = 1.000	p = 0.505	**p = 0.070**	p = 1.000
Quantiles	20	0.724 [0.651, 0.794]*	1.551 [1.319, 1.647]*	-0.004 [-0.253, 0.195]*	0.234 [0.070, 0.391]*	-1.057 [-1.192, -0.734]*
	40	0.591 [0.511, 0.678]*	1.330 [1.211, 1.440]*	0.225 [-0.006, 0.402]*	0.254 [0.095, 0.384]*	-1.218 [-1.412, -0.934]*
	60	0.496 [0.333, 0.573]*	1.365 [1.278, 1.445]*	0.236 [0.044, 0.424]*	0.250 [0.094, 0.377]*	-1.354 [-1.619, -1.089]*
	80	0.269 [0.202, 0.386]*	1.485 [1.401, 1.550]*	0.216 [0.050, 0.418]*	0.239 [0.056, 0.358]*	-1.672 [-1.872, -1.395]*
Panel B. Immigrant Speaks English but Not Well						
p-values		**p = 0.000**	p = 1.000	p = 0.130	**p = 0.000**	p = 1.000
Quantiles	20	0.310 [0.265, 0.357]*	1.422 [1.229, 1.620]*	-0.021 [-0.235, 0.161]	0.125 [0.026, 0.245]*	-1.215 [-1.362, -1.104]*
	40	0.226 [0.167, 0.275]*	1.294 [1.167, 1.444]*	0.136 [-0.011, 0.264]	0.140 [0.027, 0.248]*	-1.345 [-1.467, -1.242]*
	60	0.157 [0.095, 0.207]*	1.369 [1.224, 1.483]*	0.166 [0.054, 0.281]*	0.127 [0.016, 0.244]*	-1.505 [-1.620, -1.409]*
	80	0.031 [0.000, 0.085]*	1.422 [1.270, 1.537]*	0.184 [0.074, 0.293]*	0.124 [0.016, 0.249]*	-1.699 [-1.788, -1.582]*
Panel C. Immigrant Speaks Only English						
p-values		**p = 0.000**	**p = 0.085**	**p = 0.005**	**p = 0.000**	**p = 0.010**
Quantiles	20	-0.061 [-0.086, 0.002]	1.435 [1.212, 1.590]*	0.079 [-0.092, 0.267]	-0.120 [-0.204, -0.044]*	-1.456 [-1.553, -1.330]*
	40	-0.118 [-0.140, -0.080]*	1.279 [1.144, 1.425]*	0.142 [0.012, 0.278]*	-0.139 [-0.246, -0.053]*	-1.400 [-1.492, -1.313]*
	60	-0.137 [-0.143, -0.103]*	1.311 [1.172, 1.417]*	0.150 [0.052, 0.250]*	-0.129 [-0.216, -0.040]*	-1.469 [-1.536, -1.391]*
	80	-0.122 [-0.150, -0.093]*	1.408 [1.281, 1.487]*	0.157 [0.068, 0.232]*	-0.121 [-0.175, -0.040]*	-1.566 [-1.616, -1.486]*

Notes: p-values in bold denote significance at conventional levels (<10%).
Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QT.

Table 8. Quantile Treatment Effects for Services: Cohort by English-speaking Ability

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant Does Not Speak English						
p-values		**p = 0.000**	p = 0.875	p = 0.365	**p = 0.000**	p = 0.860
Quantiles	20	0.421 [0.366, 0.488]*	1.373 [1.036, 1.845]*	-0.381 [-0.616, -0.012]*	0.740 [-0.043, 0.939]	-1.312 [-1.467, -0.788]*
	40	0.531 [0.479, 0.608]*	1.294 [1.068, 1.839]*	-0.192 [-0.442, 0.008]	0.676 [-0.058, 0.882]	-1.247 [-1.384, -0.835]*
	60	0.579 [0.522, 0.647]*	1.266 [1.113, 1.774]*	-0.116 [-0.281, 0.024]	0.726 [-0.017, 0.909]	-1.296 [-1.403, -0.923]*
	80	0.591 [0.532, 0.667]*	1.421 [1.219, 1.956]*	-0.117 [-0.208, 0.036]	0.844 [0.030, 0.984]*	-1.556 [-1.610, -1.124]*
Panel B. Immigrant Speaks English but Not Well						
p-values		**p = 0.000**	**p = 0.005**	**p = 0.005**	p = 0.411	**p = 0.000**
Quantiles	20	0.203 [0.143, 0.265]*	1.703 [1.335, 2.013]*	-0.326 [-0.483, -0.036]*	-0.077 [-0.511, 0.125]	-1.098 [-1.176, -0.887]*
	40	0.278 [0.204, 0.323]*	1.761 [1.367, 1.990]*	-0.223 [-0.338, 0.006]	-0.083 [-0.423, 0.150]	-1.177 [-1.276, -1.009]*
	60	0.318 [0.253, 0.365]*	1.737 [1.462, 2.047]*	-0.094 [-0.273, 0.006]	-0.026 [-0.358, 0.195]	-1.299 [-1.399, -1.154]*
	80	0.361 [0.283, 0.426]*	1.880 [1.552, 2.223]*	-0.090 [-0.215, 0.035]	0.009 [-0.253, 0.302]	-1.431 [-1.583, -1.323]*
Panel C. Immigrant Speaks Only English						
p-values		**p = 0.000**	**p = 0.000**	**p = 0.056**	p = 0.702	**p = 0.000**
Quantiles	20	0.121 [0.039, 0.188]*	1.144 [0.949, 1.457]*	-0.142 [-0.325, 0.094]	0.060 [-0.160, 0.220]	-0.942 [-1.233, -0.765]*
	40	0.140 [0.089, 0.212]*	1.246 [1.076, 1.525]*	-0.119 [-0.293, 0.062]	0.003 [-0.146, 0.192]	-0.990 [-1.283, -0.845]*
	60	0.129 [0.068, 0.197]*	1.332 [1.160, 1.580]*	-0.131 [-0.289, 0.062]	0.004 [-0.173, 0.185]	-1.076 [-1.384, -0.980]*
	80	0.040 [-0.045, 0.113]	1.452 [1.255, 1.714]*	-0.096 [-0.286, 0.070]	0.021 [-0.146, 0.195]	-1.337 [-1.563, -1.211]*

Notes: p-values in bold denote significance at conventional levels (<10%).
Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QTE.

Table 9. Quantile Treatment Effects for Sales: Cohort by English-speaking Ability

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant Does Not Speak English						
p-values		**p = 0.000**	p = 1.000	p = 0.715	p = 0.410	p = 1.000
Quantiles	20	0.511 [0.474, 0.564]*	1.451 [1.202, 1.628]*	-0.085 [-0.334, 0.082]	0.222 [0.003, 0.524]*	-1.077 [-1.298, -0.724]*
	40	0.547 [0.472, 0.616]*	1.583 [1.314, 1.740]*	-0.086 [-0.309, 0.063]	0.129 [-0.032, 0.473]	-1.079 [-1.336, -0.840]*
	60	0.501 [0.415, 0.582]*	1.645 [1.339, 1.814]*	-0.095 [-0.264, 0.038]	0.136 [-0.014, 0.494]	-1.185 [-1.420, -0.998]*
	80	0.493 [0.444, 0.582]*	1.826 [1.454, 1.944]*	-0.105 [-0.247, 0.063]	0.158 [0.025, 0.549]*	-1.385 [-1.562, -1.144]*
Panel B. Immigrant Speaks English but Not Well						
p-values		**p = 0.000**	**p = 0.000**	**p = 0.000**	**p = 0.050**	**p = 0.000**
Quantiles	20	0.320 [0.280, 0.376]*	1.421 [1.206, 1.683]*	-0.291 [-0.512, -0.098]*	0.048 [-0.149, 0.216]	-0.858 [-1.075, -0.730]*
	40	0.300 [0.239, 0.336]*	1.398 [1.234, 1.626]*	-0.185 [-0.321, -0.059]*	0.052 [-0.129, 0.222]	-0.965 [-1.142, -0.868]*
	60	0.355 [0.306, 0.388]*	1.567 [1.361, 1.755]*	-0.164 [-0.260, -0.036]*	0.031 [-0.116, 0.226]	-1.078 [-1.242, -1.000]*
	80	0.308 [0.223, 0.360]*	1.697 [1.494, 1.911]*	-0.122 [-0.221, 0.003]*	0.073 [-0.111, 0.267]	-1.340 [-1.486, -1.237]*
Panel C. Immigrant Speaks Only English						
p-values		**p = 0.065**	**p = 0.015**	p = 0.460	**p = 0.075**	**p = 0.010**
Quantiles	20	0.082 [0.013, 0.145]*	1.448 [1.178, 1.690]*	-0.077 [-0.233, 0.151]	-0.106 [-0.382, 0.051]	-1.182 [-1.315, -1.028]*
	40	0.036 [-0.008, 0.095]	1.421 [1.221, 1.639]*	0.024 [-0.132, 0.172]	-0.093 [-0.347, 0.078]	-1.315 [-1.433, -1.152]*
	60	0.022 [-0.006, 0.078]	1.456 [1.261, 1.649]*	0.056 [-0.069, 0.169]	-0.098 [-0.310, 0.081]	-1.392 [-1.518, -1.261]*
	80	0.043 [-0.017, 0.095]	1.604 [1.379, 1.764]*	0.060 [-0.045, 0.169]	-0.064 [-0.257, 0.114]	-1.557 [-1.665, -1.423]*

Notes: p-values in bold denote significance at conventional levels (<10%).
Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QTE.

Table 10. Quantile Treatment Effects for Operatives: Cohort by English-speaking Ability

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant Does Not Speak English						
p-values		**p = 0.000**	**p = 0.000**	**p = 0.000**	**p = 0.000**	**p = 0.000**
Quantiles	20	0.555 [0.519, 0.587]*	1.271 [1.072, 1.477]*	0.086 [-0.135, 0.262]	0.232 [0.132, 0.352]*	-1.034 [-1.151, -0.946]**
	40	0.574 [0.528, 0.618]*	1.304 [1.155, 1.431]*	0.129 [0.009, 0.252]*	0.249 [0.150, 0.354]*	-1.109 [-1.189, -1.030]**
	60	0.583 [0.550, 0.624]*	1.408 [1.276, 1.510]*	0.129 [0.040, 0.232]*	0.266 [0.181, 0.363]*	-1.220 [-1.295, -1.152]**
	80	0.499 [0.470, 0.569]*	1.526 [1.380, 1.610]*	0.123 [0.048, 0.216]*	0.291 [0.213, 0.407]*	-1.442 [-1.507, -1.350]**
Panel B. Immigrant Speaks English but Not Well						
p-values		**p = 0.000**	p = 0.685	p = 0.545	**p = 0.000**	p = 0.770
Quantiles	20	0.301 [0.248, 0.369]*	1.280 [1.099, 1.519]*	-0.116 [-0.288, 0.093]	0.182 [-0.020, 0.243]	-1.045 [-1.163, -0.913]*
	40	0.313 [0.287, 0.349]*	1.251 [1.135, 1.473]*	0.003 [-0.132, 0.103]	0.168 [-0.034, 0.234]	-1.109 [-1.198, -0.998]*
	60	0.285 [0.233, 0.311]*	1.300 [1.189, 1.468]*	0.037 [-0.062, 0.120]	0.182 [0.033, 0.253]*	-1.235 [-1.303, -1.139]*
	80	0.203 [0.161, 0.235]*	1.431 [1.307, 1.542]*	0.049 [-0.037, 0.128]	0.206 [0.091, 0.288]*	-1.483 [-1.538, -1.375]*
Panel C. Immigrant Speaks Only English						
p-values		**p = 0.000**	p = 0.510	**p = 0.085**	p = 0.315	p = 0.515
Quantiles	20	0.138 [0.063, 0.192]*	1.266 [1.037, 1.615]*	0.090 [-0.143, 0.243]	-0.022 [-0.347, 0.199]	-1.196 [-1.331, -1.044]*
	40	0.105 [0.058, 0.171]*	1.304 [1.083, 1.566]*	0.104 [-0.065, 0.249]	-0.011 [-0.300, 0.194]	-1.291 [-1.413, -1.143]*
	60	0.038 [0.010, 0.098]*	1.298 [1.138, 1.523]*	0.145 [-0.019, 0.264]	0.015 [-0.233, 0.208]	-1.420 [-1.521, -1.263]*
	80	-0.010 [-0.062, 0.032]	1.383 [1.237, 1.511]*	0.145 [0.000, 0.255]*	0.036 [-0.154, 0.189]	-1.574 [-1.666, -1.396]*

Notes: p-values in bold denote significance at conventional levels (<10%).
Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QT

Table 11. Quantile Treatment Effects for Laborers: Cohort by English-speaking Ability

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant Does Not Speak English						
p-values		**p = 0.000**	p = 0.920	p = 0.335	**p = 0.000**	p = 1.000
Quantiles	20	0.487 [0.433, 0.523]*	1.353 [1.225, 1.497]*	-0.121 [-0.284, -0.012]*	0.213 [0.124, 0.322]*	-0.958 [-1.029, -0.889]*
	40	0.519 [0.503, 0.558]*	1.353 [1.234, 1.486]*	-0.078 [-0.186, 0.010]	0.239 [0.146, 0.340]*	-0.995 [-1.072, -0.926]*
	60	0.528 [0.495, 0.576]*	1.398 [1.305, 1.535]*	-0.056 [-0.141, 0.017]	0.292 [0.224, 0.376]*	-1.107 [-1.178, -1.039]*
	80	0.505 [0.473, 0.549]*	1.514 [1.417, 1.632]*	-0.044 [-0.125, 0.021]	0.333 [0.257, 0.427]*	-1.299 [-1.364, -1.233]*
Panel B. Immigrant Speaks English but Not Well						
p-values		**p = 0.000**	**p = 0.000**	**p = 0.045**	**p = 0.000**	**p = 0.000**
Quantiles	20	0.255 [0.208, 0.288]*	1.519 [1.304, 1.657]*	-0.256 [-0.380, -0.099]*	-0.007 [-0.131, 0.141]	-1.000 [-1.070, -0.910]*
	40	0.240 [0.205, 0.274]*	1.440 [1.243, 1.590]*	-0.146 [-0.262, -0.014]*	0.017 [-0.056, 0.149]	-1.071 [-1.136, -1.009]*
	60	0.232 [0.185, 0.267]*	1.439 [1.285, 1.554]*	-0.090 [-0.174, 0.017]	0.070 [-0.010, 0.169]	-1.188 [-1.245, -1.132]*
	80	0.192 [0.156, 0.231]*	1.502 [1.388, 1.604]*	-0.041 [-0.116, 0.046]	0.089 [0.019, 0.176]*	-1.357 [-1.409, -1.304]*
Panel C. Immigrant Speaks Only English						
p-values		**p = 0.000**	p = 0.885	p = 0.500	p = 0.910	p = 0.985
Quantiles	20	0.141 [0.091, 0.201]*	1.359 [1.206, 1.490]*	-0.014 [-0.152, 0.132]	0.001 [-0.095, 0.078]	-1.195 [-1.287, -1.076]*
	40	0.099 [0.066, 0.147]*	1.343 [1.218, 1.433]*	0.033 [-0.110, 0.157]	0.007 [-0.063, 0.076]	-1.285 [-1.362, -1.165]*
	60	0.064 [0.016, 0.124]*	1.385 [1.277, 1.471]*	0.073 [-0.061, 0.170]	0.002 [-0.050, 0.077]	-1.396 [-1.483, -1.274]*
	80	0.044 [-0.004, 0.103]	1.478 [1.374, 1.550]*	0.084 [-0.044, 0.179]	-0.007 [-0.047, 0.074]	-1.511 [-1.591, -1.390]*

Notes: p-values in bold denote significance at conventional levels (<10%).
Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QTE.

Table 12. Quantile Treatment Effects for Professionals: Cohort by Region of Origin

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant origin: North America						
p-values		**p = 0.035**	p = 0.935	p = 0.775	**p = 0.100**	p = 0.940
Quantiles	20	-0.015 [-0.053, 0.031]	1.429 [1.228, 1.577]*	-0.049 [-0.234, 0.166]	-0.046 [-0.090, -0.013]*	-1.350 [-1.460, -1.196]*
	40	0.000 [-0.039, 0.000]	1.331 [1.206, 1.435]*	0.028 [-0.111, 0.160]	-0.062 [-0.091, -0.022]*	-1.297 [-1.419, -1.206]*
	60	-0.032 [-0.067, 0.001]	1.367 [1.264, 1.446]*	0.033 [-0.062, 0.134]	-0.041 [-0.070, -0.006]*	-1.391 [-1.473, -1.298]*
	80	-0.053 [-0.078, -0.014]*	1.453 [1.377, 1.525]*	0.038 [-0.047, 0.123]	0.036 [-0.060, 0.007]	-1.507 [-1.577, -1.425]*
Panel B. Immigrant origin: South America						
p-values		**p = 0.000**	p = 1.000	p = 0.380	**p = 0.030**	p = 1.000
Quantiles	20	0.296 [0.218, 0.351]*	1.312 [1.191, 1.438]*	0.149 [-0.100, 0.368]	0.060 [-0.013, 0.111]	-1.225 [-1.389, -1.006]*
	40	0.273 [0.223, 0.301]*	1.276 [1.191, 1.386]*	0.147 [-0.028, 0.318]	0.068 [0.003, 0.122]*	-1.217 [-1.376, -1.062]*
	60	0.185 [0.119, 0.243]*	1.333 [1.253, 1.413]*	0.120 [-0.046, 0.262]	0.069 [0.007, 0.125]*	-1.336 [-1.485, -1.176]*
	80	0.154 [0.090, 0.184]*	1.431 [1.357, 1.502]*	0.100 [-0.034, 0.232]	0.095 [0.035, 0.139]*	-1.472 [-1.610, -1.320]*
Panel C. Immigrant origin: Europe						
p-values		**p = 0.000**	**p = 0.100**	**p = 0.005**	**p = 0.000**	**p = 0.000**
Quantiles	20	-0.086 [-0.126, -0.034]*	1.315 [1.114, 1.434]*	0.295 [0.173, 0.513]*	-0.040 [-0.073, -0.005]*	-1.656 [-1.732, -1.558]*
	40	-0.148 [-0.182, -0.118]*	1.189 [1.070, 1.330]*	0.460 [0.280, 0.577]*	-0.041 [-0.072, -0.007]*	-1.756 [-1.821, -1.650]*
	60	-0.155 [-0.192, -0.117]*	1.229 [1.148, 1.316]*	0.457 [0.321, 0.551]*	-0.041 [-0.067, -0.004]*	-1.801 [-1.874, -1.684]*
	80	-0.176 [-0.204, -0.125]*	1.328 [1.248, 1.399]*	0.410 [0.288, 0.525]*	-0.037 [-0.063, -0.002]*	-1.876 [-1.960, -1.761]*
Panel D. Immigrant origin: Asia						
p-values		**p = 0.000**	**p = 0.000**	**p = 0.055**	**p = 0.000**	**p = 0.000**
Quantiles	20	-0.087 [-0.128, -0.040]*	1.461 [1.244, 1.629]*	0.077 [-0.090, 0.241]	-0.157 [-0.306, -0.035]*	-1.468 [-1.571, -1.305]*
	40	-0.133 [-0.167, -0.096]*	1.418 [1.248, 1.571]*	0.100 [-0.023, 0.226]	-0.160 [-0.324, -0.046]*	-1.491 [-1.567, -1.346]*
	60	-0.148 [-0.176, -0.117]*	1.445 [1.277, 1.578]*	0.111 [-0.002, 0.211]	-0.155 [-0.323, -0.034]*	-1.548 [-1.604, -1.411]*
	80	-0.105 [-0.145, -0.092]*	1.526 [1.357, 1.655]*	0.122 [0.037, 0.217]*	-0.123 [-0.276, -0.006]*	-1.630 [-1.674, -1.528]*
Panel E. Immigrant origin: Africa						
p-values		**p = 0.095**	**p = 0.000**	p = 0.415	p = 0.125	**p = 0.000**
Quantiles	20	0.069 [0.045, 0.128]*	1.366 [1.199, 1.544]*	-0.040 [-0.196, 0.238]	0.133 [0.072, 0.186]*	-1.470 [-1.600, -1.336]*
	40	0.043 [0.001, 0.069]*	1.299 [1.159, 1.444]*	0.051 [-0.155, 0.229]	0.124 [0.071, 0.183]*	-1.430 [-1.540, -1.332]*
	60	0.000 [-0.037, 0.037]	1.313 [1.202, 1.434]*	0.055 [-0.093, 0.191]	0.121 [0.069, 0.171]*	-1.489 [-1.570, -1.407]*
	80	-0.041 [-0.069, -0.004]*	1.388 [1.297, 1.491]*	0.065 [-0.056, 0.172]	0.114 [0.064, 0.163]*	-1.608 [-1.675, -1.541]*
Panel F. Immigrant origin: Oceania						
p-values		**p = 0.010**	**p = 0.035**	**p = 0.005**	p = 0.125	**p = 0.000**
Quantiles	20	-0.026 [-0.143, 0.026]	1.044 [0.852, 1.269]*	0.550 [0.279, 0.706]*	-0.095 [-0.264, 0.076]	-1.525 [-1.729, -1.283]*
	40	-0.025 [-0.117, 0.039]	1.145 [0.955, 1.323]*	0.373 [0.200, 0.635]*	-0.016 [-0.200, 0.079]	-1.528 [-1.703, -1.280]*
	60	-0.074 [-0.143, 0.011]	1.209 [1.034, 1.385]*	0.333 [0.144, 0.548]*	-0.034 [-0.163, 0.071]	-1.583 [-1.744, -1.356]*
	80	-0.145 [-0.222, -0.065]*	1.382 [1.193, 1.473]*	0.311 [0.150, 0.485]*	-0.081 [-0.172, 0.024]	-1.756 [-1.855, -1.521]*

Notes: p-values in bold denote significance at conventional levels (<10%).
Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QT

Table 13. Quantile Treatment Effects for Services: Cohort by Region of Origin

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant origin: North America						
p-values		**p = 0.035**	p = 0.105	p = 0.115	p = 0.245	**p = 0.080**
Quantiles	20	0.065 [0.020, 0.153]*	1.325 [0.974, 1.571]*	0.194 [-0.018, 0.418]	0.123 [-0.099, 0.298]	-1.577 [-1.723, -1.257]*
	40	0.078 [0.022, 0.131]*	1.327 [1.063, 1.566]*	0.231 [0.052, 0.383]*	0.147 [-0.074, 0.298]	-1.626 [-1.802, -1.333]*
	60	0.049 [0.008, 0.107]*	1.381 [1.113, 1.599]*	0.171 [0.039, 0.355]*	0.102 [-0.096, 0.308]	-1.605 [-1.838, -1.379]*
	80	0.120 [0.037, 0.159]*	1.456 [1.251, 1.728]*	0.174 [0.029, 0.354]*	0.227 [-0.091, 0.340]	-1.737 [-1.910, -1.475]*
Panel B. Immigrant origin: South America						
p-values		**p = 0.000**	**p = 0.000**	**p = 0.000**	p = 0.567	**p = 0.000**
Quantiles	20	0.303 [0.250, 0.352]*	1.576 [1.204, 1.849]*	-0.259 [-0.511, -0.072]*	-0.091 [-0.249, 0.178]	-0.923 [-1.064, -0.624]*
	40	0.343 [0.290, 0.406]*	1.591 [1.194, 1.835]*	-0.254 [-0.369, -0.098]*	-0.039 [-0.214, 0.192]	-0.956 [-1.095, -0.631]*
	60	0.414 [0.361, 0.470]*	1.645 [1.293, 1.910]*	-0.204 [-0.339, -0.098]*	-0.039 [-0.167, 0.210]	-0.987 [-1.166, -0.678]*
	80	0.451 [0.375, 0.503]*	1.682 [1.397, 2.076]*	-0.235 [-0.333, -0.079]*	0.038 [-0.136, 0.242]	-1.033 [-1.359, -0.842]*
Panel C. Immigrant origin: Europe						
p-values		p = 0.510	p = 0.625	p = 0.515	p = 0.335	p = 0.575
Quantiles	20	0.024 [-0.026, 0.090]	1.243 [0.783, 1.788]*	0.029 [-0.263, 0.219]	0.051 [-0.707, 0.453]	-1.299 [-1.578, -0.748]*
	40	0.060 [-0.028, 0.120]	1.495 [0.941, 1.661]*	-0.082 [-0.220, 0.200]	-0.148 [-0.393, 0.470]	-1.205 [-1.729, -0.950]*
	60	0.005 [-0.037, 0.069]	1.327 [1.076, 1.819]*	-0.065 [-0.203, 0.143]	0.120 [-0.235, 0.456]	-1.377 [-1.847, -1.210]*
	80	0.049 [-0.004, 0.116]	1.509 [1.290, 1.973]*	-0.056 [-0.207, 0.126]	0.200 [-0.207, 0.486]	-1.603 [-1.944, -1.412]*
Panel D. Immigrant origin: Asia						
p-values		**p = 0.000**	**p = 0.000**	**p = 0.000**	**p = 0.000**	**p = 0.000**
Quantiles	20	0.291 [0.223, 0.377]*	1.553 [1.065, 1.957]*	-0.204 [-0.378, 0.098]	0.145 [-0.297, 0.376]	-1.203 [-1.319, -0.812]*
	40	0.308 [0.245, 0.389]*	1.554 [1.195, 2.010]*	-0.035 [-0.316, 0.171]	0.091 [-0.329, 0.380]	-1.302 [-1.516, -1.034]*
	60	0.235 [0.182, 0.325]*	1.636 [1.295, 2.087]*	0.020 [-0.237, 0.183]	0.121 [-0.285, 0.376]	-1.542 [-1.723, -1.277]*
	80	0.211 [0.147, 0.306]*	1.776 [1.441, 2.329]*	0.050 [-0.169, 0.204]	0.171 [-0.251, 0.415]	-1.786 [-2.017, -1.487]*
Panel E. Immigrant origin: Africa						
p-values		**p = 0.000**	**p = 0.000**	**p = 0.000**	**p = 0.000**	**p = 0.000**
Quantiles	20	0.106 [0.052, 0.173]*	1.287 [1.010, 1.688]*	0.034 [-0.310, 0.345]	-0.098 [-0.223, 0.095]	-1.116 [-1.312, -0.968]*
	40	0.115 [0.044, 0.177]*	1.257 [1.064, 1.532]*	0.103 [-0.079, 0.295]	-0.086 [-0.211, 0.082]	-1.159 [-1.361, -1.065]*
	60	0.173 [0.117, 0.215]*	1.380 [1.191, 1.590]*	0.112 [-0.020, 0.272]	-0.062 [-0.184, 0.105]	-1.257 [-1.431, -1.164]*
	80	0.151 [0.093, 0.213]*	1.551 [1.354, 1.755]*	0.113 [-0.018, 0.254]	-0.028 [-0.149, 0.149]	-1.485 [-1.640, -1.380]*
Panel F. Immigrant origin: Oceania						
p-values		p = 0.155	p = 0.427	p = 0.688	p = 0.347	p = 0.437
Quantiles	20	-0.066 [-0.149, 0.097]	2.179 [0.669, 2.373]*	-0.584 [-0.634, 0.419]	-0.252 [-0.958, 0.397]	-1.409 [-1.611, -0.622]*
	40	0.000 [-0.147, 0.212]	1.644 [0.709, 2.136]*	0.071 [-0.445, 0.380]	-0.385 [-0.803, 0.497]	-1.329 [-1.486, -0.751]*
	60	0.152 [0.010, 0.266]*	1.702 [0.860, 2.050]*	-0.023 [-0.275, 0.310]	-0.244 [-0.704, 0.510]	-1.283 [-1.426, -0.825]*
	80	0.090 [-0.034, 0.352]	1.699 [1.017, 2.009]*	0.072 [-0.230, 0.298]	-0.165 [-0.649, 0.592]	-1.515 [-1.635, -0.982]*

Notes: p-values in bold denote significance at conventional levels (<10%).

Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QT.

Table 14. Quantile Treatment Effects for Sales: Cohort by Region of Origin

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant origin: North America						
p-values		**p = 0.000**	p = 0.105	**p = 0.060**	**p = 0.020**	**p = 0.095**
Quantiles	20	0.129 [0.075, 0.194]*	1.149 [0.982, 1.349]*	0.183 [-0.074, 0.326]	0.143 [-0.039, 0.245]	-1.345 [-1.443, -1.101]*
	40	0.045 [0.001, 0.105]*	1.222 [1.032, 1.362]*	0.130 [-0.021, 0.245]	0.116 [-0.030, 0.271]	-1.423 [-1.536, -1.204]*
	60	0.024 [-0.017, 0.068]	1.328 [1.124, 1.466]*	0.121 [-0.020, 0.212]	0.114 [-0.035, 0.272]	-1.539 [-1.623, -1.327]*
	80	0.039 [-0.025, 0.104]	1.491 [1.247, 1.645]*	0.107 [-0.040, 0.197]	0.091 [-0.039, 0.308]	-1.651 [-1.766, -1.440]*
Panel B. Immigrant origin: South America						
p-values		**p = 0.000**	**p = 0.005**	p = 0.400	**p = 0.075**	**p = 0.005**
Quantiles	20	0.316 [0.248, 0.352]*	1.306 [1.119, 1.632]*	0.111 [-0.174, 0.292]	0.081 [-0.047, 0.245]	-1.182 [-1.377, -0.968]*
	40	0.297 [0.236, 0.340]*	1.380 [1.217, 1.565]*	0.044 [-0.113, 0.235]	0.093 [-0.042, 0.206]	-1.220 [-1.411, -1.042]*
	60	0.280 [0.221, 0.323]*	1.453 [1.305, 1.649]*	0.028 [-0.115, 0.167]	0.084 [-0.053, 0.211]	-1.285 [-1.461, -1.143]*
	80	0.282 [0.234, 0.346]*	1.640 [1.495, 1.819]*	-0.005 [-0.117, 0.119]	0.087 [-0.058, 0.218]	-1.439 [-1.602, -1.297]*
Panel C. Immigrant origin: Europe						
p-values		**p = 0.000**	p = 0.985	p = 0.590	p = 0.305	p = 0.975
Quantiles	20	-0.039 [-0.096, 0.000]	1.056 [0.887, 1.224]*	0.221 [0.013, 0.441]*	0.125 [-0.038, 0.265]	-1.441 [-1.669, -1.195]*
	40	-0.072 [-0.130, -0.002]*	1.192 [1.030, 1.327]*	0.111 [-0.033, 0.304]	0.136 [-0.035, 0.254]	-1.511 [-1.680, -1.265]*
	60	-0.076 [-0.144, -0.028]*	1.339 [1.198, 1.458]*	0.056 [-0.057, 0.203]	0.116 [-0.034, 0.233]	-1.587 [-1.750, -1.424]*
	80	-0.136 [-0.182, -0.027]*	1.576 [1.426, 1.709]*	0.031 [-0.070, 0.156]	0.091 [-0.059, 0.217]	-1.833 [-1.960, -1.610]*
Panel D. Immigrant origin: Asia						
p-values		**p = 0.000**	p = 0.615	p = 0.375	**p = 0.005**	p = 0.465
Quantiles	20	0.280 [0.233, 0.339]*	1.316 [0.886, 1.655]*	0.118 [-0.177, 0.360]	0.233 [-0.037, 0.602]	-1.387 [-1.685, -1.109]*
	40	0.171 [0.115, 0.213]*	1.306 [0.951, 1.669]*	0.108 [-0.063, 0.297]	0.205 [-0.037, 0.555]	-1.448 [-1.817, -1.209]*
	60	0.109 [0.056, 0.182]*	1.407 [1.007, 1.683]*	0.087 [-0.046, 0.242]	0.205 [-0.074, 0.543]	-1.590 [-1.892, -1.370]*
	80	0.118 [0.060, 0.179]*	1.527 [1.140, 1.797]*	0.084 [-0.036, 0.219]	0.239 [-0.028, 0.561]	-1.732 [-1.971, -1.511]*
Panel E. Immigrant origin: Africa						
p-values		**p = 0.000**	p = 0.555	**p = 0.080**	**p = 0.000**	p = 0.505
Quantiles	20	0.211 [0.186, 0.279]*	1.862 [1.422, 2.038]*	-0.247 [-0.462, 0.114]	-0.124 [-0.215, 0.107]	-1.280 [-1.510, -1.067]*
	40	0.185 [0.147, 0.237]*	1.733 [1.379, 1.866]*	-0.085 [-0.240, 0.177]	-0.139 [-0.206, 0.088]	-1.323 [-1.527, -1.160]*
	60	0.158 [0.124, 0.223]*	1.706 [1.435, 1.858]*	0.024 [-0.132, 0.192]	-0.128 [-0.218, 0.065]	-1.444 [-1.641, -1.290]*
	80	0.145 [0.065, 0.217]*	1.764 [1.565, 1.964]*	0.100 [-0.054, 0.204]	-0.105 [-0.200, 0.063]	-1.615 [-1.796, -1.460]*
Panel F. Immigrant origin: Oceania						
p-values		p = 0.615	p = 0.960	p = 0.895	p = 0.920	p = 0.955
Quantiles	20	0.051 [-0.087, 0.168]	1.118 [0.427, 1.819]*	-0.110 [-0.861, 0.198]	-0.005 [-0.322, 0.937]	-0.952 [-1.400, -0.720]*
	40	0.027 [-0.108, 0.125]	1.129 [0.433, 1.512]*	-0.019 [-0.448, 0.233]	0.108 [-0.243, 0.985]	-1.192 [-1.486, -0.840]*
	60	0.000 [-0.165, 0.137]	1.072 [0.531, 1.513]*	0.186 [-0.332, 0.249]	0.066 [-0.240, 1.032]	-1.324 [-1.646, -1.031]*
	80	-0.105 [-0.280, 0.005]	1.217 [0.574, 1.598]*	0.153 [-0.264, 0.291]	0.093 [-0.249, 1.013]	-1.569 [-1.920, -1.204]*

Notes: p-values in bold denote significance at conventional levels (<10%).

Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QTE.

Table 15. Quantile Treatment Effects for Operatives: Cohort by Region of Origin

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant origin: North America						
p-values		**p = 0.000**	p = 0.160	**p = 0.045**	**p = 0.050**	p = 0.145
Quantiles	20	0.137 [0.075, 0.190]*	1.386 [1.094, 1.526]*	-0.017 [-0.183, 0.229]	0.103 [-0.026, 0.222]	-1.336 [-1.443, -1.113]*
	40	0.091 [0.038, 0.143]*	1.342 [1.113, 1.448]*	0.110 [-0.030, 0.247]	0.091 [-0.022, 0.225]	-1.452 [-1.554, -1.255]*
	60	0.043 [-0.005, 0.098]	1.372 [1.171, 1.467]*	0.146 [0.028, 0.265]*	0.098 [-0.045, 0.226]	-1.574 [-1.682, -1.355]*
	80	-0.018 [-0.041, 0.027]	1.465 [1.224, 1.542]*	0.162 [0.049, 0.257]*	0.038 [-0.066, 0.224]	-1.682 [-1.786, -1.482]*
Panel B. Immigrant origin: South America						
p-values		**p = 0.000**	**p = 0.020**	p = 0.275	**p = 0.000**	**p = 0.040**
Quantiles	20	0.325 [0.281, 0.387]*	1.382 [1.217, 1.523]*	-0.037 [-0.204, 0.111]	0.150 [0.060, 0.261]*	-1.169 [-1.242, -1.060]*
	40	0.322 [0.291, 0.368]*	1.428 [1.251, 1.503]*	0.024 [-0.105, 0.163]	0.140 [0.069, 0.256]*	-1.271 [-1.346, -1.141]*
	60	0.349 [0.315, 0.410]*	1.484 [1.318, 1.574]*	0.059 [-0.046, 0.165]	0.166 [0.090, 0.280]*	-1.359 [-1.424, -1.225]*
	80	0.339 [0.305, 0.367]*	1.599 [1.428, 1.682]*	0.074 [-0.021, 0.170]	0.172 [0.098, 0.310]*	-1.507 [-1.591, -1.394]*
Panel C. Immigrant origin: Europe						
p-values		**p = 0.000**	p = 0.870	**p = 0.020**	p = 0.700	p = 0.740
Quantiles	20	-0.047 [-0.118, 0.015]	1.301 [1.012, 1.460]*	0.000 [-0.289, 0.333]	0.050 [-0.073, 0.130]	-1.398 [-1.564, -1.107]*
	40	-0.093 [-0.121, -0.034]*	1.231 [1.005, 1.366]*	0.066 [-0.119, 0.245]	0.005 [-0.064, 0.109]	-1.395 [-1.506, -1.171]*
	60	-0.079 [-0.134, -0.041]*	1.224 [1.045, 1.360]*	0.077 [-0.051, 0.213]	0.037 [-0.067, 0.109]	-1.416 [-1.524, -1.233]*
	80	-0.039 [-0.106, -0.028]*	1.344 [1.151, 1.439]*	0.088 [-0.016, 0.200]	0.038 [-0.054, 0.133]	-1.509 [-1.600, -1.339]*
Panel D. Immigrant origin: Asia						
p-values		**p = 0.070**	**p = 0.070**	p = 0.355	**p = 0.000**	**p = 0.000**
Quantiles	20	0.094 [0.016, 0.173]*	1.088 [0.846, 1.558]*	0.225 [-0.089, 0.463]	0.338 [-0.108, 0.518]	-1.557 [-1.820, -1.182]*
	40	0.091 [0.033, 0.151]*	1.187 [0.938, 1.640]*	0.157 [-0.110, 0.384]	0.329 [-0.107, 0.523]	-1.582 [-1.840, -1.234]*
	60	-0.005 [-0.082, 0.052]	1.228 [0.968, 1.661]*	0.055 [-0.154, 0.282]	0.359 [-0.063, 0.571]	-1.647 [-1.894, -1.384]*
	80	-0.041 [-0.136, 0.031]	1.347 [1.073, 1.722]*	0.015 [-0.152, 0.224]	0.366 [-0.012, 0.566]	-1.769 [-1.971, -1.528]*
Panel E. Immigrant origin: Africa						
p-values		p = 0.610	p = 1.000	p = 1.000	p = 0.135	p = 1.000
Quantiles	20	0.042 [-0.027, 0.102]	1.381 [1.094, 1.474]*	0.049 [-0.285, 0.414]	0.074 [-0.070, 0.309]	-1.461 [-1.760, -1.072]*
	40	0.074 [-0.007, 0.140]	1.371 [1.113, 1.529]*	0.021 [-0.234, 0.260]	0.096 [-0.059, 0.313]	-1.415 [-1.658, -1.100]*
	60	0.054 [-0.011, 0.114]	1.401 [1.191, 1.519]*	0.050 [-0.140, 0.230]	0.040 [-0.070, 0.273]	-1.437 [-1.681, -1.191]*
	80	-0.005 [-0.066, 0.065]	1.440 [1.231, 1.549]*	0.060 [-0.115, 0.231]	0.091 [-0.074, 0.243]	-1.596 [-1.752, -1.343]*
Panel F. Immigrant origin: Oceania						
p-values		p = 0.345	**p = 0.000**	**p = 0.070**	p = 0.975	**p = 0.000**
Quantiles	20	0.039 [-0.033, 0.223]	1.403 [0.836, 1.882]*	-0.128 [-0.655, 0.370]	-0.033 [-0.174, 0.267]	-1.203 [-1.381, -0.860]*
	40	0.027 [-0.135, 0.129]	1.223 [0.871, 1.583]*	0.169 [-0.334, 0.411]	-0.006 [-0.162, 0.244]	-1.358 [-1.499, -1.042]*
	60	-0.030 [-0.200, 0.105]	1.304 [0.968, 1.539]*	0.193 [-0.131, 0.418]	0.010 [-0.165, 0.236]	-1.537 [-1.653, -1.161]*
	80	-0.077 [-0.246, 0.019]	1.383 [1.031, 1.591]*	-0.204 [-0.085, 0.402]	0.004 [-0.193, 0.265]	-1.668 [-1.798, -1.329]*

Notes: p-values in bold denote significance at conventional levels (<10%).

Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QT.

Table 16. Quantile Treatment Effects for Laborers: Cohort by Region of Origin

		Complete Wage Gap	Explained Productivity Gap	Unobserved Wage Dicrmination	Observed Wage Dicrmination	Unexplained Productivity Gap
Panel A. Immigrant origin: North America						
p-values		**p = 0.000**	**p = 0.005**	p = 0.175	**p = 0.010**	p = 0.500
Quantiles	20	0.165 [0.125, 0.202]*	1.221 [1.046, 1.367]*	0.134 [-0.015, 0.284]	0.060 [-0.037, 0.147]	-1.250 [-1.347, -1.150]*
	40	0.148 [0.108, 0.180]*	1.209 [1.079, 1.333]*	0.124 [0.021, 0.255]*	0.075 [-0.035, 0.161]	-1.261 [-1.363, -1.147]*
	60	0.095 [0.056, 0.125]*	1.250 [1.134, 1.372]*	0.076 [-0.015, 0.202]	0.075 [-0.026, 0.163]	-1.306 [-1.408, -1.208]*
	80	0.079 [0.036, 0.118]*	1.392 [1.277, 1.473]*	0.043 [-0.037, 0.147]	0.061 [-0.022, 0.145]	-1.417 [-1.503, -1.328]*
Panel B. Immigrant origin: South America						
p-values		**p = 0.000**	**p = 0.000**	p = 0.390	**p = 0.000**	**p = 0.000**
Quantiles	20	0.331 [0.288, 0.368]*	1.323 [1.158, 1.456]*	-0.006 [-0.140, 0.127]	0.097 [-0.008, 0.211]	-1.083 [-1.159, -1.008]*
	40	0.321 [0.273, 0.357]*	1.331 [1.185, 1.438]*	0.051 [-0.054, 0.154]	0.101 [0.000, 0.214]*	-1.162 [-1.240, -1.065]*
	60	0.286 [0.248, 0.328]*	1.372 [1.243, 1.486]*	0.054 [-0.039, 0.142]	0.109 [0.014, 0.215]*	-1.249 [-1.323, -1.164]*
	80	0.281 [0.240, 0.324]*	1.485 [1.362, 1.587]*	0.056 [-0.035, 0.141]	0.140 [0.055, 0.245]*	-1.400 [-1.457, -1.316]*
Panel C. Immigrant origin: Europe						
p-values		**p = 0.050**	p = 0.805	p = 0.815	p = 0.620	p = 0.475
Quantiles	20	-0.041 [-0.095, 0.000]	1.189 [0.959, 1.425]*	0.079 [-0.190, 0.300]	-0.028 [-0.086, 0.025]	-1.280 [-1.430, -1.086]*
	40	-0.025 [-0.074, 0.009]	1.126 [1.014, 1.249]*	0.119 [-0.026, 0.290]	-0.037 [-0.088, 0.015]	-1.233 [-1.389, -1.125]*
	60	-0.059 [-0.098, -0.019]*	1.161 [1.077, 1.262]*	0.133 [0.015, 0.259]*	-0.009 [-0.062, 0.039]	-1.344 [-1.419, -1.250]*
	80	-0.050 [-0.109, -0.008]*	1.288 [1.215, 1.376]*	0.137 [0.027, 0.234]*	0.011 [-0.042, 0.058]	-1.486 [-1.565, -1.388]*
Panel D. Immigrant origin: Asia						
p-values		**p = 0.000**	p = 1.000	p = 0.970	p = 0.290	p = 1.000
Quantiles	20	0.192 [0.122, 0.233]*	1.250 [1.017, 1.400]*	0.053 [-0.145, 0.186]	0.047 [-0.117, 0.302]	-1.157 [-1.313, -0.991]*
	40	0.112 [0.080, 0.163]*	1.286 [1.073, 1.388]*	0.032 [-0.119, 0.188]	0.054 [-0.075, 0.295]	-1.259 [-1.406, -1.077]*
	60	0.096 [0.065, 0.154]*	1.342 [1.163, 1.442]*	-0.018 [-0.113, 0.140]	0.071 [-0.048, 0.294]	-1.335 [-1.473, -1.183]*
	80	0.100 [0.050, 0.129]*	1.479 [1.249, 1.585]*	0.001 [-0.115, 0.109]	0.106 [-0.023, 0.392]	-1.486 [-1.632, -1.361]*
Panel E. Immigrant origin: Africa						
p-values		**p = 0.000**	p = 0.985	**p = 0.055**	**p = 0.005**	p = 0.940
Quantiles	20	0.278 [0.225, 0.322]*	1.343 [1.124, 1.566]*	0.011 [-0.258, 0.279]	0.098 [0.025, 0.184]*	-1.174 [-1.367, -1.003]*
	40	0.208 [0.171, 0.244]*	1.289 [1.150, 1.420]*	0.080 [-0.092, 0.227]	0.120 [0.032, 0.197]*	-1.282 [-1.388, -1.136]*
	60	0.197 [0.148, 0.240]*	1.357 [1.241, 1.455]*	0.081 [-0.052, 0.211]	0.132 [0.064, 0.221]*	-1.373 [-1.489, -1.262]*
	80	0.145 [0.099, 0.202]*	1.480 [1.347, 1.571]*	0.081 [-0.020, 0.191]	0.162 [0.086, 0.256]*	-1.578 [-1.662, -1.473]*
Panel F. Immigrant origin: Oceania						
p-values		p = 0.480	p = 1.000	p = 0.825	p = 0.735	p = 1.000
Quantiles	20	0.068 [-0.044, 0.163]	1.347 [0.735, 1.550]*	-0.209 [-0.473, 0.332]	-0.027 [-0.266, 0.188]	-1.043 [-1.270, -0.757]*
	40	0.028 [-0.036, 0.151]	1.182 [0.781, 1.389]*	-0.094 [-0.224, 0.354]	-0.090 [-0.215, 0.191]	-1.159 [-1.323, -0.892]*
	60	0.000 [-0.063, 0.134]	1.186 [0.784, 1.370]*	0.138 [-0.135, 0.348]	-0.054 [-0.201, 0.329]	-1.270 [-1.398, -1.013]*
	80	0.056 [0.002, 0.138]*	1.351 [0.533, 1.477]*	0.119 [-0.089, 0.361]	-0.021 [-0.198, 0.769]	-1.393 [-1.507, -1.128]*

Notes: p-values in bold denote significance at conventional levels (<10%).

Numbers in parenthesis denote the 95% confidence bands obtained from 200 bootstraps. (*) denotes significant QT.

Table A1. Summary Statistics

Occupation	Natives	Immigrants						
		Full Sample	Cohort				Naturalized Citizen	Non Citizen
			1	2	3	4		
Professionals								
Hourly Wage	25.21	26.48	29.15	26.55	25.47	25.52	27.57	25.62
Labor Supply (hrs/wk)	45.76	44.84	44.89	44.98	44.76	44.68	44.74	44.98
Age	42.73	40.77	50.05	41.74	38.01	35.17	43.82	37.68
Education								
less than HS	0.02	0.05	0.04	0.06	0.05	0.03	0.03	0.06
High School	0.35	0.22	0.30	0.25	0.20	0.14	0.24	0.19
College	0.63	0.73	0.66	0.69	0.75	0.83	0.72	0.75
Married	0.73	0.74	0.79	0.75	0.75	0.69	0.77	0.72
Race								
White	0.91	0.44	0.66	0.36	0.39	0.46	0.43	0.45
Black	0.06	0.07	0.05	0.09	0.06	0.04	0.07	0.06
Asian/Pacific	0.01	0.39	0.19	0.42	0.44	0.43	0.40	0.39
Other	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Region								
Northeast	0.20	0.26	0.29	0.24	0.28	0.25	0.25	0.25
Midwest	0.24	0.14	0.14	0.11	0.14	0.17	0.13	0.15
South	0.34	0.28	0.27	0.28	0.27	0.30	0.27	0.29
West	0.22	0.32	0.30	0.37	0.31	0.28	0.35	0.31
Urban	0.14	0.23	0.19	0.23	0.24	0.24	0.22	0.24
Number of Children	0.94	1.00	0.97	1.19	1.01	0.73	1.10	0.91
Observations	596,818	76,333	14,080	25,218	22,245	14,790	37,920	36,163
Services								
Hourly Wage	14.79	11.68	14.75	12.38	10.90	10.06	13.58	10.55
Labor Supply (hrs/wk)	41.94	41.81	40.98	41.85	42.12	41.69	41.91	41.90
Age	41.11	40.13	50.84	42.39	36.94	35.81	43.75	38.02
Education								
less than HS	0.14	0.52	0.43	0.53	0.55	0.51	0.39	0.60
High School	0.72	0.40	0.47	0.39	0.38	0.38	0.50	0.34
College	0.14	0.08	0.09	0.08	0.08	0.11	0.12	0.07
Married	0.58	0.68	0.71	0.71	0.67	0.62	0.74	0.65
Race								
White	0.76	0.38	0.56	0.33	0.35	0.41	0.37	0.38
Black	0.18	0.08	0.07	0.09	0.07	0.07	0.10	0.07
Asian/Pacific	0.01	0.17	0.09	0.21	0.18	0.14	0.27	0.13
Other	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01
Region								
Northeast	0.21	0.26	0.36	0.24	0.25	0.22	0.28	0.22
Midwest	0.23	0.10	0.09	0.09	0.10	0.12	0.10	0.10
South	0.35	0.26	0.24	0.24	0.25	0.33	0.24	0.27
West	0.21	0.38	0.31	0.43	0.40	0.33	0.38	0.41
Urban	0.17	0.32	0.31	0.32	0.33	0.31	0.31	0.32
Number of Children	0.79	1.16	1.08	1.48	1.17	0.69	1.31	1.10
Observations	187,784	44,151	5,665	13,757	16,520	8,209	14,141	27,777

Table A1. Summary Statistics (continued)

Occupation	Natives	Immigrants						
		Full Sample	Cohort				Naturalized Citizen	Non Citizen
			1	2	3	4		
Sales								
Hourly Wage	18.66	16.22	19.50	16.50	14.71	14.96	17.60	14.96
Labor Supply (hrs/wk)	44.40	43.37	43.68	43.44	43.28	43.04	43.60	43.21
Age	41.87	40.27	48.73	40.43	37.31	36.28	42.61	37.98
Education								
less than HS	0.06	0.20	0.14	0.20	0.25	0.21	0.14	0.27
High School	0.65	0.52	0.61	0.53	0.49	0.44	0.56	0.47
College	0.30	0.28	0.25	0.27	0.27	0.35	0.31	0.26
Married	0.66	0.70	0.74	0.70	0.69	0.66	0.74	0.66
Race								
White	0.86	0.41	0.66	0.35	0.35	0.41	0.41	0.41
Black	0.10	0.08	0.05	0.09	0.09	0.09	0.08	0.08
Asian/Pacific	0.01	0.27	0.12	0.31	0.30	0.27	0.33	0.23
Other	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.01
Region								
Northeast	0.19	0.26	0.28	0.23	0.27	0.27	0.25	0.25
Midwest	0.25	0.10	0.12	0.09	0.09	0.12	0.10	0.10
South	0.35	0.28	0.28	0.26	0.27	0.33	0.26	0.29
West	0.21	0.36	0.32	0.42	0.37	0.28	0.39	0.36
Urban	0.15	0.29	0.23	0.28	0.32	0.31	0.28	0.31
Number of Children	0.84	1.12	1.06	1.26	1.13	0.83	1.19	1.06
Observations	308,351	35,775	6,474	12,877	11,373	5,051	17,039	16,995
Operatives								
Hourly Wage	17.14	14.49	18.79	15.80	13.38	11.52	17.36	13.02
Labor Supply (hrs/wk)	43.44	42.28	42.34	42.38	42.31	41.98	42.66	42.11
Age	41.04	38.88	49.20	40.96	35.49	34.23	42.85	36.78
Education								
less than HS	0.18	0.54	0.37	0.55	0.57	0.57	0.39	0.62
High School	0.78	0.40	0.58	0.40	0.37	0.35	0.53	0.33
College	0.05	0.06	0.05	0.05	0.06	0.08	0.09	0.05
Married	0.68	0.72	0.76	0.75	0.70	0.64	0.78	0.69
Race								
White	0.86	0.46	0.64	0.41	0.43	0.51	0.47	0.46
Black	0.09	0.06	0.05	0.07	0.06	0.04	0.08	0.05
Asian/Pacific	0.01	0.09	0.06	0.12	0.08	0.05	0.16	0.05
Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Region								
Northeast	0.16	0.19	0.28	0.17	0.18	0.15	0.24	0.15
Midwest	0.26	0.09	0.12	0.08	0.08	0.09	0.10	0.08
South	0.38	0.36	0.27	0.34	0.36	0.48	0.29	0.40
West	0.20	0.36	0.33	0.41	0.38	0.28	0.37	0.37
Urban	0.10	0.28	0.21	0.27	0.30	0.29	0.26	0.28
Number of Children	0.96	1.31	1.22	1.63	1.30	0.79	1.46	1.24
Observations	352,031	49,469	6,791	16,232	17,780	8,666	15,708	31,867

Table A1. Summary Statistics (continued)

Occupation	Natives	Immigrants						
		Full Sample	Cohort				Naturalized Citizen	Non Citizen
			1	2	3	4		
Laborers								
Hourly Wage	16.00	13.32	16.75	14.05	12.23	11.23	15.39	12.06
Labor Supply (hrs/wk)	44.32	42.93	43.16	43.04	43.00	42.33	43.29	42.76
Age	42.00	40.34	50.33	42.01	36.79	36.15	43.70	38.16
Education								
less than HS	0.18	0.52	0.43	0.55	0.54	0.49	0.40	0.59
High School	0.76	0.41	0.52	0.39	0.39	0.41	0.51	0.35
College	0.06	0.07	0.05	0.06	0.07	0.11	0.09	0.06
Married	0.66	0.73	0.76	0.76	0.71	0.66	0.79	0.70
Race								
White	0.81	0.40	0.60	0.35	0.35	0.43	0.40	0.39
Black	0.14	0.06	0.05	0.06	0.06	0.06	0.07	0.05
Asian/Pacific	0.01	0.15	0.05	0.17	0.17	0.15	0.23	0.12
Other	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Region								
Northeast	0.17	0.23	0.32	0.20	0.22	0.20	0.23	0.18
Midwest	0.32	0.16	0.17	0.14	0.15	0.19	0.16	0.16
South	0.36	0.25	0.20	0.24	0.24	0.34	0.23	0.27
West	0.15	0.37	0.31	0.42	0.39	0.27	0.38	0.39
Urban	0.11	0.28	0.24	0.28	0.30	0.29	0.26	0.29
Number of Children	0.91	1.38	1.22	1.69	1.35	0.89	1.48	1.34
Observations	453,748	70,312	9,951	24,288	25,325	10,748	24,508	42,155