On discrimination and the status of immigrants in the Hong Kong labour market

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Abstract

This paper studies the extent of discrimination against mainland Chinese immigrants in the Hong Kong labour market and provides a quantitative assessment of the source of wage differentials between local born Hong Kong residents and Chinese immigrants. Using the 2001 Hong Kong Population Census data, we find strong evidence of a wage gap between locals and post-1980 Chinese immigrants. There is also clear evidence that discrimination accounts for a substantial proportion of the wage gap between the two groups. Furthermore, our findings suggest that while the overall wage gap may shrink with the immigrants' duration of residence in Hong Kong, the percentage of the wage gap due to discrimination does not change very much after the immediate post-immigration period.

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1. Introduction

Mainland Chinese immigrants in Hong Kong have long displayed a poor earnings performance relative to that of the local population. Historically, mainland China has been the major source of immigrants for Hong Kong. Prior to 1974, immigrants from China, whether legal or illegal, were basically allowed free ingress into Hong Kong, which had been a British colony since 1842. Early Chinese immigrants supplied Hong Kong with low-cost labour for its labour-intensive manufacturing industries in the 1950's and 1960's. Hong Kong's industrialization had in fact been accelerated by the inflow of refugees, entrepreneurs and capital fleeing the communist regime on the mainland. However, each wave of immigration also caused the population to swell, putting enormous pressure on the labour market and local infrastructure. By the mid-1950's, Hong Kong's population had swollen to 2.2 million from 1.8 million in 1947. It had continued to rise despite a low fertility rate, reaching 4 million in 1970. The Hong Kong government finally changed its liberal immigration policy in 1974 and adopted instead a "touch-base" policy – those who made it to Hong Kong without being arrested at the border could stay. The end of the Cultural Revolution in China in the late 1970's witnessed another wave of illegal immigration into Hong Kong. In 1979, some 102,826 illegal immigrants were reported to have touched base (Lam and Liu, 1998, p.12). Meanwhile, there had also been a surge in legal immigration into Hong Kong. The touch-base immigration policy was finally abolished in 1980, whereby no illegal immigrant from the mainland was to be allowed in Hong Kong and all illegal immigrants would be repatriated immediately regardless of where they were caught. The government also set a strict quota for legal immigration from China. It was initially set at 150 persons per day in 1980, revised downwards to 75 persons per day in 1983, then increased to 105 per day in 1993 and further increased to 150 per day in 1995. The main purpose of the quota was to facilitate family reunion. After the reversion of sovereignty of Hong Kong to China in 1997 this system has largely remained unchanged[1]. Interestingly, persons approved by the Chinese authorities within the agreed-upon quota would be admitted into Hong Kong as a matter of course, and the Hong Kong government has had no participation in the process. This policy has by its very nature led to a lot of abuse (Lam and Liu, 1998, pp. 30-32).

There has been a good deal of documentation on Hong Kong's immigration policy. There is also the popular belief that locally born Hong Kong residents at large earn substantially higher incomes than mainland immigrants. Not surprisingly, part of the wage differential is due to differences in objective characteristics such as education, language ability and work experience, while part remains even when these factors are controlled for. The quantitative dimensions of the various causes of unequal wages are not known at all. The claims of pervasive labour market discrimination against many minorities are well known. Studies on salary differentials in the U.S. by sex (Oaxaca, 1973, Gordon *et al.*, 1974, Hoffman, 1976, Oaxaca and Ransom, 1994) or by race (Blackaby *et al.*, 2005, , Carneiro *et al.*, 2005, Lang, 2005) have suggested, *inter alia*, that often wage differentials are not entirely due to differences in observable skill characteristics. Given these findings in the foreign context and the considerable evidence of a salary gap between local residents and Chinese immigrants in Hong Kong, it is clearly interesting to

[1] In recent years, besides allowing the entry of dependents, the Hong Kong government has also implemented new admission schemes for mainland professionals and mainland students who have graduated from a Hong Kong university to reside permanently in Hong Kong. The proportion of these entrants within the immigrants' overall population however is small.

ascertain how much of the wage differential is attributable to discrimination. Generally, labour economists have held the conventional belief that immigrants' earnings will catch up with the locals as they assimilate into the host country (Chiswick, 1978, Borjas, 1985). In the case of Hong Kong, however, Lam and Liu (2002) have found that immigrants from China have been unable to narrow the earnings gap with respect to the locals over time. Such earnings divergence, as argued by Lam and Liu (2002), is due to the deterioration in the relative education skill prices of the immigrants brought about by Hong Kong's economic restructuring.

The purpose of this paper is to investigate the role of labour market discrimination in generating the earnings gap between mainland immigrants and the local population in Hong Kong. The empirical basis of this paper is the 2001 Hong Kong Population Census. Our analysis follows Oaxaca's (1973) widely used empirical techniques by determining how much of the wage differential between the two groups is due to differences in the estimated coefficients of separately estimated wage regressions. Section 2 briefly reviews Oaxaca's (1973) approach. Section 3 discusses the features of the data source upon which this study is based. Section 4 reports the results and Section 5 concludes the paper.

2. Decomposition using the Oaxaca Method

Oaxaca's (1973) estimate of wage discrimination is obtained by decomposing total salary differentials into a portion explained by observable characteristics and an unexplained portion which approximates salary discrimination. Let $\ln(\bar{W}_L)$ and $\ln(\bar{W}_M)$ be the means of the (natural) logarithms of locals and immigrants wages respectively, and the standard log wage model be estimated separately for locals and immigrants. Estimation of the regressions by Ordinary Least Squares (OLS) yields

$$\ln(\bar{W}_L) = \bar{Z}_L' \hat{b}_L \tag{1}$$

and

$$\ln(\bar{W}_M) = \bar{Z}_M' \hat{b}_M \quad , \tag{2}$$

where $\bar{Z}_L'$ and $\bar{Z}_M'$ are vectors containing the mean values of the regressors for locals and immigrants respectively, and $\hat{b}_L$ and $\hat{b}_M$ are the corresponding least squares coefficient estimates. Write

$$G = \frac{\bar{W}_L - \bar{W}_M}{\bar{W}_M}, \tag{3}$$

as the wage differential between locals and immigrants, or in logarithmic terms,

$$\ln(G+1) = \ln(\bar{W}_L) - \ln(\bar{W}_M) = \bar{Z}_L' \hat{b}_L - \bar{Z}_M' \hat{b}_M . \tag{4}$$

Now, letting $\Delta\bar{Z}' = \bar{Z}_L' - \bar{Z}_M'$ and $\Delta\hat{b} = \hat{b}_L - \hat{b}_M$, we have

$$\ln(G+1) = \Delta\bar{Z}'\hat{b}_L + \bar{Z}_M'\Delta\hat{b} \tag{5}$$

or

$$\ln(G+1) = \Delta\bar{Z}'\hat{b}_M + \bar{Z}_L'\Delta\hat{b} \quad . \tag{6}$$

The first term of either (5) or (6) is the part of the log wage differential due to the different (mean) characteristics of locals and immigrants, and the second term is the part of the differential due to different coefficients or wage structures. If, in a non-discriminatory labour market, the prevailing wage structure of locals would apply to immigrants, and that of immigrants would apply to locals, then the second term in (5) or (6) can be interpreted as the part of the log wage differential because of discrimination. This is the essence of Oaxaca's (1973) approach. In (5), the coefficient estimates of the locals' wage structure are used to weight the differences in characteristics. Conversely, in (6), the differences are weighted by the immigrants' coefficient estimates. The question is, which of the two equations, (5) or (6), should be used in deriving the discrimination measure since in general, they will yield different answers. Oaxaca's (1973) suggestion[2] is to take a simple average of the discrimination estimates obtained from the two equations. Not surprisingly, in our sample, there are significant asymmetries in the number of observations between the locals' and immigrants' subgroups. To allow for such differences we take a weighted average of estimates produced by the two equations using the number of observations in the respective sample subgroups as the weightings.

3. Data Source

The empirical basis of this study is the 100% sample of the 2001 Population Census[3], which contains altogether 81 variables on the resident population and demographic characteristics. Among the immigrant population, the share of those from mainland China is by far the largest (72%). For our purposes, those observations corresponding to residents of economically inactive status, of no personal income or whose country of birth is neither Hong Kong nor mainland China are excluded from the analysis. After these exclusions, the sample finally consists of 2,859,172 observations, of which 1,990,996 are Hong Kong-born and 868,176 are immigrants from China. Four population subgroups are defined: *locals* (= residents born in Hong Kong), *very recent Chinese immigrants* (= mainland immigrants in Hong Kong for no more than 4 years), *moderately recent Chinese immigrants* (= mainland immigrants in Hong Kong for between 4 and no more than 8 years), *settled Chinese immigrants* (= mainland immigrants in Hong Kong for between 8 and no more than 20 years), *old Chinese immigrants* (= mainland immigrants in Hong Kong for 20 years or more). The first three groups of immigrants are all legal and migrated to Hong Kong after the curtailment of the "touch-base" policy in 1980. For purposes of analysis we refer to them collectively as *post-1980 immigrants*. On the other hand, a high percentage of the old immigrants are illegal immigrants. Our basic wage variable is the

[2] Oaxaca's (1973) paper in which this methodology was originated was concerned with sex differential in the labour market with roughly the same number of observations in the male and female subgroups.

[3] A preliminary version of the analysis was based on a 5% sample of the Census. Our results were subsequently updated using the full 100% sample with the permission of the Census and Statistics Department of the Hong Kong Government.

natural logarithm of total monthly income from all employment (LPPINCOM). The control variables are:

1. age (AGE),
2. square of age (SQAGE),
3. marital status (MARIT1 = 1 if married, 0 otherwise; MARIT2 = 1 if divorced or separated, 0 otherwise),
4. gender (GENDER = 1 for females, 0 for males),
5. highest level of educational attainment
   (EDUCNH1 = 1 for research postgraduate degrees, 0 otherwise;
   EDUCNH2 = 1 for taught postgraduate degrees, 0 otherwise;
   EDUCNH3 = 1 for bachelor degrees, 0 otherwise;
   EDUCNH4 = 1 for diploma, associateship or sub-degree, 0 otherwise;
   EDUCNH5 = 1 for form five to seven; 0 otherwise;
   EDUCNH6 = 1 for form one to four; 0 otherwise;
   EDUCNH7 = 1 for primary one to six; 0 otherwise)
6. occupation
   (OCCUP1 = 1 for government administrators, foreign diplomats, corporate managers and small business managers, 0 otherwise;
   OCCUP2 = 1 for professionals including life-science professionals, engineers, medical doctors and dentists, legal and accounting professionals, university lecturers and school teachers; business consultants, journalists, social workers, etc., 0 otherwise;
   OCCUP3 = 1 for associate professionals such as laboratory technicians, surveying technicians, interior designers, nurses, dental surgery assistants, legal assistants, book keepers, etc., 0 otherwise;
   OCCUP4 = 1 for office and customer services clerks and IT assistants, 0 otherwise;
   OCCUP5 = 1 for service workers and shop sales workers, 0 otherwise;
   OCCUP6 = 1 for agricultural, fishery, extraction and building trades, metal and machinery trades and other craft workers, 0 otherwise;
   OCCUP7 = 1 for plant and machine operators and assemblers excluding drivers and mobile machine operators, 0 otherwise;
   OCCUP8 = 1 for drivers and mobile machine operators, 0 otherwise;
7. industry
   (INDUST1 = 1 for agriculture and fisheries, 0 otherwise;
   INDUST2 = 1 for mining and quarrying, 0 otherwise;
   INDUST3 = 1 for manufacturing, 0 otherwise;
   INDUST4 = 1 for electricity, gas and water, 0 otherwise;
   INDUST5 = 1 for construction, 0 otherwise;
   INDUST6 = 1 for wholesale, retail and import/export trades, restaurants and hotels, transport, storage and communication, 0 otherwise;
   INDUST7 = 1 for finance and insurance services;
   INDUST8 = 1 for community, education, social and personal services;
8. language ability
   ENG = 1 if the person's usual language spoken at home or other languages spoken include English;

PUA = 1 if the person's usual language spoken at home or other languages spoken include Putonghua (Mandarin)

Means and standard deviations of these variables for each of the population subgroups are reported in Table 1.

As can easily be seen, summary statistics on gender, marital status, as well as education, occupation and language ability, show a large variance between the locals and Chinese immigrants. Indeed, in some aspects the differences between some of the Chinese immigrant subgroups may be larger than the differences between the locals and the group of Chinese immigrants as a whole. The age pattern of locals is quite similar to that of the post-1980 immigrants. On the other hand, the old immigrants are, on average, substantially older than the average Hong Kong-born residents. This may be explained by the predominance of male adults among the early immigrants before the curtailment of illegal immigration in the early 1980's. The latter also accounts for the hugely imbalanced gender ratio among the old immigrants, with a ratio of about 26 to 74 in favour of the males. The gender ratio of the locals, with a male to female ratio of about 57 to 43, is in fact quite balanced given the usual higher fraction of males in the working population. On the other hand, the gender balance of the very recent, moderately recent and settled immigrants is highly skewed in favour of the females. This is mainly the result of increased cross border marriages in last 15 - 20 years and the shift of the immigration policy to towards facilitating family reunions. Many of the legal immigrants are actually wives and dependents of Hong Kong residents. Not surprisingly, the percentage of married individuals among the recent immigrants is very high.

There are also noticeable differences in educational attainment and occupational concentrations among the various subgroups. Chinese immigrants are generally less educated, and more likely to concentrate in blue-collar occupations that require mostly general skills. But the old immigrants also comprise a significant number of industrialists and entrepreneurs. This can perhaps explain the relatively high proportion of old immigrants in managerial occupations. The post-1980 immigrants are all legal, and are better educated than the old immigrants. In terms of educational attainment, the pool of the post-1980 immigrants who have been educated up to secondary school level is by far the largest. This is partly responsible for the substantial number of the recent immigrants being employed in the services, shop-floor sales and laboring sectors of the retail, catering and construction industries. Only a small percentage of the Chinese immigrants speak English but a substantial number of them are fluent in Putonghua (Mandarin), the official language of China. On the whole, the post-1980 immigrants appear to have quite similar characteristics in terms of the distribution by age, educational attainment, industry and occupational concentrations.

4. Empirical Findings

Information in Table 1 allows the calculations of the wage differentials. Between locals and the very recent, moderately recent, settled and old immigrants, the wage differentials (log wage differentials) are, respectively, 1.0446 (0.7152), 0.8002 (0.5879), 0.5135 (0.4144) and 0.2847 (0.2505). In other words, the wage differential is substantially smaller for the immigrants who arrived before 1980 than for the post-1980 immigrants. This may be a result of wage

disadvantage dissipation as the immigrants move through the labour market or the different characteristics of the post-1980 and pre-1980 immigrants, or a combination of both. Granted that the post-1980 immigrants have similar characteristics, the differences in wage differentials among the three post-1980 subgroups of immigrants may be taken to imply the existence of a reduction in wage disadvantage as the immigrants assimilate into the host country.

Least squares regressions using LPPINCOM as the dependent variable were performed separately on each of the five sample subgroups. The set of explanatory variables initially comprised all control variables [4] listed in Table 1, but INDUST2 and PUA were found insignificant in all of the regressions and were subsequently deleted. The least squares estimates of coefficients together with the associated t ratios are contained in Table 2, which also reports the values of $\Delta\hat{b}$ for each subgroup. As the sample sizes of the individual groups vary substantially, the individual t tests for testing $\Delta b = 0$ are biased towards rejection. To circumvent this problem, we also performed a test of the joint significance of the Δb's using the Chow (1960) test.

Some remarks on the regression results are in order. First, the age coefficient estimates for all the immigrants' samples are numerically smaller than that of the locals' sample. Clearly, there is a critical age level, at which income earnings peak and start turning negative. For the younger age-groups, earnings generally shift up from one year to the next much faster for the locally born than for the Chinese immigrants. This may be due to the concentration of the immigrants in the lower-paying occupations and to their being somewhat less educated. All regressions indicate that males have higher earnings than females; unmarried workers tend to earn less than the married or divorced workers. The latter is consistent with the common empirical findings that married workers have higher earnings than their unmarried counterparts. Returns to education also seem to vary across the different sample subgroups; a postgraduate degree is generally most useful in increasing the earning powers of both the locals and immigrants. There is also a considerable degree of complementarity between English language skills and wage-levels. This is completely justified, as in Hong Kong, it is difficult to reap a return to human capital acquired through formal education unless one can speak English. On the other hand, no clear pattern of a linkage is observed between Putonghua ability and salary earnings. The Chow test indicates that the wage structure for the locals and various groups of immigrants are significantly different with respect to the common control variables.

Table 3 presents results on the calculations of the effects of discrimination and information on the sources of wage differentials. Averaging the discrimination estimates obtained using the locals' and immigrants' wage structures and the number of observations in the respective subgroups as the weightings, it is found that discrimination accounts for 47.37% of the logarithmic wage differential for the very recent immigrants, 39.96% for the moderately recent immigrants, 36.77% for the settled immigrants and 22.14% for the old immigrants. In other words, for the post-1980 subgroups of immigrants, except for the immediate post-migration

[4] The earnings equation in most other similar studies uses age – years of schoolings - 5 as a proxy for labour market experience. The Hong Kong Census, however, does not provide the exact data on years of schoolings. The difficulties this presents for estimation revolve around the errors in variable problem. To avoid this problem, we use actual data on educational attainment and occupations instead of labour-market experience as control variables.

period, there is a relatively small reduction in the percentage of log wage differential due to discrimination as the immigrants move through the labour market over time. Initially, there is a fairly substantial reduction in discrimination (from 47.37% to 39.96%) as the immigrant changes from being very recent to moderately recent in terms of migrancy status. The extent of discrimination reduces at about the same rate as the log wage differential decreases (from 0.7152 to 0.5879). However, as the immigrants assimilate into the domestic labour market, the effects of discrimination on log wage differential remain relatively static (from 39.96% to 36.77%) in spite of a further narrowing in the earnings gaps (from 0.5879 to 0.4144). Since the post-1980 immigrants are all legal and largely similar in terms of characteristics, one may argue that such reduction in log wage differential would be due to the increased returns due to local work experience and on-job training. However, the extent of wage discrimination as a percentage of log wage differential has more or less remained unchanged. In the case of the old immigrants, discrimination accounts for roughly 22% of the log wage differential. The much reduced magnitude of discrimination experienced by this group of immigrants is probably not entirely the result of their assimilation into the Hong Kong labour market, but also due to their being in somewhat different occupational and industrial concentrations from the post-1980 immigrants. Recall that the pre-1980 immigrants are very different in terms of socio-economic characteristics and the group contains both legal and illegal immigrants with industrialists and entrepreneurs in addition to unskilled labourers. Table 3 shows that differences in industrial and occupational classes, educational attainment and English proficiency significantly contribute to the log wage differential while marital status reduces the wage gap.

As a further consideration, we repeat our analysis by examining separately the male and female samples. All control variables, with the exception of GENDER, are retained in the regressions. The regression results are not shown here but are available on request from the author. Tables 4 and 5 present the corresponding results on log wage differentials and discrimination measures. For the male population, the log wage differentials between the locals and the very recent, moderately recent, settled and old immigrants are, respectively, 0.5050, 0.3606, 0.3173 and 0.2560. The corresponding figures for the female population are 0.7438, 0.6208, 0.4719 and 0.3522. Accordingly, the wage gaps of immigrants vis-à-vis locals are larger for females than for males; such a large wage differential in the female population is perhaps accounted for by the Hong Kong-born females being far better educated[5] than their immigrant counterparts and the concentration of the latter group in the lower-paying occupations. Many of the post-1980 immigrants are in fact wives of Hong Kong residents and typically are not well educated. Interestingly, for the very recent and moderately recent male immigrants, it is possible for differences in education to narrow their wage gap vis-à-vis the locally born males, whereas for the female immigrants, educational differences invariably widen their wage gap with respect to the locally born females. This is probably reflective of the fact that recent male immigrants have in general a higher level of educational attainment[6] than their female counterparts and the older immigrants. In all cases considered, differences in occupations, industries and language ability significantly widened the wage gaps. Looking at the magnitude of discrimination, it is clear that

[5] Our descriptive statistics indicate that 16.76% of locally born females have received higher education. The corresponding figures for the very recent, moderately recent, settled and old female immigrants are 6.63%, 7.29%, 8.58% and 8.65% respectively.

[6] Interestingly, among the very recent and moderately recent male immigrants, 23.84% and 17.39% of whom have received higher education. The corresponding percentage for the locally born male is only 16.75%.

the estimated effects of discrimination are more significant for males than for females. In the case of the very recent male immigrants, 68.04% of the wage differential is attributed to discrimination compared with a corresponding figure of 31.04% for the same female subgroup. For the moderately recent, settled and old immigrants, the respective discrimination estimates are 43.78%, 40.66% and 33.18% for males, and 29.34%, 26.81% and 9.84% for females. In other words, market discrimination is a more significant factor in producing a pay difference for male immigrants than for female immigrants, although the actual earnings gaps between the locals and immigrants are smaller for males than for females. This is perhaps not surprising as males traditionally exhibit a stronger attachment to the labour force than females and are likely to concentrate in occupations with better pay and status. The pattern of our results are in line with the widely accepted notion that discrimination against immigrants is more serious with higher paying jobs requiring more specialised skills than with lower-paying jobs requiring general skills (e.g., Greeley, 1976). Again, in both the male and female populations, discrimination reduces fastest in the first few years after immigration; then flattens as the immigrants move through the domestic labour market and change from being moderately recent to settled immigrants.

5. Conclusions

In this paper, we have presented results of what appears to be the first direct study of labour market discrimination against mainland Chinese immigrants in Hong Kong. Our results have provided unambiguous evidence that a large proportion of the wage differential is attributable to the effects of discrimination. One particularly noteworthy aspect of our findings is that for the post-1980 immigrants, while duration of residence in the host country appears to reduce the wage differential, pay discrimination as a percentage of wage differential has more or less remained static. The immigrants' earnings have risen primarily as a result of rewards for local labour market experience, adaptation to local labour market conditions or human capital accumulation during the immigrants' assimilation process, but except for the first few years after immigration, the existence of a disadvantage for the immigrants in the labour market does not seem to disappear over time. The extent of discrimination against male immigrants also appears to be more serious than that against female immigrants. Given that Hong Kong has a large and growing Chinese immigrant population, it is clear that further analysis of this problem is worthwhile to provide further insights into the Hong Kong labour market.

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Table 1: Summary statistics of variables

Variable	Locals		Very recent immigrants		Moderately recent immigrants		Settled immigrants		Old immigrants	
	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
LPPINCOM	9.4794	0.7336	8.7642	0.6743	8.8915	0.6498	9.0650	0.6047	9.2289	0.7028
AGE	35.5560	9.8489	36.0080	9.8476	36.9040	10.4350	37.3670	11.5670	47.5490	11.1070
SQAGE	1361.20	745.27	1393.60	755.93	1470.80	802.67	1530.10	917.77	2384.30	1065.00
GENDER	0.4250	0.4943	0.6769	0.4677	0.6826	0.4655	0.5153	0.4998	0.2645	0.4411
MARIT1	0.5444	0.4980	0.7834	0.4120	0.7641	0.4246	0.6695	0.4704	0.8375	0.3689
MARIT2	0.0272	0.1627	0.0170	0.1292	0.0307	0.1725	0.0257	0.1582	0.0293	0.1687
EDUCNH1	0.0018	0.0423	0.0048	0.0693	0.0044	0.0660	0.0018	0.0422	0.0010	0.0314
EDUCNH2	0.0277	0.1641	0.0255	0.1578	0.0197	0.1389	0.0111	0.1047	0.0089	0.0941
EDUCNH3	0.1380	0.3449	0.0915	0.2884	0.0810	0.2728	0.0900	0.2861	0.0587	0.2350
EDUCNH4	0.0842	0.2778	0.0309	0.1732	0.0378	0.1907	0.0525	0.2231	0.0347	0.1830
EDUCNH5	0.4256	0.4944	0.1785	0.3829	0.2355	0.4243	0.3237	0.4679	0.2323	0.4223
EDUCNH6	0.2015	0.4011	0.3715	0.4832	0.3426	0.4746	0.3218	0.4672	0.2952	0.4561
EDUCNH7	0.1087	0.3113	0.2602	0.4388	0.2386	0.4262	0.1689	0.3747	0.3190	0.4661
OCCUP1	0.1092	0.3118	0.0510	0.2201	0.0526	0.2233	0.0660	0.2482	0.1109	0.3140
OCCUP2	0.0705	0.2560	0.0273	0.1630	0.0219	0.1463	0.0276	0.1639	0.0231	0.1503
OCCUP3	0.2007	0.4005	0.0496	0.2171	0.0583	0.2343	0.1056	0.3073	0.0830	0.2759
OCCUP4	0.2098	0.4071	0.0836	0.2768	0.1227	0.3281	0.1577	0.3645	0.0901	0.2863
OCCUP5	0.1519	0.3589	0.2843	0.4511	0.2810	0.4495	0.2136	0.4099	0.1463	0.3534
OCCUP6	0.0873	0.2823	0.1126	0.3160	0.1126	0.3160	0.1352	0.3420	0.1764	0.3811
OCCUP7	0.0129	0.1126	0.0262	0.1599	0.0342	0.1817	0.0442	0.2055	0.0285	0.1663
OCCUP8	0.0617	0.2406	0.0100	0.0995	0.0173	0.1305	0.0269	0.1618	0.0779	0.2680
INDUST1	0.0026	0.0507	0.0210	0.1432	0.0067	0.0813	0.0022	0.0473	0.0046	0.0675
INDUST2	0.0001	0.0093	0.0002	0.0132	0.0003	0.0186	0.0002	0.0131	0.0002	0.0137
INDUST3	0.1206	0.3257	0.0964	0.2951	0.1230	0.3285	0.1718	0.3772	0.1564	0.3633
INDUST4	0.0065	0.0804	0.0015	0.0390	0.0009	0.0297	0.0014	0.0379	0.0047	0.0681
INDUST5	0.0586	0.2349	0.1066	0.3086	0.1092	0.3119	0.0974	0.2965	0.1508	0.3579
INDUST6	0.3851	0.4866	0.5330	0.4989	0.5314	0.4990	0.4493	0.4974	0.3884	0.4874
INDUST7	0.0716	0.2578	0.0247	0.1553	0.0224	0.1478	0.0323	0.1768	0.0265	0.1608
INDUST8	0.2339	0.4233	0.1758	0.3806	0.1577	0.3645	0.1660	0.3721	0.1676	0.3735
ENG	0.6386	0.4804	0.1418	0.3489	0.1532	0.3601	0.2358	0.4245	0.2235	0.4166
PUA	0.4026	0.4904	0.5476	0.4977	0.5783	0.4938	0.6026	0.4894	0.4317	0.4953

Table 2: Aggregate sample regression results

Variable	Locals	Very recent immigrants		Moderately recent immigrants		Settled immigrants		Old immigrants	
	$\hat{b}_L$	$\hat{b}_M$	$\Delta\hat{b}$	$\hat{b}_M$	$\Delta\hat{b}$	$\hat{b}_M$	$\Delta\hat{b}$	$\hat{b}_M$	$\Delta\hat{b}$
AGE	0.0827** (360.30)	0.0105** (6.38)	-0.0722** (-43.33)	0.0320** (23.15)	-0.0507** (-36.22)	0.0492** (66.15)	-0.0336** (-43.18)	0.0438** (96.48)	-0.0390** (-76.62)
SQAGE	-0.0009** (-311.00)	-0.0001** (-4.68)	0.0008** (39.90)	-0.0004** (-24.18)	0.0005** (28.97)	-0.0006** (-69.31)	0.0003** (32.47)	-0.0005** (-112.40)	0.0004** (71.82)
GENDER	-0.1823** (-226.00)	-0.1788** (-28.54)	0.0035 (0.55)	-0.2776** (-56.91)	-0.0954** (-19.29)	-0.2732** (-106.30)	-0.0910** (-33.78)	-0.2949** (-166.50)	-0.1127** (-57.88)
MARIT1	0.1425** (155.50)	0.0670** (8.51)	-0.0755** (-9.52)	0.0143** (2.28)	-0.1282** (-20.13)	0.0431** (12.23)	-0.0994** (-27.25)	0.1156** (48.08)	-0.0269** (-10.45)
MARIT2	0.0487** (21.07)	0.1700** (9.04)	0.1213** (6.40)	0.1692** (14.00)	0.1205** (9.79)	0.0343** (4.44)	-0.0144* (-1.79)	0.0587** (12.72)	0.0100* (1.94)
EDUCNH1	0.8840** (96.96)	0.4474** (12.10)	-0.4366** (-11.46)	0.9591** (30.24)	0.0751** (2.27)	0.6489** (23.63)	-0.2351** (-8.12)	0.5398** (24.11)	-0.3442** (-14.24)
EDUCNH2	0.9051** (218.20)	0.5670** (24.97)	-0.3381** (-14.65)	0.8545** (45.03)	-0.0506** (-2.60)	0.6123** (46.25)	-0.2928** (-21.10)	0.7247** (85.28)	-0.1804** (-19.08)
EDUCNH3	0.6845** (188.00)	0.1692** (10.01)	-0.5153** (-29.82)	0.2949** (22.58)	-0.3896** (-28.73)	0.3159** (38.37)	-0.3686** (-40.95)	0.4049** (83.68)	-0.2797** (-46.19)
EDUCNH4	0.5493** (149.70)	0.1353** (7.26)	-0.4140** (-21.77)	0.2357** (16.72)	-0.3136** (-21.52)	0.2300** (26.67)	-0.3193** (-34.06)	0.3311** (62.55)	-0.2182** (-33.88)
EDUCNH5	0.3462** (100.80)	0.1439** (10.48)	-0.2023** (-14.29)	0.1412** (13.36)	-0.2050** (-18.44)	0.1016** (14.28)	-0.2447** (-30.98)	0.1763** (47.29)	-0.1699** (-33.50)
EDUCNH6	0.1828** (53.94)	0.0747** (5.80)	-0.1081** (-8.12)	0.1155** (11.41)	-0.0673** (-6.30)	0.0593** (8.55)	-0.1235** (-16.00)	0.1125** (32.13)	-0.0703** (-14.43)
EDUCNH7	0.0324** (9.51)	0.0341** (2.70)	0.0017 (0.13)	0.0661** (6.68)	0.0337** (3.22)	-0.0056 (-0.79)	-0.0380** (-4.88)	0.0531** (15.72)	0.0207** (4.31)
OCCUP1	0.9616** (524.20)	1.0693** (74.86)	0.1077** (7.48)	1.0597** (97.53)	0.0981** (8.90)	0.9119** (162.40)	-0.0497** (-8.42)	0.9885** (345.40)	0.0269** (7.90)
OCCUP2	0.8667** (404.70)	1.0758** (58.67)	0.2090** (11.32)	1.0895** (66.24)	0.2228** (13.43)	0.8253** (98.99)	-0.0414** (-4.81)	0.9985** (179.70)	0.1317** (22.12)
OCCUP3	0.5786** (350.40)	0.5989** (44.64)	0.0203 (1.50)	0.4868** (49.33)	-0.0918** (-9.18)	0.5036** (100.20)	-0.0750** (-14.18)	0.6232** (191.20)	0.0445** (12.19)
OCCUP4	0.3424** (214.70)	0.1952** (19.57)	-0.1472** (-14.57)	0.2161** (28.99)	-0.1263** (-16.56)	0.2801** (63.94)	-0.0623** (-13.37)	0.3358** (111.50)	-0.0067* (-1.95)

OCCUP5	0.3239** (207.10)		0.2030** (30.34)	-0.1209** (-17.59)		0.2190** (38.16)	-0.1049** (-17.63)		0.2245** (57.97)	-0.0994** (-23.79)		0.2981** (119.90)	-0.0258** (-8.80)
OCCUP6	0.2973** (165.60)		0.1204** (12.66)	-0.1769** (-18.28)		0.1160** (15.18)	-0.1813** (-23.09)		0.1726** (38.50)	-0.1246** (-25.81)		0.2504** (102.30)	-0.0469** (-15.44)
OCCUP7	0.1075** (31.43)		0.1476** (9.34)	0.0401** (2.48)		0.0746** (6.34)	-0.0330** (-2.69)		0.1021** (16.06)	-0.0055 (-0.76)		0.1057** (23.14)	-0.0018 (-0.32)
OCCUP8	0.2942** (153.70)		0.4824** (20.58)	0.1883** (8.01)		0.2834** (19.01)	-0.0107 (-0.71)		0.3417** (45.32)	0.0475** (6.11)		0.2858** (93.51)	-0.0084** (-2.33)
INDUST1	-0.1902** (-26.22)		-0.6779** (-33.60)	-0.4877** (-22.75)		-0.6399** (-26.46)	-0.4497** (-17.81)		-0.1444** (-6.04)	0.0458* (1.83)		-0.1633** (-15.51)	0.0269** (2.11)
INDUST3	-0.0708** (-46.96)		-0.1357** (-9.59)	-0.0649** (-4.56)		-0.0138 (-1.32)	0.0570** (5.39)		-0.0090* (-1.75)	0.0618** (11.56)		0.0059* (1.95)	0.0767** (22.73)
INDUST 4	0.1829** (40.30)		-0.1165** (-1.97)	-0.2994** (-5.04)		0.1889** (3.04)	0.0060 (0.10)		0.1702** (5.76)	-0.0127 (-0.42)		0.2816** (27.23)	0.0987** (8.74)
INDUST5	0.0183** (9.45)		0.0821** (5.71)	0.0638** (4.40)		0.0704** (6.57)	0.0522** (4.78)		0.0687** (11.68)	0.0504** (8.14)		0.0545** (17.35)	0.0362** (9.81)
INDUST6	-0.0697** (-55.86)		-0.0963** (-7.82)	-0.0266** (-2.15)		-0.0326** (-3.54)	0.0371** (3.99)		-0.0142** (-3.09)	0.0555** (11.65)		-0.0554** (-20.80)	0.0143** (4.85)
INDUST7	0.0293** (17.23)		0.2230** (11.92)	0.1938** (10.32)		0.1967** (13.06)	0.1674** (11.05)		0.0899** (12.03)	0.0607** (7.91)		0.1179** (24.10)	0.0887** (17.12)
INDUST8	0.0950** (73.55)		-0.1022** (-7.99)	-0.1971** (-15.33)		-0.0166* (-1.71)	-0.1115** (-11.40)		0.0486** (9.89)	-0.0464** (-9.14)		0.1058** (37.32)	0.0109** (3.49)
ENG	0.1104** (117.70)		0.2243** (25.25)	0.1138** (12.74)		0.1197** (18.84)	0.0092 (1.43)		0.0963** (28.98)	-0.0141** (-4.09)		0.2166** (104.70)	0.1062** (46.72)
INTERCEPT	6.9130** (1311.00)		8.3248** (251.30)	1.4118** (42.09)		8.1260** (301.00)	1.2130** (44.10)		7.8767** (509.50)	0.9637** (59.00)		7.8465** (723.80)	0.9336** (77.44)
No. of Observations	1990996		45998			63396			174736			584046	
Standard error of estimate	0.5014		0.4834			0.4602			0.4646			0.5255	
R^2	0.5328		0.4864			0.4986			0.4098			0.4410	
Adjusted R^2	0.5327		0.4861			0.4984			0.4097			0.4410	
F (H_0: all ß's except intercept =0)	81074.98**		1554.69**			2250.50**			4332.61**			16457.32**	
(p-value)	(0.00)		(0.00)			(0.00)			(0.00)			(0.00)	
Chow (H_0: ? ß=0)				956.31**			854.11**			1101.44**			919.08**
(p-value)				(0.00)			(0.00)			(0.00)			(0.00)

Notes: i) Figures in parentheses, unless stated otherwise, are t-ratios of the respective coefficient estimates;
ii) "*" and "**" indicate significance at the 10% and 5% levels respectively

Table 3: Aggregate sample decomposition of log wage differentials

Item	Locals *vs.* very recent immigrants		Locals *vs.* moderately recent immigrants		Locals *vs.* settled immigrants	
	Local regression weights	Immigrant regression weights	Local regression weights	Immigrant regression weights	Local regression weights	Immigrant regression weights
Log wage differential	0.7152 (100%)	0.7152 (100%)	0.5879 (100%)	0.5879 (100%)	0.4144 (100%)	0.4144 (100%)
Adjustment for coefficient differences in						
Age	-0.0079 (-1.1065%)	-0.0017 (-0.2373%)	-0.0115 (-1.9639%)	0.0020 (0.3385%)	0.0042 (1.0199%)	0.0141 (3.4082%)
Gender	0.0459 (6.4204%)	0.0450 (6.2986%)	0.0470 (7.9868%)	0.0715 (12.1665%)	0.0164 (3.9697%)	0.0247 (5.9509%)
Marital Status	-0.0336 (-4.6918%)	-0.0143 (-1.9970%)	-0.0315 (-5.3548%)	-0.0037 (-0.6364%)	-0.0178 (-4.2862%)	-0.0053 (-1.2906%)
Education	0.1099 (15.3669%)	0.0326 (4.5612%)	0.1053 (17.9096%)	0.0341 (5.7962%)	0.0767 (18.5000%)	0.0362 (8.7336%)
Occupation	0.1873 (26.1947%)	0.2168 (30.3116%)	0.1701 (28.9368%)	0.1808 (30.7472%)	0.1241 (29.9605%)	0.1238 (29.8738%)
Industry	0.0190 (2.6594%)	0.0234 (3.2751%)	0.0199 (3.3893%)	0.0133 (2.2696%)	0.0158 (3.8251%)	0.0064 (1.5335%)
Language ability	0.0549 (7.6707%)	0.1114 (15.5745%)	0.0536 (9.1189%)	0.0581 (9.8786%)	0.0445 (10.7349%)	0.0388 (9.3611%)
No of observations	1990996	45998	1990996	63396	1990996	174736
Log wage differential due to discrimination	0.3396 (47.4862%)	0.3019 (42.2133%)	0.2350 (39.9773%)	0.2319 (39.4398%)	0.1503 (36.2760%)	0.1758 (42.4296%)
	weighted average: 47.3671%		weighted average: 39.9607%		weighted average: 36.7725%	

Item	Locals *vs.* old immigrants	
	Local regression weights	Immigrant regression weights
Log wage differential	0.2505 (100%)	0.2505 (100%)
Adjustment for coefficient differences in		
Age	-0.0588 (-23.4868%)	0.0063 (2.5246%)
Gender	-0.0293 (-11.6774%)	-0.0473 (-18.8965%)
Marital Status	-0.0419 (-16.7142%)	-0.0340 (-13.5774%)
Education	0.1422 (56.7460%)	0.0749 (29.9030%)
Occupation	0.1173 (46.8378%)	0.1322 (52.7581%)
Industry	0.0094 (3.7575%)	0.0081 (3.2447%)
Language ability	0.0458 (18.3005%)	0.0899 (35.8907%)
No of observations	1990996	584046
Log wage differential due to discrimination	0.0657 (26.2367%)	0.0204 (8.1527%)
	weighted average: 22.1351%	

Table 4: Male sample decomposition of log wage differentials

Item	Locals *vs.* very recent immigrants		Locals *vs.* moderately recent immigrants		Locals *vs.* settled immigrants	
	Local regression weights	Immigrant regression weights	Local regression weights	Immigrant regression weights	Local regression weights	Immigrant regression weights
Log wage differential	0.5050 (100%)	0.5050 (100%)	0.3606 (100%)	0.3606 (100%)	0.3173 (100%)	0.3173 (100%)
Adjustment for coefficient differences in						
Age	0.0606 (11.9982%)	0.0359 (7.1051%)	0.0731 (20.2741%)	0.0343 (9.5085%)	0.0409 (12.8974%)	0.0292 (9.1939%)
Marital Status	-0.0160 (-3.1768%)	-0.0053 (-1.0417%)	-0.0129 (-3.5703%)	-0.0030 (-0.8370%)	-0.0138 (-4.3517%)	-0.0063 (-1.9785%)
Education	-0.0153 (-3.0299%)	-0.0158 (-3.1203%)	0.0140 (3.8808%)	-0.0126 (-3.4963%)	0.0369 (11.6180%)	0.0165 (5.2141%)
Occupation	0.0858 (16.9887%)	0.1018 (20.1648%)	0.0832 (23.0772%)	0.0975 (27.0511%)	0.0816 (25.7215%)	0.0869 (27.3856%)
Industry	0.0151 (2.9971%)	0.0384 (7.5943%)	0.0127 (3.5287%)	0.0157 (4.3513%)	0.0144 (4.5483%)	0.0038 (1.2049%)
Language ability	0.0303 (5.9947%)	0.0783 (15.5062%)	0.0332 (9.2005%)	0.0363 (10.0735%)	0.0307 (9.6786%)	0.0252 (7.9279%)
No of observations	1144834	14860	1144834	20120	1144834	84704
Log wage differential due to discrimination	0.3446 (68.2279%)	0.2717 (53.7916%)	0.1572 (43.6091%)	0.1924 (53.3489%)	0.1266 (39.8879%)	0.1620 (51.0521%)
	weighted average: 68.0429%		weighted average: 43.7773%		weighted average: 40.6570%	

Item	Locals vs. old immigrants	
	Local regression weights	Immigrant regression weights
Log wage differential	0.2560 (100%)	0.2560 (100%)
Adjustment for coefficient differences in		
Age	-0.0504 (-19.6917%)	0.0239 (9.3540%)
Marital Status	-0.0647 (-25.2650%)	-0.0659 (-25.7484%)
Education	0.1138 (44.4642%)	0.0641 (25.0436%)
Occupation	0.1055 (41.1906%)	0.1232 (48.1328%)
Industry	0.0101 (3.9298%)	0.0058 (2.2574%)
Language ability	0.0340 (13.2785%)	0.0807 (31.5225%)
No of observations	1144834	429569
Log wage differential due to discrimination	0.1078 (42.0936%)	0.0242 (9.4381%)
	Weighted average: 33.1837%	

Table 5: Female sample decomposition of log wage differentials

Item	Locals *vs.* very recent immigrants		Locals *vs.* moderately recent immigrants		Locals *vs.* settled immigrants	
	Local regression weights	Immigrant regression weights	Local regression weights	Immigrant regression weights	Local regression weights	Immigrant regression weights
Log wage differential	0.7438 (100%)	0.7438 (100%)	0.6208 (100%)	0.6208 (100%)	0.4719 (100%)	0.4719 (100%)
Adjustment for coefficient differences in						
Age	-0.0523 (-7.0348%)	-0.0006 (-0.0741%)	-0.0612 (-9.8605%)	0.0017 (0.2682%)	-0.0301 (-6.3814%)	0.0059 (1.2439%)
Marital Status	-0.0177 (-2.3750%)	-0.0124 (-1.6688%)	-0.0173 (-2.7828%)	0.0074 (1.1860%)	-0.0104 (-2.1944%)	0.0044 (0.9356%)
Education	0.2285 (30.7264%)	0.0605 (8.1323%)	0.1969 (31.7122%)	0.0632 (10.1739%)	0.1429 (30.2721%)	0.0623 (13.1998%)
Occupation	0.2553 (34.3247%)	0.2610 (35.0877%)	0.2257 (36.3463%)	0.2062 (33.2132%)	0.1711 (36.2483%)	0.1562 (33.1034%)
Industry	0.0224 (3.0162%)	0.0124 (1.6683%)	0.0242 (3.9040%)	0.0115 (1.8523%)	0.0175 (3.7013%)	0.0109 (2.3164%)
Language ability	0.0789 (10.6079%)	0.1293 (17.3908%)	0.0745 (12.0061%)	0.0680 (10.9462%)	0.0604 (12.8063%)	0.0496 (10.5201%)
No of observations	846162	31138	846162	43276	846162	90032
Log wage differential due to discrimination	0.2286 (30.7347%)	0.2935 (39.4638%)	0.1780 (28.6747%)	0.2630 (42.3602%)	0.1206 (25.5478%)	0.1825 (38.6808%)
	weighted average: 31.0445%		weighted average: 29.3406%		weighted average: 26.8108%	

Item	Locals *vs*. old immigrants	
	Local regression weights	Immigrant regression weights
Log wage differential	0.3522 (100%)	0.3522 (100%)
Adjustment for coefficient differences in		
Age	-0.0557 (-15.8218%)	-0.0309 (-8.7720%)
Marital Status	-0.0123 (-3.5002%)	0.0024 (0.6828%)
Education	0.1725 (48.9871%)	0.1067 (30.2875%)
Occupation	0.1507 (42.8019%)	0.1581 (44.8820%)
Industry	0.0065 (1.8540%)	0.0089 (2.5305%)
Language ability	0.0523 (14.8622%)	0.0912 (25.8906%)
No of observations	846162	154477
Log wage differential due to discrimination	0.0381 (10.8169%)	0.0158 (4.4985%)
	weighted average: 9.8415%	