Decomposing differences in employment outcomes: How important is the role of school achievement?

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Abstract

New Caledonia, the largest French Territory in the South Pacific, enjoys a high level of standard of living but is marked by huge social inequalities as a result of geographic and ethnic origin, involving 'closing the gap' policies implemented in the late eighties. This study highlights the differences in school achievement and labour market outcomes between Kanak (indigenous people) and non-Kanak. Using data from the four most recent censuses (1989, 1996, 2004 and 2009), we show that though dramatic progress has been made in the area of school achievement, employment rates still differ widely across ethnic groups. We decompose the gap in labour market attachment between Kanak and non-Kanak using the Blinder – Oaxaca decomposition for non-linear regression models. The decomposition shows that the part of the gap that can be attributed to differences in observed characteristics between Kanak and non-Kanak significantly differs for women and men.

JEL Classification: I24, J15, C15, C25, O56.

1. Introduction

New Caledonia is the largest French Territory in the South Pacific and one of the largest economies in the Pacific Island region. In contrast with other French overseas territories and other islands in Oceania, New Caledonia has high standards of living and human development (gross domestic product per capita comparable to New Zealand). New Caledonia has largely gained autonomy from France and has been engaged in the emancipation process since the *Accord de Noumea* in November 1998. This agreement, signed by the 'independentists', the 'non-independentists' and the French government, designs the institutional context of New Caledonia. Since 1998, the emancipation process has led to numerous transfers of responsibility from the French state to New Caledonia.

Since 2000, significant economic and social progress has occurred, particularly as a result of investments in nickel mining, but huge disparities in income distribution remain. The standard of living increased at an annual rate of 1.3 per cent from 1991 to 2008, accompanied by deepening inequalities[1]. In 2008, the standard of living of the richest 10 per cent was 7.9 times higher than the standard of living of the poorest 10 per cent (Hadj, 2010). This huge disparity in wealth distribution has been exacerbated by the high cost of living due to New Caledonia's small market size and heavy market protection (favouring local goods). The roots of these social inequalities are geographic and ethnic.

Similar to its neighbours, which have experienced comparable colonial settlements (Australia and New Zealand in particular), New Caledonia is characterized by cultural heterogeneity;

[1] The standard of living reflects the household's total income divided by the number of consumption units. Consumption units derive from the OECD equivalence, which assigns a weight to each member of the household. The standard of living takes into account redistribution and economies of scale when several people live in the same dwelling. It also takes into account the size and composition of households.

Kanak (indigenous people) represent approximately 40 per cent of the population, compared with 17 per cent of other Pacific populations, 34 per cent of Europeans and 4.5 per cent of Asians. However, Kanak do not enjoy the same socio-economic endowments as non-Kanak. In 2009, only 3 per cent of Kanak people graduated from higher education compared with 23 per cent of non-Kanak, and the unemployment rate was 26 per cent for Kanak compared with 7 per cent for non-Kanak.

In response to these inequalities, the government introduced policies intended to reduce the gap between ethnic groups in the early 1990s. Indeed, substantial social and economic policies favoring Kanak have accompanied the *Accord de Noumea* and, before that, the *Accords de Matignon* (signed in 1988). Efforts have been made in all economic and social fields to allow the two provinces of North and Loyalty Islands, mainly Kanak, to 'catch up' with the far wealthier and mostly non-Kanak Southern Province[2]. In addition to ethical reasons, a more equitable distribution of resources, opportunities and power among ethnic groups is essential to ensure economic and social development of New Caledonia because high inequality threatens a country's political stability and, as a consequence, reduces investment (Alesina and Perotti, 1996). This is particularly relevant for New Caledonia; the country must now find its own way, through the emancipation process, in ensuring a 'common destiny' for the whole population (the *Accord de Noumea* refers to *destin commun*).

Despite its importance in political discourse, the disparity issue has never been accompanied by precise measures of the current situation. With regards to education and employment, which have desirable distributional effects, enhance social cohesion and improve growth, the situation remained almost unknown until recently (Gorohouna, 2011; and Hadj *et al.*, 2012). However,

[2] The median income in the South is twice as high as in the North Province and 2.5 times higher than in the Loyalty Islands Province.

policy debates on reducing inequalities between indigenous and non-indigenous Caledonians require specific analysis and thus would benefit from a better understanding of the factors that affect education outcomes. The link between educational attainment and employment is well established in the literature, as skills and competencies are expected to be rewarded in the labour market, especially through higher employment opportunities. The role of education in explaining employment in New Caledonia has further increased in importance in recent years and the lack of skills is the main factor of exposure to unemployment (ISEE, 2011): two out of five unemployed have no diploma.

The goals of this study are to provide further insights into the extent to which school achievement and labour market participation differ between Kanak and non-Kanak and to explain the evolution process during the past 20 years. Specifically, this study aims to answer the following questions: How do indigenous people behave in the labour market compared with non-indigenous people (e.g., Do they have the same return to education)? What are the differences in labour force status? Do any observed characteristics help explain the discrepancies?

To answer these questions, we use the data from the four most recent censuses (1989, 1996, 2004 and 2009), which contain ethnic identification; the data are original and novel in the French republic's context in which ethnic statistics are limited. The analysis shows huge inequalities in educational qualifications and employment, particularly at the highest levels of each. The gap in employment status between Kanak and non-Kanak can be explained by differences in observed characteristics of the two populations and these characteristics' effects on labour market outcomes. Using the decomposition of Blinder (1973) and Oaxaca (1973), which Sinning *et al.* (2008) generalise to non-linear models, we find that the unexplained component of the gap in employment status varies from 10 to 44 per cent. We discuss the importance of the various

observable characteristics in explaining employment in terms of public policy, with a special focus on the feasibility of public interventions to close the gap in educational achievement.

The remainder of this article proceeds as follows: Section 2 presents a literature review on the ethnic inequalities in the labour market and provides background on Caledonians' education and employment. Section 3 describes the data and method. Section 4 reports the regression results on labour force status and the decomposition of the gap in labour market attachment between the two populations. Section 5 summarises and concludes.

2. Review of literature and context

2.1 Literature review

Extensive international literature (theoretical and applied) in the field of ethnic inequality shows that ethnic groups around the world reach different levels of educational achievement and attainment and differ in labour market participation[3]. Such research has been especially prolific in the United States, in which the statistics provide clear and easily interpreted figures on the degree of segregation of black people in residential, school and labour markets (Borjas, 1995; and Fryer, 2010). However, as Fryer *et al.* (2011) note, less attention has been paid to differentials in employment rates than to wage differences, though the former are larger (Western and Pettit, 2005). In 2008, the unemployment rate in the United States for black men aged 25–54 years was 9.1 per cent versus 4.5 per cent for white men. Ritter and Taylor (2011) find that the control variables explain almost half the variation in the probability of employment, the remainder being due to differences in labour market participation (e.g., differences in rates,

[3] In one of the few international comparisons of ethnic inequality, Darity and Nembhard (2000) find that economic disparity is correlated with race and ethnicity and appears remarkably similar across a wide range of nations.

longer period of unemployment). Fryer *et al.* (2011) show that differential treatment accounts for at least one-third of the black–white wage gap. This is consistent with a search-matching model, in which employers statistically discriminate on the basis of race when hiring unemployed workers but learn about their marginal product over time. Understanding the causes of ethnic inequality is still the subject of intense debate in the United States (Fryer, 2010). Wilson (2010) shows that the interaction between poverty and racial discrimination explains most of the observed disparities. However, identifying the proportion of inequality attributable to these explanations is extremely difficult. Even experimental evidence is not clear about what is really being measured (Heckman, 1998). The lack of success in identifying the causes of inequality often reduces this debate to the recitation of residuals, such as 'discrimination' and 'culture'.

Studies of ethnic inequality are also numerous in Australia and New Zealand, paying special attention to indigenous peoples who still suffer discrimination (Paradies and Cunningham, 2009). Consequently, many studies have attempted to highlight the changing circumstances of indigenous Australians measured by socio-economic characteristics and access to employment (see Altman *et al.,* 2009; Biddle, 2006 and Biddle *et al.,* 2009). In 2008, the unemployment rate for Australian Aboriginal men was 20 per cent compared with 3 per cent for other Australians, and the average income was 30 per cent lower than that for non-Aboriginal men (Gray and Hunter, 2011). On average, Aboriginal people are less active in the labour market; they show significant lower employment rates and levels of education. Despite the 'closing-the-gap' policies implemented by successive Australian governments, Altman *et al.* (2009) show that reducing ethnic inequalities is difficult. In a recent study, Kalb *et al.* (2012) decompose the gap in labour market attachment between indigenous and non-indigenous Australians in non-remote areas. They show that at least two-thirds of the gap can be attributed to differences in the observed characteristics between indigenous and non-indigenous Australian women. For men,

the differences in observed characteristics account for 36 to 47 per cent of the gap. A detailed decomposition shows that lower education, worse health and larger families (particularly for women) substantially explain the lower labour market attachment of indigenous Australians.

In New Zealand, numerous studies have tried to assess the impact of 'closing-the-gap' policies (Johnston *et al.*, 2005; and TePuni Kokiri, 2000). Lock and Gibson (2008) use PISA[4] 2000 reading literacy test scores to identify educational differences between Maori and Pakeha students using regression analysis. They show that, on average, Maori students perform less well in the education system than their Pakeha counterparts even when they take the effects of other variables, such as socio-economic status and school factors, into account. This is in contrast with previous New Zealand studies in which the effect of ethnicity disappears when other variables are introduced to control for socio-economic background (Maani and Kalb, 2007). Regarding differences in labour market outcomes between Maori and Pakeha, Maani (2004) shows that Maori have lower incomes than New Zealand Europeans and experience less success in the labour market. Her empirical analysis suggests that these differences reflect the lower accumulation of favourable labour market characteristics of Maori. Furthermore, she shows that the Maori income disadvantage is partly associated with less employment and fewer hours of work. An important finding is that though significant differences persist in the educational attainment of Maori and non-Maori groups[5], when educational attainment is controlled for, much of the income gap disappears. This study establishes the significance of educational attainment as a strategy for reducing disparity.

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[4] Programme for International Student Assessment.

[5] An important feature of the study is the distinction between full- and part-Maori.

This abundant international literature excludes France and the French territories, for which studies on ethnic inequality are scarce, mainly because ethnic identification is not a component of French statistics (see Box 1). Studies on France, which apply different methods to bypass restrictions and identify people's origins, show that discrimination based on ethnicity is part of the everyday experiences of immigrants and French citizens with immigrant origins (see Felouzis, 2003, for ethnic segregation in high school). Aeberhardt *et al.* (2010) and Couppié *et al.* (2010) show that wage inequality between the reference group and the potentially discriminated group is due to differences in observable characteristics. However, differences in these characteristics explain only 25 per cent of the gap in employment rates between the two groups. These results suggest that in France, entry into the labour force (i.e., the ability to obtain employment) marks the point at which immigrants and French citizens with immigrant origins face the greatest discrimination (Rathelot, 2010).

Box 1. Ethnic statistics: the French specificity

Ethnic statistics do not run counter to the principle of equality in most Anglo-Saxon countries and are considered necessary for the implementation of public policies to reduce the gap between ethnic groups. In France, the republican conception of equality is the main obstacle to the use of ethnic statistics. For COMEDD (2010), this principle of equality denies the complexity of the situation.

David (2011) explains that though the data protection act of 1978 contains a general prohibition on the statistical processing of sensitive data, it allows exemptions. This is the case for New Caledonia, in which eight of the nine censuses held since World War II (2004 is the exception) identify ethnic groups according to the *Accords de Matignon* (1988) and *Accord de Noumea* (1998), which highlight the need for policies aimed to reduce gaps in social inequalities.

The situation in New Caledonia differs from that in France and most countries in that discriminated groups are not immigrant minorities. That is, Kanak are the majority compared with other ethnic groups in the country (40 per cent of the population of New Caledonia in 2009). New Caledonia also differs from France in that ethnic groups are identified in official statistics. Despite this, the country lacks economic analyses on ethnic inequality. Gorohouna (2011) was the first to analyze ethnic disparity in socio-economic characteristics in New Caledonia, using a sample of young people from the Northern Province. He examines the effect of socio-economic factors on school achievement and finds that when family economic factors are controlled for, the school achievement gap between Kanak and non Kanak still remains. However, simulations show that the gap is considerably reduced if Kanak had the same family socioeconomic factors as non-Kanak. He also analyses wage inequalities and shows that for young people (aged 18–30 years), the difference in wages between Kanak and non-Kanak is 33 per cent. The only other work that has assessed educational differences between Kanak and non-Kanak used census data sets (Hadj *et al.*, 2012). This work finds a significant school achievement difference between students from the two ethnic groups.

2.2 Indigenous Caledonians' education and labour market outcomes

This sub-section provides some preliminary information on the evolution of education and occupational status for Kanak and non-Kanak[6].

[6] In the 2009 census, the 245,580 inhabitants of New Caledonia reported belonging to the following ethnic groups: 40.3% to the Kanak ethnic group, 29.2% to the European ethnic group, and 8.7% to the Wallisian and Futunan ethnic group. In addition, 8.3% of the population claimed to belong to several ethnic groups or to be mixed. Finally, 5% said they belonged to the group "Caledonian", refusing to choose among ethnic groups proposed. The remaining 1.2% did not report.

1989–2009: Improvement in school achievement

Since the early 1990s, educational achievement has increased dramatically in New Caledonia. However, Kanak continue to be less well educated than non-Kanak. As Figure 1 shows, non-Kanak score higher in terms of university (degree) education level, and the increase in educational attainment also differs between populations. The shift in the population distribution diminishes from 1989 to 2009 but is much stronger overall for non-Kanak; the level for higher education grades increases for non-Kanak and increases for Kanak in terms of vocational and below baccalaureate levels. In 2009, 40 per cent of Kanak were under-qualified (20 per cent for non-Kanak); only 3 per cent had graduated from higher education (23 per cent for non-Kanak). As Hadj *et al.* (2012) report, these inequalities, measured by the highest level of qualification, begin in primary school and increase with educational level (relatively small differences between ethnic groups for lower levels of qualification, but major differences for higher education).

Figure 1 about here

Unequal participation in the labour market

In relation to the level of qualification, inactivity and unemployment are significantly higher for Kanaks. Freyss (1995) argues that the current marginalization of Kanaks in the labour market is mainly due to New Caledonia's colonial history. Only in 1946 were Kanak allowed to enter the labour market, and integration into the market was slow. In 1956, the number of Kanak identified as active was still small. Between 1956 and 2009, their numbers had increased quite markedly, which suggests that integration into the economic sphere significantly progressed during that time. Examination of labour force participation rates, however, modifies this view (Figure 2): the differences in participation rates between ethnic groups remains constant. Furthermore, the gap between ethnic groups is exacerbated if we consider the unemployment rate (Figure 3). That is, unemployment and the gap in unemployment rates between Kanak and

non-Kanak have changed little since the end of the 1990s. Although the level of educational qualification has increased, participation in the labour market has remained stable.

Figure 2 about here

Figure 3 about here

The public sector is an important employer. The share of Kanaks in the public sector was 25 per cent in 1956, and this ratio has remained remarkably stable for 53 years. With the decline in agriculture, the share of self-employment among Kanaks fell sharply between 1989 and 2009.

Caledonians are unevenly distributed across the six occupational categories, based on ethnicity (Figure 4). Kanaks' employment structure remains deeply marked by their over-representation in lower job categories; manager positions are more frequent among non-Kanaks (13 per cent) than among Kanaks (3 per cent). Furthermore, the distribution within occupational categories has changed little during the last 15 years. Among Kanaks, the share of employees and workers has increased, while it has decreased among non-Kanaks in favor of middle and upper categories.

Figure 4 about here

Opposite trends in educational achievement and job access

We assess the respective shares of overall improvement in educational achievement and the labour market situation and examine the link between ethnicity and professional status. How has the distribution of Kanak among different education levels and job categories progressed? Is the observed trend of higher numbers of Kanak with higher education due to an increase in education levels across the whole population or to a reduction in the inequalities between ethnic groups?

We calculate odds ratios to illustrate the difference in chance for indigenous people to be employed compared with non-indigenous people. According to the odds ratios, as inequalities in access to degrees decreased from 1989 to 2009, inequalities in access to jobs generally increased, except for access to the most senior positions (see Table 1).

Table 1 about here

However, overall inequality is nuanced if we examine types of degrees (including baccalaureates). Odds ratios indicate that the gap between Kanak and non-Kanak increases with degree level: variation of 1 to 2.8 for any degree, 1 to 4.8 for all baccalaureates (vocational and generic), 1 to 6.1 for generic baccalaureate and 1 to 9.4 for degrees in higher education. However, there is an exception: for technological and vocational baccalaureates, the gap between ethnic groups is small.

In 1989, non-Kanak had a 2.6 times greater chance than Kanak of being employed. In 2009, the odds increased to 3.5. In 1989, non-Kanak were three times more likely than Kanak to have a stable job. In 2009, the odds ratio increased to 3.2.

These results demonstrate an increase in ethnic inequalities in the access to jobs, except for the highest socio-professional categories (odds ratio decreased from 1989 to 2009). Odds ratios indicate that in 1989, non-Kanak were 6.3 times more likely to be in a higher occupational position than Kanak. In 2009, this ratio decreased but remained high (4.7).

Lefranc *et al.* (2004) show that rather than being due to socio-economic factors, the influence of proximity to adults with high socio-economic status has an effect on the future of young people. Here, the imitation effect seems to be strong; the propensity to engage in behavior depends on the prevalence of that same behavior in the neighbourhood (Vallet, 2005). Expectations people form about the economic benefits of education influence educational participation. According to

standard Human Capital Theory, individuals will choose a level of education that maximises their expected future lifetime income after taking into account the costs of education. The perception of returns to education is likely to influence this study decision. Under-representation of Kanak among middle and higher occupations leads to a disincentive to invest in human capital. This result supports affirmative action policies related to higher education programs for young Kanak to promote the emergence of a Kanak elite, who would serve as models for the ethnic group. Finally, the results show that despite the improvement in education of Kanak since 1989, this improvement is not fully reflected in the labour market.

We now examine the extent to which school achievement and labour market participation differ between Kanak and non-Kanak. Do they have the same return to education? How can we explain the differences in the labour force status?

In the following, we attempt to explain the differences between Kanak and non-Kanak in labour market attachment using regression analysis. We then assess the differences due to observed characteristics and the differences due to the return on those characteristics.

3. Data and method

3.1 2009 Census Data

Here, we use data from the most recent census (2009). In 2009, the population of New Caledonia was approximately 245,000 inhabitants, and 164,749 individuals were between the ages of 15 and 64 years. From these 164,749 individuals, we use a random sample of 50,897 observations in the logistic regressions. The censuses data contain individual characteristics, including sex, age, province of residence, ethnicity and level of education, but do not contain information on socio-

economic background, previous labour market experience or household characteristics. The Appendix provides descriptive statistics of the population of New Caledonia.

3.2 Method

We use two related methods to identify the factors associated with the differences in labour market outcomes between Kanak and non-Kanak. Our variable of interest is the most frequent variable used to examine the labour market status: being employed or not. We first regress the probability of being employed on a binary indicator variable for ethnicity, along with other variables measuring individual characteristics. This indicator variable captures the effects of ethnicity on the probability of being employed after controlling for the other characteristics. One limitation of this method is that it constrains all the other variables, which can have the same effect on both ethnic groups. Therefore, we secondly employ a regression decomposition to decompose the gap in employment between Kanak and non-Kanak into two components: one component explained by differences in the average characteristics of the two groups and one unexplained component due to unequal coefficient vectors estimated in the two groups. These unequal coefficient vectors imply different rates at which individual characteristics are translated into employment probability. This involves running separate regressions for Kanak and non-Kanak and implementing the Blinder–Oaxaca decomposition method, which Sinning *et al.* (2008) generalise for non-linear models.

As Kalb *et al.* (2012) describe, in this regression decomposition, differences exists amongst the various methods according to the parameter vector used to weight the difference in average characteristics between the two groups. Note that $\hat{\beta}_{NK}$ is the non-Kanak parameter vector and $\hat{\beta}_{K}$ is the Kanak parameter vector. The 'true' non-discriminatory basis should lie somewhere between the non-Kanak and the Kanak coefficients:

$$\beta^{*} = \Omega\hat{\beta}_{NK} + (I - \Omega)\hat{\beta}_{K},$$

where Ω is a weighting matrix and I is the identity matrix.

The literature has proposed different weighting schemes according to the choice of the reference group:

- Oaxaca (1973) proposes using either the coefficients for the majority group as the non-discriminatory basis (Ω = 1) or the coefficients for the disadvantaged group (Ω = 0).

  With Ω = 1, the estimated coefficients for the non-Kanak represent the non-discriminatory basis. The decomposition involves determining what the labour market attachment of the Kanak would be if they had the same set of coefficients as that for the non-Kanak.

  With Ω = 0, the estimated coefficients for the Kanak represent the non-discriminatory basis. The decomposition involves determining what the labour market attachment of the non-Kanak would be if they had the same set of coefficients as that for the Kanak.
- Cotton (1988) proposes weighting the coefficients by group size, which leads to Ω = 0.6 in our case because non-Kanak represent 60 per cent of the population.
- Neumark (1988) proposes estimating a pooled model across both groups to obtain β^*.

It follows then that Ω = 0 and Ω = 1 represent the two extremes within which the results based on the other weighting schemes would lie; Cotton's (1988) and Neumark's (1988) methods give intermediate results.

4. Empirical results

This section reports the estimation results on standard logistic regressions to control for observable characteristics in the probability of being employment. Because the variable of interest is employment status, we exclude students and retired people; however, because being employed (working for someone else) or being self-employed may depend on different logics,

we retain those who are self-employed. We add both the individual's gender and age into the equations modeling employment. Level of education is also a predictor of the probability of being employed. Here, we introduce five indicators for degrees to account for type (level) of education. From the geographic differences, place of residence seems to be a key determinant of the probability of employment. We report the marginal effects for the 'average' person (i.e., a hypothetical individual with all characteristics set at the mean values), which provide the change in the predicted probability of the outcome resulting from an increase of one unit in the relevant variable, holding the other variables at their respective means.

4.1 Regression model

The results from the regression analysis with a binary indicator variable for ethnicity appear in Table 2. Although we control for several other variables, the effect of ethnicity remains statistically significant. Thus, even if a Kanak had the same observable characteristics as a non-Kanak for each of these control variables, his or her chance of being employed would decrease by 6.6 percentage points, relative to a statistically identical non-Kanak.

Table 2 about here

The regression coefficients suggest several notable results, many of which find support in previous work (e.g., Gorohouna, 2011). For example, women had a lower probability of being employed than men with otherwise identical characteristics. The simultaneous introduction of province of residence and ethnicity also had a significant impact. Therefore, ethnic and geographic inequalities overlap rather than are substitutes for each other. One of the most important variables for explaining employment is level of education. The return on higher education is considerable: that is, having a higher education degree increases by 34 percentage points the probability of being employed, compared with having no degree.

Because inequalities may differ according to gender, we run the same logit model separately for women and men. As expected, ethnic gap is greater among men: that is, being a Kanak man decreases by 11 percentage points the probability of being employed, compared with being a non-Kanak men. Being a Kanak woman decreases by only 1.8 percentage points the probability of being employed, compared with being a non-Kanak woman. Note that returns on education are higher for women than men: having a higher education degree increases by 28 percentage points the probability of being employed for men and by 40 percentage points the probability of being employed for women, compared with not having a degree. One explanation for this is the historic gap: women used to be less educated than men. Today, women are more educated than men, and thus the difference in this area has diminished. Conversely, non-Kanak women have a lower probability of being employed than non-Kanak men; therefore, the finding that the gap between them and Kanak women is small is not surprising.

4.2 Decomposition

Although the regression analysis identifies variables that contribute to employment for the population as a whole, it does not provide insights into the cause of the employment differences between the two ethnic groups. If the differences in the level of observable characteristics completely explained the employment difference between Kanak and non-Kanak, we would expect the binary ethnicity variable to become non-significant in the regression; however, this variable remains highly significant. Thus, there may be differences in the effect of each characteristic on the employment status for Kanak and non-Kanak. The results from the separate regressions for Kanak and non-Kanak sub-samples appear in Table 3.

Table 3 about here

First, as Table 3 shows, the penalty for being a woman (in terms of employment) is larger for non-Kanak. Second, the repartition within the three provinces of residence has a strong (significant at 1 per cent) negative impact only for Kanak. For non-Kanak, the coefficient for the Northern Province is not significant and the coefficient for the Loyalty Islands Province is significant only 5 per cent. This result is due to the notion that non-Kanak people are likely to have extensive labour market networks, which improves their chances of employment, even for those in the Northern or Loyalty Islands Provinces (see Gorohouna, 2011). Third, Kanak seem to benefit more from educational achievement than non-Kanak. A higher education level has a high return for Kanak. Compared with having no degree, having a higher education level increases the probability of getting a job by 44 percentage points for Kanak compared with 30 percentage points for non-Kanak. Signaling theory may help explain this result: that is, because so few indigenous people receive a higher education, getting a degree constitutes a strong signal.

The regressions by ethnic group suggest that coefficients of variables differ between groups. To assess the difference in the probability of being employed between Kanak and non-Kanak due to differences in characteristics versus differences in coefficients, we summarise the results from the Blinder–Oaxaca decomposition in Table 4. We first examine the decomposition results when using the non-Kanak coefficients as the non-discriminatory basis ($\Omega = 1$). We find that individual characteristics explain 56 per cent of differences in employment between Kanak and non-Kanak. For men, only 38.5 per cent of the gap in labour market attachment can be attributed to differences in the control variables. For women, differences in the characteristics account for 77.5 per cent of the gap in labour market attachment between the two populations.

Table 4 about here

Adding more control variables would decrease the unexplained component. However, in line with Kalb *et al.*'s (2012) Australian study, although little difference emerges between Kanak and

non-Kanak women, a strong gap remains between the two male ethnic groups. That is, ethnicity seems to play a stronger role in the labour market for men than for women.

As mentioned previously, decomposition results can vary markedly between reference groups. In our case, when we used Kanak coefficients as the non-discriminatory basis ($\Omega = 0$), differences in observed characteristics explained most of the gap in labour market attachment (only 10 per cent of the difference is not explained). For men, 75 per cent of the gap between Kanak and non-Kanak is due to differences in observed characteristics. The coefficient effect is an advantage for Kanak women over non-Kanak women. This implies that in this case and for some variables, the coefficient of Kanak women is higher than the coefficient of non-Kanak women.

Using Cotton's (1988) weight ($\Omega = 0.6$), we find that the unexplained difference is 30 per cent. Following Neumark (1988), we find that the unexplained component equals 20 per cent. According to Neumark (1988) and Kalb *et al.* (2012), if the labour market outcome of non-Kanak is the 'normal' outcome that Kanak should be able to achieve in a 'normal' situation, the coefficients of non-Kanak should be taken as the reference. In other words, the reference case should use the Blinder–Oaxaca decomposition ($\Omega = 1$). In this case, 44 per cent of the difference between the Kanak and non-Kanak probability of being employment is unexplained by the controlled-for individual characteristics difference.

Using more explanatory variables (e.g., partner, number of dependent children, income from non-governmental sources, poor health, daily smoker), Kalb *et al.* (2012) find almost the same decomposition results: 63 per cent of the difference between indigenous and non-indigenous men is unexplained, whereas 22 per cent is unexplained for women. Because adding control variables in the Caledonian regressions should reduce the unexplained component of the gap, it seems that labour market status for indigenous Caledonians is 'better' than for indigenous Australians.

This unexplained component of differences in labour market status indicates that there are omitted characteristics, unobservable variables that are not included in the analysis, differences in behaviour or preferences, discrimination, or different rates of return on characteristics for the ethnic groups. Previous studies have highlighted the role of some variables that are not available in the census data set, including health, number of dependent children, previous labour market experience, and so on. Kalb *et al.* (2012) refer to the following unobserved factors that could explain some of the remaining gap in labour market attachment in Australia and, thus, that could be important for New Caledonia as well:

- The potential lack of job-related networks by family members and friends, which makes people with these networks less likely to find a job than people who are part of a community with good job-related networks.
- Weaker motivation affected by previous experiences in the labour market, as experience or perception of discrimination may cause discouraged job seekers.
- The lack of local job opportunities or the lack of good opportunities to obtain higher education and training.

The unexplained component suggests that we should not exclude discrimination as a possible factor. Gorohouna (2011) analyses wage inequalities between Kanak and non-Kanak in the Northern Province using more control variables. He finds that for young people (18–30 years of age), 33 per cent of the difference between wages gap is unexplained by observed characteristics. This high level imposes the need for more attention to be paid on inter-ethnic labour relations in New Caledonia. Segal (2009) shows that ethnicity is a real factor in the tension in Caledonian companies. Indeed, the phenomenon of geographical or ethnic discrimination as a result of employer recruitment practices is an identifiable cause of the difficulties in accessing jobs, regardless of whether this is a result of 'discriminatory preferences' among employers against

certain minority groups in general (Becker, 1957) or 'statistical discrimination' (Phelps, 1972) resulting from imperfect information in the labour market, which leads employers to select individuals on the basis of certain characteristics.

These decomposition results suggest that the gap in labour market status could be closed by narrowing the gaps in characteristics with positive contributions while widening the gaps in characteristics with negative contributions. For example, one factor that might lead to higher labour market attachment among Kanak is investments in education, especially for those living in the Northern and Loyalty Islands Provinces.

5. Summary and conclusions

This study contributes to the literature by exploring ethnic inequality and employment in the three provinces of New Caledonia. Using census data sets to calculate odds ratios, we find that despite a dramatic decrease in school achievement between Kanak and non-Kanak in the past 20 years, differences in employment rates have increased. We use logit regressions to identify the factors associated with the differences in labour market outcomes between Kanak and non-Kanak. We regress the probability of being employed on a binary indicator variable for ethnicity, along with other variables measuring individual characteristics. Logit regression shows that the probability of being employed is 6.6 percentage points lower for Kanak than for non-Kanak. Significant factors that shape labour force status in both populations include location and education. However, the size of the effects varies markedly across gender; the effects of the education variables are weaker for men than for women. To allow all the control variables to have different effects on both ethnic groups, we run regressions separately for Kanak and non-Kanak. The results show that the penalty for being female (in terms of employment) is larger for non-Kanak. Furthermore, estimated returns on education for Kanak were higher at every level of

education. These results imply that higher levels of education enable Kanak to find employment. Thus, questions about the employment gap between Kanak and non-Kanak could be recast as question about differences in educational attainment. Moreover, beyond their role in explaining the employment gap, differences in educational achievement are important in their own right because of the benefits associated with education for both the individual and society (Maani, 2004).

To assess the difference in the probability of being employed between Kanak and non-Kanak due to differences in characteristics versus differences in return on those characteristics, we implement the Blinder–Oaxaca decomposition. When we use the non-Kanak coefficients as the non-discriminatory basis, the model explains only 56 per cent of the gap that can be attributed to differences in the observed characteristics between the two populations. For men, only 38.5 per cent of the gap in labour market attachment can be attributed to differences in the control variables. For women, differences in the characteristics account for 77.5 per cent of the gap in labour market attachment between the two populations. These results could be because other factors influence men's labour market attachment than women's and these factors may be absent from our model. In addition, the returns on characteristics between the two populations may be more different for men than for women, causing these to make up a larger proportion of the gap. For example, ethnicity seems to play a stronger role in the labour market for men than for women.

This unexplained component (44 per cent) of differences in labour market status indicates that there are omitted characteristics, unobservable variables that are not included in the analysis, differences in behaviour or preferences, discrimination, or different rates of return on characteristics of the ethnic groups. Thus, further research in New Caledonia should be done with new surveys that integrate more observed characteristics.

This article is another step in the understanding of the origins of ethnic differences in the labour market in New Caledonia. This understanding is essential for the formulation and orientation of public policies to close the gaps between ethnic groups. These policies, whose effectiveness is a major collective challenge, should ensure fair distribution of income, leading to conditions of social stability necessary to achieve balanced and sustainable development in New Caledonia.

Appendix:

Characteristics of the population of New Caledonia (per cent of the relevant group)

	Whole Population			Kanak			Non Kanak		
	1989	1996	2009	1989	1996	2009	1989	1996	2009
Province of Residence									
Loyalty Islands	11	9	7	24	23	16	0	1	0
Northern	21	20	19	37	38	35	8	9	8
Southern	68	70	74	39	39	50	92	90	91
Highest qualification									
Under GCSE'S under C grade (D-G)	71	53	33	87	74	48	60	40	22
GCSE'S under C grade (D-G)	6	8	10	4	7	12	7	9	8
Youth training	13	19	24	8	15	26	17	22	22
Technologic and professionnal bacalaureat	2	5	7	0	1	6	3	7	8
Generic bacalaureat	4	4	9	1	1	5	7	6	11
Higher education	4	10	18	0	1	4	7	15	28
Labour Force Status									
Employed	61	59	70	48	40	55	71	70	81
Unemployed	12	14	11	18	20	20	7	9	6
Out of the labour force	27	27	18	33	39	28	23	19	13
Occupations									
Farmers	12	4	3	33	12	6	2	2	1
Artisans, merchants, entrepreneurs	8	10	10	2	4	4	12	13	13
Managers and higher category jobs	4	8	10	1	2	3	6	11	13
Middle category jobs	17	18	22	9	12	13	21	20	26
Employees	29	32	29	25	34	35	31	31	27
Workers	29	27	26	31	35	39	27	24	20
Sector									
Agriculture		7	5		16	10	0	4	2
Industry		12	11		10	11	0	12	11
Energy		1	1		1	1	0	1	1
Construction		11	13		9	12	0	11	14
Business		13	11		7	7	0	15	13
Transports		5	4		4	5	0	5	4
Services		20	24		20	25	0	20	23
Education, health		16	14		15	12	0	16	15
Administration		16	17		17	17	0	16	18

e.g. in 2009, 16% of Kanak live in the Loyalty Island Province.
Source : ISEE, Censuses 1989, 1996 and 2009 (aged 15 to 64 years and not at school or retired).

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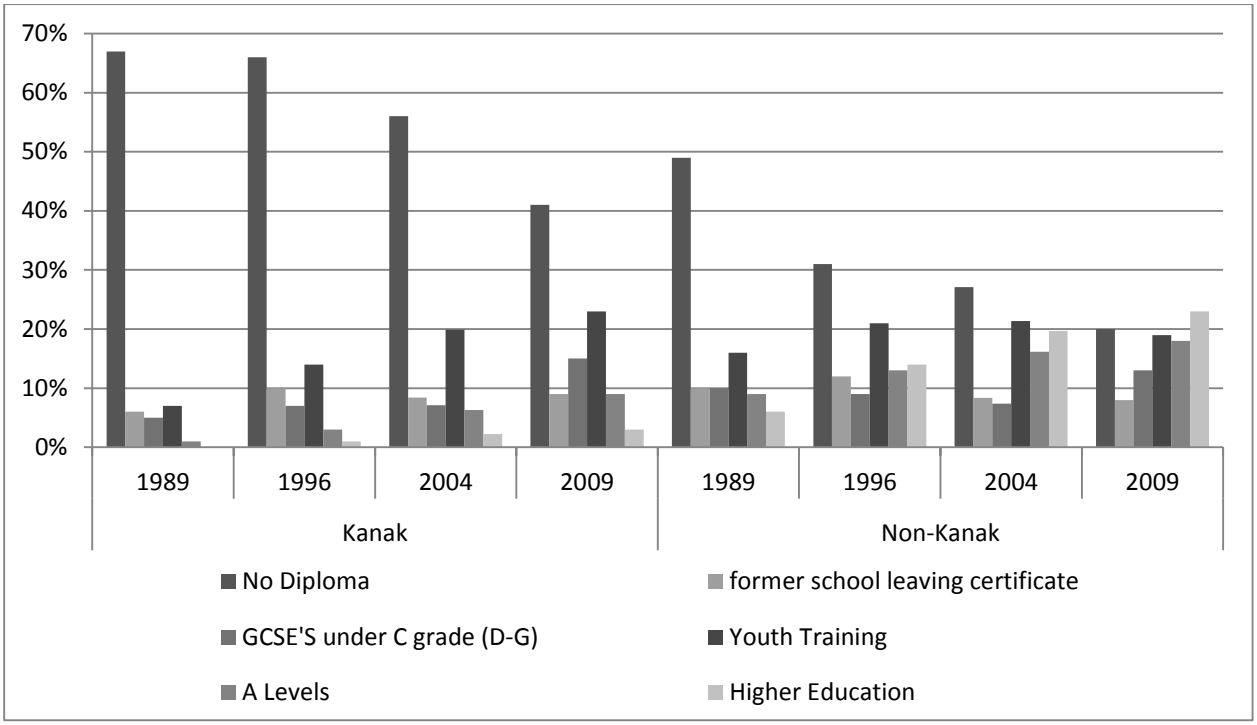
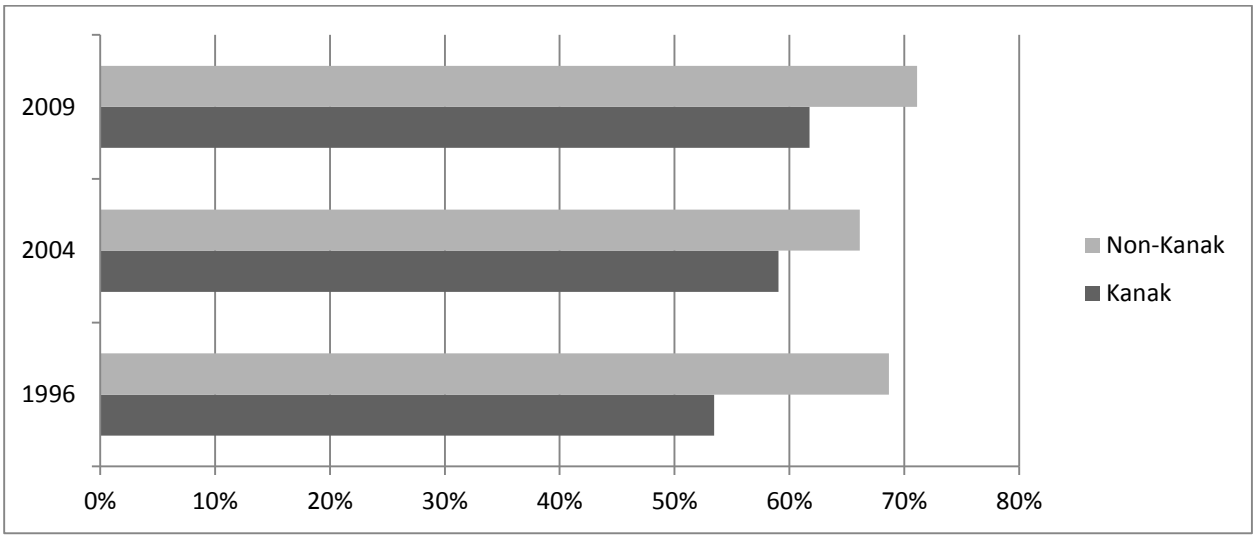
Figure 1. Population distribution by highest level of education achieved



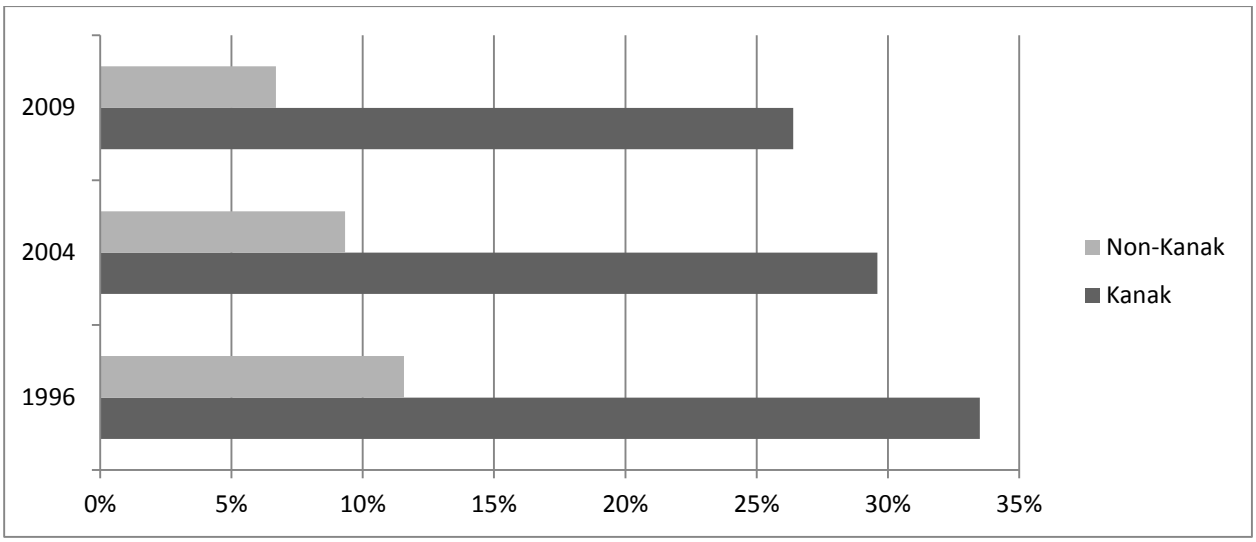
Source: ISEE, Censuses 1989, 1996, 2004 and 2009.

Figure 2. Labour force participation rates (aged 15 to 64 and not at school)



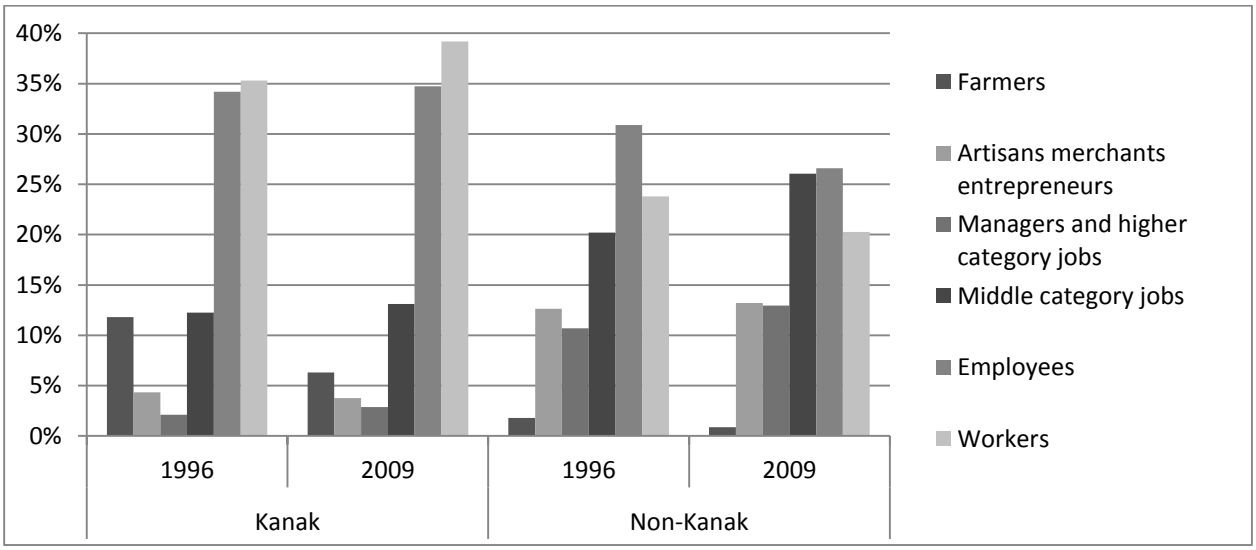
Source: ISEE, Censuses 1996, 2004 and 2009.

Figure 3. Unemployment rates



Source: ISEE, Censuses 1996, 2004 and 2009.

Figure 4. Distribution of labour force within occupations



Source : ISEE, Censuses 1996 and 2009.

Table 1. Odds ratios: non-Kanak / Kanak

	1989	2009
Diploma (all types of diploma)	2.9	2.8
A levels – Technological and vocational baccalaureate	5.4	1.5
A levels (all baccalaureates)	12.5	4.8
A levels – Generic baccalaureate	15.2	6.1
Higher education degree	36.0	9.4
Employed	2.6	3.5
Permanent employment	3.0	3.2
Long-term contract		1.6
Higher occupation	6.3	4.7

Source: ISEE, Censuses 1989 and 2009. Odd ratios are calculated from cross tabulations.

Note: In 1989, non-Kanak had a 36 times greater chance than Kanak to get a higher education degree, in 2009, the odds decreased to 9.4.

Table 2: Marginal effects on the probabilities of employment for the whole population and by gender.

Control variable		Whole population	Male	Female
Ethnicity	Kanak	-.066***	-.110***	-.018**
		(.005)	(.007)	(.008)
Gender	Female	-.148***		
		(.005)		
Age		.006***	.006***	.006***
		(.000)	(.000)	(.000)
Province of residence	Loyalty Islands	-.148***	-.145***	-.139***
		(.011)	(.014)	(.014)
	North	-.081***	-.065***	-.094***
		(.006)	(.008)	(.009)
Level of education	GCSE'S under C grade (D-G)	-.029***	-.061***	.008
		(.008)	(.010)	(.011)
	Youth training (NVQ Level 1,2)	.205***	.191***	.215***
		(.005)	(.006)	(.009)
	BTEC National Diploma	.279***	.213***	.341***
		(.006)	(.008)	(.009)
	A levels	.216***	.161***	.267***
		(.006)	(.009)	(.010)
	Higher education	.345***	.280***	.406***
		(.005)	(.006)	(.007)
Observations		50,897	25,765	25,132
Pseudo-R^2		0.132	0.1315	0.1172

Note: Coefficients significant at ***:1%; **: 5%; *: 10%. Robust standards errors are in parentheses; corrected for heteroscedasticity using the Eicker-White method.
Data Source: ISEE, Census 2009.

Table 3: Marginal effects on the probabilities of employment by ethnic group

Control variable		Kanak	Non-Kanaks
Gender	Female	-.119*** (.007)	-.160***(.005)
Age		.011*** (.000)	.003***(.000)
Province of residence	Loyalty Islands	-.169*** (.010)	-.124**(.051)
	North	-.122*** (.008)	-.001 (.010)
Level of education	GCSE's C and lower (grade D-G)	.064*** (.012)	-.087***(.010)
	Youth training (NVQ Level 1,2)	.259*** (.009)	.168***(.006)
	BTEC National Diploma	.342*** (.012)	.229***(.006)
	A levels	.300*** (.014)	.169*** (.007)
	Higher education	.441*** (.012)	.298***(.005)
Observations		20,477	30,420
Pseudo R^2		0.106	0.1135

Note: Coefficients significant at ***:1%; ** 5%; * 10%. Robust standards errors are in parentheses; corrected for heteroscedasticity using the Eicker–White method.
Data Source: ISEE, Census 2009.

Table 4. Decomposition of the gap in labour market attachment between Kanak and non-Kanak

	Whole population		Male		Female	
	Coef.	%	Coef.	%	Coef.	%
Non-Kanak as reference group (Ω = 1)						
Differences due to characteristics	.119	55.8	.092	38.5	.142	77.5
Differences due to coefficients	.094	44.2	.148	61.5	.041	22.5
Kanak as reference group (Ω = 0)						
Differences due to characteristics	.193	90.2	.180	74.9	.202	110.5
Differences due to coefficients	.021	9.8	.060	25.1	.019	-10.5
Weigth of the non-Kanak population (Ω = 0.6; Cotton)						
Differences due to different productivity	.150	70.5	.129	53.3	.169	92.2
Advantage of the non Kanak group	.007	3.5	.022	9.3	-.009	-4.8
Disadvantage of the Kanak group	.056	26.0	.090	37.4	.023	12.6
Pooled model over both groups (Neumark)						
Differences due to different productivity	.172	80.6%	.169	70.4	.172	93.7
Advantage of the non Kanak group	.0168	7.8%	.028	11.7	.005	2.6
Disadvantage of the Kanak group	.025	11.6%	.043	17.9	.007	3.7
Raw difference	.214	100%	.240	100%	.183	100%

Data Source: ISEE, Census 2009.