Canadian International Labour Network

Labour Market Outcomes:

A Cross-National Study

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McMaster University

DEPARTMENT OF ECONOMICS

Assimilation and Economic Success in an Aboriginal Population:

Evidence from Canada

Like immigrants, aboriginal populations are endowed with skills and cultural traits which are not necessarily optimal for economic success in the "majority" culture where they reside. As for immigrants, Aboriginal economic success may thus be enhanced by the acquistion of such skills and traits via greater contact with the majority culture. Using 1991 Canadian Census data, we document three stylized facts that support this assimilation hypothesis: Aboriginal labour market success is greater for Aboriginals whose ancestors intermarried with the non-Aboriginal population, for those who live off Indian reserves, and for those who live outside the Yukon and Northwest Territories. While each of these results, individually, could also be explained by other processes, such as differential discrimination, physical remoteness, and selection, we argue that none of these other processes can provide a convincing explanation of all three.

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1. Introduction.

Over the past three decades, the economic assimilation of immigrants has been the subject of countless research papers in labour and population economics. Immigrants often arrive in a new culture with a set of skills and cultural traits (including language) that are not ideally suited to economic success in that culture, and the rate of convergence of immigrants' labour market outcomes to natives' is typically attributed to the acquisition of those skills and traits.

Aside from immigration, there is of course a second way in which one can become a minority in a country where one's skills are not ideally matched to the majority culture: invasion of one's homeland. For such aboriginal populations, economic success may nonetheless be enhanced by assimilating into the dominant culture. Perhaps surprisingly, this assimilation process and its role in the economic success of aboriginal peoples has received almost no attention from labour- or population economists.[1]

The goal of this paper is to study economic assimilation of an aboriginal population using 1991 Census data from Canada.[2] We show that three measures of contact with the dominant culture –residence away from an Indian reserve, residence outside the Yukon and Northwest Territories, and intermarriage with non-Aboriginals– are among the most powerful predictors of

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[1]There is a small amount of work on Aboriginal labour markets in North America but it is largely descriptive, and does not focus on assimilation effects. Studies include Sandefur and Scott (1983), Snipp (1989) and Kimmel (1994) for the US; and George and Kuhn (1994) and Drost (1996) for Canada. Australian Aboriginals have been more extensively studied (see for example Daly 1994); again the literature tends not to focus on assimilation effects.

[2]Canada is an interesting context in which to study the labour market outcomes of Aboriginal peoples for several reasons. Compared, for example, to the US, Aboriginals form a much higher share of the Canadian population, and –in part because most of Canada was colonized by Europeans much later-- a larger fraction of Aboriginals still live in remote areas where contact with the invading culture has been limited. Working with Canadian data also has practical advantages: a quirk of the Canadian Census public use file allows us to identify individuals living on Indian reserves. This has a powerful effect on Aboriginals' labour market prospects, and is not identified in the 1990 US Census PUMS.

Aboriginal labour market success in Canada. Indeed these are, in some situations and in a well-defined sense, more important than the standard human capital variables. For example, according to our results, raising the education levels of men with purely Aboriginal backgrounds to those of non-Aboriginals in Canada is predicted to raise their wages by five percent. At the same time, holding *all* observed characteristics (including education) constant, an observationally identical individual would earn twelve percent more if he had mixed (Aboriginal and non-Aboriginal) origins.

Section 2 of the paper briefly discusses our analytical framework. Section 3 describes the data. Section 4 presents our results on the effects of "social mobility" into the dominant culture –as measured by intermarriage of one's ancestors with non-Aboriginals-- on labour market outcomes. Section 5 focuses on geographical mobility, in the sense of leaving Aboriginal enclaves such as reserves or the Northern Territories, and Section 6 concludes.

2. Analytical Framework

Beginning with Chiswick (1978), economists have devoted considerable attention to measuring the rate at which new skills, appropriate to economic success in a "host" culture, are acquired by immigrants. While some dispute remains concerning the size of these effects (see for example Borjas (1985), but also Duleep and Regets (1997)), it is widely accepted that some assimilation towards natives' earnings levels does occur. The standard way to measure such assimilation is to measure the effect on earnings of the number of years that have elapsed since a person entered the host country. Essentially, the argument goes, the more years that have elapsed, the more contact with the host culture has occurred, and the more new skills can be

acquired.

Clearly, since (essentially) all Canadian Aboriginals were born in Canada, there is no direct analogy to the "years since migration" variable for Aboriginals.[3] There are, however, large variations among the Aboriginal population in the amount of contact individuals have had with non-Aboriginal society, and we shall identify assimilation effects in this paper with direct measures of this contact. The first of these is based on intermarriage: Like most immigrants (but unlike, for example, African-Americans), North American Aboriginals have intermarried to a very high degree with non-Aboriginals.[4] If assimilation over a number of generations is important, one might expect the close interaction that occurs within a family to be a key channel via which it occurs. The other two measures of assimilation we use, because they are based on geographical mobility, are more directly analogous to the immigrant experience. In particular, we propose that individuals who live in ethnically segregated environments, such as Indian reserves, or simply in isolated areas –Canada's Northern Territories-- where contact with the dominant culture is rare, are likely to have acquired fewer skills, habits and attitudes that are conducive to economic success in that culture.

3. Data.

Statistics Canada's 1991 Census Public Use Microdata File forms the basis of our analysis. This file consists of 809,654 individuals, a 3 percent sample of the Canadian

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[3]As there is free mobility of registered Indians across the Canada-US border, some Canadian aboriginals may be born in the US. One fairly direct analogy to the "YSM" variable might count the number of years that have elapsed since one's area of residence was first colonized by Europeans. This is essentially what we do when we look at differences between the Territories and the rest of Canada.

[4]In the U.S. in 1976, 56 percent of Indian males were married to white wives, compared to 2 percent of black males (Sandefur and Scott, 1983).

population. Given the relatively small share of the Canadian population that is Aboriginal, and the relatively small fraction of Aboriginals who are employed, this is the only publicly-available data set of sufficient size to allow a reasonably precise analysis of Aboriginals' labour market outcomes.[5]

In the 1991 Census, an individual's ethnic origin is measured by the following question: "To which ethnic or cultural group(s) did this person's ancestors belong?" A large number of responses could be chosen, including three we define as Aboriginal: North American Indian, Inuit, and Métis.[6] For this paper, two Aboriginal ethnic groups are defined. Individuals reporting a single ethnic origin are called "single origin Aboriginals" if that origin is Aboriginal; individuals reporting multiple ethnic origins are denoted "multiple origin Aboriginals" if they have at least one Aboriginal ethnic origin.[7] To avoid repetition, the terms "native" and "Aboriginal" are used synonymously throughout this paper.

Our measure of intermarriage in this paper is based on the difference between single- and multiple-origin Aboriginals; it is noteworthy that it thus concerns not current intermarriage, but intermarriage among one's parents or earlier forebears. While not necessarily ideal, it does have

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[5]In conjunction with the 1991 Census, Statistics Canada has also conducted a special survey of Aboriginals called the Aboriginal Peoples Survey (APS). While providing a wealth of detail on a narrowly-defined group of Aboriginals, this data set excludes most of the Aboriginals we find are highly assimilated: those with multiple ethnic origins. It also does not supply a comparison population of non-Aboriginals.

[6]The 1991 Census also contains a "Registered Indian" indicator. This is a legal construct determining access to such factors as rights to live on a reserve, and tax-exempt status. Using it gives similar results to the "single Aboriginal origins" category in the current paper.

[7]One quirk of the Census is that individuals who have two or more different Aboriginal origins (e.g. Indian and Métis) are classified, along with those who have Aboriginal and non-Aboriginal ethnic origins, as multiple origin Aboriginals. This would serve to make the multiple origins group look more like those with single origins than it ought to, but the effect is likely very small. Statistics Canada (1993 - Table 1) indicates that only 2% of the multiple origins group are combinations of the Aboriginal subgroups exclusively.

the following advantages over a measure of current intermarriage: first, it is less directly subject to endogeneity or selection effects. Second, it captures the fact that Aboriginal assimilation may be a much slower process than for immigrants, involving several generations. Unlike immigrants, Aboriginals as a group are not a self-selected group who voluntarily chose to migrate in search of greater economic opportunity, and this may be reflected in a slower assimilation rate.

Our sample is restricted to individuals between the ages of 15 and 64, and excludes those with missing information on crucial variables (eg., age, Aboriginal ethnic origin or education), those living in collectives or outside of Canada, non-permanent residents, and those with top-coded family income. To ensure that our results are not affected by discrimination against visible minorities who are not Aboriginals, all such visible minorities (as defined by Statistics Canada's Interdepartmental Working Group on Employment Equity Data) are also excluded.[8] Together these restrictions leave us with a sample of 487,080 observations, which we use to study Aboriginal/non-Aboriginal differentials in labour force activity. In our study of wages received by Aboriginals and non-Aboriginals, we further restrict our sample to those working full-time and full-year in 1990 (the calendar year preceding the Census interview). This full-time, full-year sample also excludes self-employed and family members, since the reported levels of pay for these people may not correspond to their "true" levels of net compensation.

As with all work concerning Aboriginals using Canadian census data, there is a problem that results from incomplete enumeration of reserves: In the 1991 Census, as in the 1986 Census, a number of Indian reserves refused to cooperate with Census-takers; in the 1991 PUMF all of

[8]We also deleted the very small number of people who reported no Aboriginal ethnic origins, but were band members and/or Registered Indians. As most Indian bands maintain quite strict controls over who qualifies for membership, many or most of these individuals may simply have been misclassified.

the individuals living in the 78 reserves or settlements that were incompletely enumerated are excluded from the data set. Geographically, the distribution of these reserves was not that different from those that did participate, though they were somewhat more concentrated in Ontario and in urban areas.[9] Since our regressions control for province of residence, and for residence in large urban areas, this source of difference between enumerated and non-enumerated reserves should not affect those findings. More importantly, it should not affect our results for the majority of Aboriginals who live off reserves, and who are the main focus of our analysis here. A final data issue is the identification of those living on "Indian reserves and settlements", which the Census labels synonymously as "band housing".[10] Statistics Canada does not provide an indicator of on-reserve residence on its public use Census files, but it is sometimes possible to infer this from housing-related questions. As George and Kuhn (1994) show, this inference can be made cleanly in the 1986 file; it can also be made in 1991 though not quite as cleanly. In 1991, the gross rent (GROSRTP) and owner's major payments (OMPP) questions allow for individuals living in band housing and in farm dwellings to be separated from the remainder of the population. The dwelling tenure (TENURP) question allows us to further identify those who own the farm dwelling in which they live, but we cannot separate Aboriginals who rent and live in (part of) a farm dwelling from those who live in band housing (ie. on an Indian reserve or settlement). Our final sample can thus be divided into: 1) those who do not live on a reserve and 2) those who live either on a reserve or rent (a room in) a farm dwelling. We label this latter

[9]Twenty percent of the excluded reserves are urban, and the largest group, 33, are in Ontario. See Statistics Canada (1994) (pages 107 ff and appendices 1 and 2) for details and a list of incompletely enumerated reserves. The estimated undercount of persons is about 38,000 (Silcoff, 1996).

[10]We are indebted to Oliver Lo of Statistics Canada for clarifying these definitions.

group as living on a reserve in the remainder of the paper.[11]

4. Social Mobility: Effects of Intermarriage

If acquiring the skills and values of the dominant culture is important to Aboriginals' economic success, and if many of these skills and values are taught to children in families, one would expect Aboriginals who grew up in families containing a non-Aboriginal parent (or grandparent, etc.) to have an advantage in the Canadian labour market. In this section we study labour market differentials between single- and multiple-origin Aboriginals to see if this is indeed the case. We show that, whether or not we control for differences in the standard measures of human capital, or for differences in the geographical distribution of the two groups, single-origin Aboriginals are much less likely to work and earn much lower wages than multiple-origin Aboriginals.

Because of the distinct labour market patterns of Canada's Territories and Indian reserves, –which we examine in the following section--, we restrict our attention in this section to the majority of Aboriginal Canadians who lived outside the Yukon and Northwest Territories, and not on Indian reserves in 1991. Our examination begins with differences in labour market activity, then turns to wage differentials among full-time, full-year workers.

(a) Employment and Unemployment

The main patterns of labour market activity among Canada's off-reserve Aboriginal

[11]To assess the size of this misclassification problem, we looked at the percentage of the non-Aboriginal sample that fall into the latter group and are classified as living on a reserve, although they may rent (a room in) a farm dwelling. It is 0.39% for men and 0.33% for women. These are very small proportions even if we assume that all of these individuals live in farm dwellings and are therefore misclassified (which is not necessarily true). If the same fractions hold for the Aboriginal population, then less than 10 people would be misclassified in the largest group studied. It is possible, however, that a larger fraction of Aboriginals are misclassified, since theirs is a more rural population. Even three times more misclassification is, however, only one percent of the sample of Aboriginals.

population outside the Yukon and Northwest Territories, relative to non-Aboriginals, are summarized in Table 1. Considering men and women together, it is clear that Aboriginal Canadians exhibit less overall labour force activity than non-Aboriginals: 58.7 percent of individuals aged 15 to 64 reporting any Aboriginal origins were employed, compared with 70.4 percent of non-Aboriginal Canadians. Of this 11.7 percentage point gap, (12.1-7.5=) 4.6 points, or about 40 percent, takes the form of higher Aboriginal unemployment, the rest constitutes higher non-participation. Interestingly, in 1990, 32.7 percent of Aboriginals worked full-time, full-year, compared to 45.6 percent of non-Aboriginals; a gap which exceeds the gap in survey week employment rates. This larger gap suggests that Aboriginals' work patterns are more intermittent than those of non-Aboriginals.

While the above gaps between Aboriginals and non-Aboriginals are substantial, a much more striking result emerges when we disaggregate Aboriginals into single- and multiple-origin groups in columns 2 and 3. Clearly, the size of Aboriginal labour force activity gaps is strongly influenced by (ancestral) intermarriage: *for both men and women, most of the Aboriginal/Non-Aboriginal gap is associated with the single-origins group*. For example, the 11.7 percentage point overall Aboriginal employment gap actually consists of only a 4.0 point gap for those with multiple origins and a 25.2 point gap for those with single origins, with similar differences in unemployment and labour force participation rates. The 25 percentage point gap between this group's employment rates and that of non-Aboriginals dwarfs even the gender gap in employment, of 14 percentage points, in the non-Aboriginal population. Indeed, single-origin Aboriginal men are substantially less likely to work than non-Aboriginal women in Canada. In contrast, for almost outcomes, Aboriginals of mixed ancestry appear to be highly assimilated, in

the sense of having labour market outcomes that are fairly close to those of Canadians who do not belong to any visible minority.

A final message of Table 1 is that the Aboriginal labour force activity gap varies considerably with gender. For example, for single-origin Aboriginal men, the Aboriginal/non-Aboriginal unemployment gap is 10.8 percentage points, compared to only 5.0 percentage points for women; indeed Aboriginal women's unemployment rate is considerably below men's.

What explains the sizable gaps in Aboriginal labour force activity documented in Table 1, both relative to non-Aboriginals and between single- and multiple-origin Aboriginals? To gain some insights into this question, we use standard techniques (Oaxaca 1973) to partition these gaps into a component which can be statistically attributed to observable differences -- largely in human capital and geographical location-- between these three groups, and ones which cannot. We restrict our attention to gaps in survey week employment rates, and report predicted employment rates holding various characteristics constant in Table 2.[12] The first column just shows the difference between predicted employment probabilities for an average Aboriginal and a non-Aboriginal, each calculated from their own probit coefficients and own means. (The level and the standard error of these prediction are simply repeated in the rows labelled "own regressions" and "non-Aboriginal regressions"). This is the total gap we wish to partition into two components; clearly the largest such gap is the 30 percentage point gap between single-origin Aboriginal men and non-Aboriginal men.[13] In columns 2 and 3 of the Table, the adjusted

[12]The probit regressions on which these predictions are based are reported in Appendix Table 1. Control variables include age, education, region, marital status, and are described there as well.

[13]These gaps differ slightly from those in Table 1 only because of the nonlinearity of the normal distribution function used in the probit model.

gaps using "own" regressions estimate what the employment gap would be if Aboriginals had the observed characteristics of non-Aboriginals. Adjusted gaps using "non-Aboriginal" regressions predict the gap if non-Aboriginals had the characteristics of Aboriginals. Because education and training may be more under policymakers' control than other variables, column 2 makes these counterfactual comparisons using the education and training variables only.

Overall, the decompositions of Table 2 indicate the following. First, as noted in Table 1, unadjusted employment gaps (relative to non-natives) are much higher for single-origin Aboriginals than multiple-origin Aboriginals: For men the single-origin gap is *five times* as high as the multiple origin gap; for women it is *nine times* as high. Second, differences in observable characteristics, including education, can explain a substantial fraction of this (much larger) single-origins gap, but not very much of the smaller multiple-origins gap. For example, the "own" regression results indicate that, constraining both Aboriginal groups' characteristics to be the same (and equal to those of non-Aboriginals), the employment gap falls to 15 percentage points for single-origin Aboriginal men, now "only" three times as high as the 5 percentage point gap faced by multiple-origin Aboriginal men. A sizable fraction of this reduction, especially for single-origin women, is attributable to Aboriginals' education and training deficits compared to non-Aboriginals. Equalizing Aboriginals' access to education thus can play an important role in reducing their employment gaps, but according to our estimates will not nearly be enough to eliminate them.

Third, for both men and women, observed characteristics explain much more of the single-origin/non-Aboriginal gap when the aboriginal regressions are used than the non-Aboriginal regressions. Inspection of the means and coefficients involved reveals that this is

largely a consequence of the differential effect of geography on Aboriginals and non-Aboriginals: Interestingly, living in the Prairie provinces reduces Aboriginals' employment but raises that of non-Aboriginals.[14] Since it seems much more easier to imagine a possible migration of Canada's aboriginal population such that it had the same geographical distribution as non-Aboriginals than the other way around, the former (own regressions) thought-experiment seems to us the most interesting.

In sum, while observed characteristics are important, very sizable differences between the employment rates of single- and multiple-origin Aboriginals remain even after we control for measurable characteristics. To appreciate the size of these differences, note that according to row 1 of Table 2, the predicted effect of raising single-origin Aboriginal males' education levels to those of non-Aboriginals is a reduction in their employment gap by (30-24=) 6 percentage points. This is substantially smaller than difference in the Aboriginal-white gap between single- and multiple-origin Aboriginals of ten percentage points (15-5; from column three, rows 1 and 3).

What explains this difference? Some of the single-multiple origin differential may be due to lesser discrimination against multiple-origin Aboriginals who, on average, may be less visibly identifiable to employers, customers or co-workers than single-origin Aboriginals. While this is possible, we argue below that it cannot explain the two other differentials we document in this paper: differentials between aboriginals on- and off- reserves, and a higher Aboriginal-non-Aboriginal wage gap in the Territories. Another possibility might be selection into intermarriage: "able" Aboriginals might be more likely to find non-Aboriginal mates. For this to be relevant to

[14]Outside Canada's Territories, the interior Prairie provinces are the part of Canada that was colonized most recently by Europeans. The high gaps here are thus consistent with our intergenerational assimilation hypothesis, and with the differences between the Territories and the rest of Canada we document in this paper.

our findings, however, note that there must be a substantial inherited component of ability: our finding is that individuals with non-Aboriginal *ancestors* do better than those with only Aboriginal ancestors. Note also that such a pure selection argument cannot explain the considerable economic progress that Aboriginals have made as a group over the last century: it can only explain re-shuffling of opportunities within a group. We conclude that the effects of ancestral intermarriage documented here strongly suggest the importance of skills (and cultural traits) acquired via close contact with non-Aboriginals within families.

(b) Wages.

Mean earnings of full-time, full-year Aboriginal and non-Aboriginal workers are presented in Table 3. According to this Table, the wages of Aboriginal Canadians were 10.4 percent less than those of non-Aboriginals in 1990, which is very similar to the 11.0 percent gap found by George and Kuhn (1994) in the 1986 Census. Parallel to the employment patterns analyzed above, the gap is considerably greater for those with single Aboriginal origins (at 19.9%) than for multiple-origin Aboriginals (7.0%). Also parallel to employment patterns, the Aboriginal wage gap is smaller for women (5.9%) than for men (11.3%). Interestingly, however, *in contrast to the huge labour force activity gaps examined in the last section, Aboriginal wage gaps are relatively modest in size* compared to those faced by other groups. For example, all the wage gaps in Table 3 are substantially smaller than the male-female wage gap of 30.3% (1-26888/38607) among non-Aboriginals.

Some insights as to why Aboriginal Canadians' wages are lower than non-Aboriginals' can be derived from a decomposition of these gaps analogous to those in the last section. These are presented in Table 4. (The underlying regression coefficients are reported in Appendix Table

2). According to column 1, the biggest wage gap to be explained is again that between single-origin Aboriginal men and non-Aboriginal men, at 25 log points, or 28.4 percent. In addition, Table 4 shows that, especially for women, a substantial fraction of the wage gap between single-origin Aboriginals and non-Aboriginals, and between single- and multiple-origin Aboriginals, can be explained by differences in age, education and other characteristics between these groups. For men, however, a substantial fraction cannot thus be explained. For example, according to column 1, raising single-origin males' education to non-Aboriginal levels is predicted to raise their wage by only (25-20=5) log points (7 points according to row 2). At the same time, according to column 3, the unexplained wage differential beween single- and multiple-origin Aboriginals is (16-4) 12 points, or 9 points, depending on which regressions are used. In this sense, ancestral intermarriage has a more important effect on wages than eliminating all educational differences between Aboriginal and non-Aboriginal males.

What explains these "unexplained" wage differentials between single- and multiple-origin Aboriginals, especially males, in column 3 of Table 4? As for the labour market activity differentials documented earlier, these remaining differences might capture discrimination or selection. They might, however, also capture cultural and skill differences associated with assimilation into the dominant North American culture via intermarriage. As we shall see, this cultural/skills interpretation of our results receives added support from our analysis of geography-based differences *among single-origin Aboriginals* to which we now turn.

5. Geographical Mobility: Reserves and Territories

Like immigrants, a large number of Canadian Aboriginals have left their ancestors'

regions of birth to live and work. The regions they are leaving are often enclaves where natives form a majority, but are isolated from the "mainstream" economy and culture. In this section we document the effects of leaving these areas on the employment and wages of Aboriginals. We consider two kinds of mobility: mobility away from Indian reserves, and mobility out of Canada's Northern Territories. Because only a very small number of multiple-origin Aboriginals live on reserves, or in the Territories, our analysis throughout this section focuses only on single-origin Aboriginals; this also serves to hold the level of "social mobility" constant while we turn our focus to geographical mobility here.

(a) Reserves

About 27 percent of the single-origin Aboriginals in our sample live on one of Canada's 633 Indian reserves; adjusting for Statistics Canada's estimate of under-enumeration of reserves, the actual fraction of working-age single-origin Aboriginals living on reserves is probably about 33 percent.[15] These reserves vary tremendously in size and location, ranging from small neighbourhoods in the heart of Vancouver to both small and large geographical areas in very remote locations. What they all have in common, however, is a small population base --the most populous has fewer than 25,000 residents--, and ethnic homogeneity: non-Aboriginals are prohibited from living on reserves. In this section we examine the effects of living on a reserve on Aboriginals' labour market outcomes.

Descriptive statistics on the wages and labour force activity of Aboriginals on- versus off-reserves are given in Table 5. Men's on-reserve employment rates, at 32.8 percent, are almost

[15]This is derived from Statistics Canada's own estimates of the total undercounts, (38,000: see Silcoff 1996), plus an estimated 61.5% share of the aboriginal population between the ages of 15 and 64 (Mitchell 1998).

twenty percentage points lower than off-reserve; women's employment rates are about 15 points lower.[16] *Only about **12 percent** of Aboriginal men and women living on reserves worked full-year, full-time in 1990*, compared with 28 and 20 percent for single-origin off-reserve men and women respectively (and with 56 and 36 percent of non-Aboriginal men and women, from Table 1). In addition to carrying a penalty in terms of access to jobs, living on a reserve appears to carry a wage penalty with it as well: those few on-reserve Aboriginals who did work full-time, full-year earned 20 to 25% less than single-origin, off-reserve Aboriginals.[17]

Table 6 decomposes the above total reserve-employment, and reserve-wage effects respectively into components that can, and cannot be explained by differences in observed characteristics, using the same technique as in the last section's analysis of intermarriage.[18] Because of small on-reserve sample sizes, the standard errors of the predicted gaps using the on-reserve regressions are very large; we thus restrict our attention to the off-reserve regressions. According to these regressions, differences in observed characteristics between on- and off-reserve Aboriginals do play an important role in explaining their differential employment rates. With the possible exception of women's survey-week employment gaps, however, reserve-wage and reserve-employment gaps remain both economically and statistically significant when observed characteristics are held constant. For men in particular, highly significant employment gaps of 11 percentage points, and wage gaps of .29 log points (or 33.6 percent) remain when

[16]Especially in the less urbanized reserves, traditional hunting, fishing, and trapping activities may be important uses of time and sources of (in-kind) income. To the extent that these activities are not reported as self employment, they will not be reflected in our statistics here.

[17]Because of the favourable tax treatment of reserve residents, this number may however overstate the difference in real, after-tax incomes.

[18]Results of the underlying regressions are available on request from the authors.

observed characteristics are controlled for.

We conclude from our analysis of reserve-wage and reserve-employment effects that something intrinsic to living on a reserve appears to reduce both the wages and employment of Aboriginal Canadians. Whatever this factor is, it seems unlikely to be discrimination, since it is a differential *among* single-origin Aboriginals. Further, if anything, one might expect the ethnically homogeneous environment of reserves to provide a haven from discrimination by the non-Aboriginal majority, in the same way that self-employment and urban "enclave" economies have been argued to provide a haven from discrimination for a number of immigrant groups (Borjas 1986). The reserve-wage and -employment effect could, as we have argued, reflect a lack of contact with the majority culture, making it harder to acquire skills and values that are helpful in promoting regular paid employment of the sort measured by the Census. Alternatively, one might argue that it simply reflects selection: it could be that those Aboriginals who leave reserves would have earned high wages on reserves as well. Note again, however, that because –for many Aboriginals-- migration off reserves occurred many generations ago, this selection argument would require a substantial amount of heritability of ability. Finally, the reserve-wage and -employment effect might just stem from pure geographical remoteness of many reserves that is not captured by our crude "geography" controls (province of residence and residence in a CMA). The role of pure "geographical" remoteness is explored in our analysis of Canada's northern Territories below.

(b) The Territories.

Canada's two northern Territories, the Yukon and Northwest Territories, comprise a huge

geographical area with a forbidding climate. Sparsely populated, but with a much higher Aboriginal population share than the rest of the country, they are the portions of the country that have changed the least since European colonization. In this section we examine the effects of living in the Territories on the labour market outcomes of Aboriginals. Because the number of multiple-origin Aboriginals living in the North is very small, our analysis, like that for reserves, focuses only on the single-origins group, thus implicitly controlling for the degree of aboriginal ancestry by restricting the sample. Also, because of the small number of individuals living on reserves in the Territories, our analysis is restricted to those living off reserves.

Descriptive statistics on the employment and wages of Canadian Aboriginals and non-Aboriginals in the Territories, versus the rest of Canada, are given in Table 7. For both men and women, labour force activity exhibits an interesting and consistent pattern: non-Aboriginals in the Territories are *more* attached to the labour force (more likely to work, less likely to be unemployed or out of the labour force) than in the rest of Canada, while Aboriginals in the Territories are *less* attached to the paid labour force than in the rest of Canada. As a consequence, the Aboriginal/non-Aboriginal gaps in all these outcomes are much greater in the Territories than elsewhere. Regarding wages, both Aboriginal and non-Aboriginal Canadians receive a premium in the Territories, but this premium (at around 14% for both women and men) is smaller for Aboriginals than for non-Aboriginals (at 27-37%). As a consequence, the Aboriginal wage gap is also higher in the Territories than the rest of Canada. A final, perhaps surprising, result of Table 7 is the exceptionally high employment rates and wages of *non-Aboriginal* women in Canada's Territories. At 81.1 percent, the employment rates of (non-Aboriginal) women in the Territories are above those of men in the rest of Canada. Non-

Aboriginal women's wages are 37 percent more in the Territories than the south, compared to only a 27 percent premium for men. This exceptional degree of labour market success presents a difficult target for northern Aboriginal women to attain in any gender-specific comparison.

Because of the small sample of people we have in the Territories, it is not practical to estimate separate employment and wage regressions for Territories versus the rest of Canada. In order to control for observed differences between workers in the Territories and the "south" we thus simply estimate pooled regressions including a dummy variable for residence in the Territories, separately for Aboriginals and non-Aboriginals. Coefficients on these Territory dummies are reported in Table 8. Even with this pooling of Territories and the rest of Canada, all but one of the probit coefficients for Aboriginals are insignificant, with the exception of a higher unemployment rate for women in the North. All the results for non-Aboriginals, however, strongly support the notion that residence in this remote region *improves* their labour market outcomes: employment is higher, unemployment lower, and wages are higher, especially for women. To some extent, this is surely a compensating differential for isolation and a higher cost of living.

In sum, our evidence shows that living in the North either reduces, or at least has no beneficial effect on Aboriginal labour force attachment. However, because living in the North clearly raises the labour force attachment of non-Aboriginals, and raises their wages more than those of Aboriginals, the Aboriginal/non-Aboriginal gap in all outcomes is greater in the North. In our opinion, this beneficial labour market effect of northern residence for *non*-Aboriginals casts some doubt on the ability of pure "geographical" remoteness to explain Aboriginals'

relatively poor labour market outcomes when they live either on reserves *or* in the North.[19]

6. Conclusion

Compared to a number of other minority groups, Aboriginal peoples, both in Canada and around the world, have been largely ignored by labour economists. In this paper, we show that Aboriginal Canadians face significantly worse labour market prospects than non-Aboriginal Canadians: they are less likely to be employed, more likely to be unemployed or out of the labour force, and earn lower wages than non-Aboriginals. Interestingly, these gaps are considerably larger for men than women, and larger for employment rates than wage rates.[20]

What explains the relative lack of labour market success among Canadian Aboriginals? Not surprisingly, one set of factors that plays an important role are the "traditional" human capital measures: lower levels of education, training, and also the relative youth of the Aboriginal population. In addition to these variables, however, we have shown that (ancestral) intermarriage with non-Aboriginals, residence off reserves, and residence outside the northern Territories, all have substantial positive effects on Aboriginal relative wages and employment rates that, in some cases, and in a well-defined sense, are more important than the "traditional" human capital variables.

While each of the three above phenomena has multiple possible explanations, including

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[19]It might again be explained by pure selection, but note that selection into the North would need to work in *opposite* directions for Aboriginals and non-Aboriginals to explain this result. Further, many explanations of *why* non-Aboriginals in the North might be positively selected and Aboriginals negatively selected themselves involve arguments about a lack of assimilation among Aboriginals there.

[20]This large role of employment gaps contrasts with immigrants to North America, for whom assimilation primarily takes the form of wage growth among full-time workers. This difference may be due to the continuing availability of traditional non-market subsistence activities for a number of Aboriginals, and the greater ease and frequency of back-and-forth migration between reserves and settlements (where these are carried out) and the "dominant" culture.

pure geographical remoteness, selection, and differential discrimination, we argue that, taken together, they are strongly suggestive of one common explanation, which we term an "intergenerational assimilation" hypothesis. According to this hypothesis, skills (and perhaps cultural traits) acquired via close contact with the majority culture increase Aboriginal economic success, at least as measured by monetary income and participation in work for pay. While much more work is needed to sort out the precise quantative importance of many of the possible causal mechanisms discussed in this paper --for example a panel data-based exploration of wage and employment changes associated with migration on and off reserves would address a number of important selection issues-- we conjecture that assimilation effects, captured by measures of contact with non-Aboriginal society, will play an important role in such further analyses.

It remains to be said that, despite our findings regarding the economic benefits of contact with the "majority" culture, it does not of course follow that we *advocate* assimilation –this is a highly personal choice for most individuals, and (especially today in Canada) a highly political one for groups.[21] As well, our results do not by any means imply that native cultural autonomy or distinctiveness necessarily *precludes* economic success. Our data merely show that, given the options available to Aboriginal Canadians up to 1991, one of their most reliable routes to economic success, as measured by the standards of the dominant North American culture, has been assimilation into that culture, in the sense of leaving reserves, living in cities, and marrying non-Aboriginals.

[21]Current sentiment among many organized Aboriginal groups in Canada is strongly *against* further cultural assimilation.

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Table 1 - Labour Force Status: Persons Not Living on Reserves or in the Yukon or Northwest Territories.

	Aboriginal Origins			
	Any Aboriginal Origins	Single Aboriginal Origins	Multiple Aboriginal Origins	Non Aboriginal
MEN				
Employed (%)	65	51.5	72.6	77.5
Unemployed (%)	14.2	19	11.5	8.2
Not in LF (%)	20.8	29.5	15.9	14.2
FTFY (%)	39.6	28.1	46.1	55.8
N	7001	2525	4476	231811
WOMEN				
Employed (%)	53.2	39.9	60.9	63.4
Unemployed (%)	10.2	11.8	9.3	6.8
Not in LF (%)	36.6	48.3	29.8	29.8
FTFY (%)	26.8	20	30.7	35.6
N	8069	2965	5104	236361
ALL				
Employed (%)	58.7	45.2	66.4	70.4
Unemployed (%)	12.1	15.1	10.3	7.5
Not in LF (%)	29.3	39.6	23.3	22.0
FTFY (%)	32.7	23.7	37.9	45.6
N	15070	5490	9580	468172

Notes:

1. This and all following tables restrict the sample to ages 15-64.

2. Rows 1-3 for each group (Employed, Unemployed and Not in LF) refer to labour force status in the Census week. The fourth row gives the fraction of individuals who were full-time, full-year (49 or more weeks) workers in the preceding calendar year (1990) preceding the Census.

Table 2 - Predicted Employment Gaps (relative to non-Aboriginals): Persons Not Living onReserves or in the Yukon or Northwest Territories

	Unadjusted	Adjusted for Education & Training Only	Adjusted for all Observable Character-istics
MEN			
Single Origins			
Own Regressions	.30 (.010)	.24 (.015)	.15 (.013)
Non-Aborig Regs	.30 (.010)	.26 (.010)	.25 (.010)
Multiple Origins			
Own Regressions	.06 (.006)	.05 (.008)	.05 (.008)
Non-Aborig Regs	.06 (.006)	.05 (.006)	.06 (.006)
WOMEN			
Single Origins			
Own Regressions	.27 (.012)	.20 (.016)	.12 (.015)
Non-Aborig Regs	.27 (.012)	.20 (.012)	.22 (.011)
Multiple Origins			
Own Regressions	.03 (.006)	.03 (.008)	.03 (.008)
Non-Aborig Regs	.03 (.006)	.03 (.006)	.05 (.006)

Note: Prediction standard errors in parentheses.

Table 3 - Mean Earnings of Full-Time, Full-Year Workers (Not in Territories or Reserves)

	Single Origin	Multiple Origin	Single & Multiple	Non-Aboriginal
MEN				
Mean	30157	35652	34252	38607
% Gap	21.9	7.6	11.3	
N	600	1754	2354	103691
WOMEN				
Mean	23455	25986	25295	26888
% Gap	12.8	3.3	5.9	
N	521	1387	1908	73268
ALL				
Mean	27042	31384	30242	33755
% Gap	19.9	7.0	10.4	
N	1121	3141	4262	176959

Table 4 - Predicted Wage Gaps (relative to non-Aboriginals) among Full-Time, Full-Year Workers (Not in Territories or Reserves)

	Unadjusted	Adjusted for Education & Training Only	Adjusted for all Observable Character-istics
MEN			
Single Origins			
Own Regressions	.25 (.018)	.20 (.025)	.16 (.024)
Non-Aborig Regs	.25 (.018)	.18 (.018)	.13 (.018)
Multiple Origins			
Own Regressions	.08 (.009)	.07 (.011)	.04 (.011)
Non-Aborig Regs	.08 (.009)	.07 (.009)	.04 (.009)
WOMEN			
Single Origins			
Own Regressions	.12 (.018)	.07 (.024)	.01 (.024)
Non-Aborig Regs	.12 (.018)	.06 (.018)	.01 (.018)
Multiple Origins			
Own Regressions	.03 (.011)	.03 (.013)	.02 (.013)
Non-Aborig Regs	.03 (.011)	.06 (.011)	.02 (.011)

Note: Prediction standard errors in parentheses.

Table 5 - Labour Force Status and Annual Earnings for Single-Origin Aboriginals Living On and Off Reserves

	On Reserve	Off Reserve
MEN		
Employment Status		
Employed (%)	32.8	51.5
Unemployed (%)	23.6	19.0
Not in Labour Force (%)	44.6	29.5
Full-Time Full Year (%)	12.6	28.1
N	1104	2525
Annual Earnings		
Mean ($)	22645	30157
% Gap Relative to Off Reserve	24.9	--
N	120	600
WOMEN		
Employment Status		
Employed (%)	25.1	39.9
Unemployed (%)	10.7	11.8
Not in Labour Force (%)	64.2	48.3
Full-Time Full-Year (%)	12.2	20.0
N	1017	2965
Annual Earnings		
Mean ($)	18611	23455
% Gap Relative to Off Reserve	20.6	--
N	108	521

Table 6 - Predicted Employment and Wage Gaps between Single-Origin Aboriginals living On versus Off Reserves

	Unadjusted	Adjusted for Education & Training Only	Adjusted for all Observable Character-istics
MEN			
Employment (Survey Week)			
On-Reserve Regressions	.21 (.024)	.18 (.058)	.04 (.049)
Off-Reserve Regressions	.21 (.024)	.17 (.027)	.11 (.028)
Wages			
On-Reserve Regressions	.39 (.038)	.34 (.158)	.05 (.158)
Off-Reserve Regressions	.39 (.038)	.33 (.041)	.29 (.041)
WOMEN			
Employment (Survey week)			
On-Reserve Regressions	.16 (.031)	.11 (.066)	.11 (.066)
Off-Reserve Regressions	.16 (.031)	.10 (.034)	.06 (.035)
Wages			
On-Reserve Regressions.	.28 (.035)	.27 (.169)	.06 (.169)
Off-Reserve Regressions	.28 (.035)	.22 (.040)	.11 (.040)

Note: Prediction standard errors in parentheses.

Table 7 - Labour Force Status and Annual Earnings: Yukon and Northwest Territories versus Rest of Canada

	Single Origin Aboriginals		Non-Aboriginals	
	Terri-tories	Rest of Canada	Terri-tories	Rest of Canada
MEN				
Employment Status				
Employed (%)	44.7	51.5	88.2	77.5
Unemployed (%)	19.8	19.0	5.7	8.2
Not in LF (%)	35.5	29.5	6.1	14.2
FTFY (%)	24.1	28.1	62.3	55.8
N	282	2525	493	231811
Annual Earnings				
Mean ($)	34460	30157	49227	38607
% Gap vs. Non-Aboriginals	30.0	21.9	--	--
% Gap vs. Rest of Cda.	14.3	--	27.5	--
N	63	600	253	103691
WOMEN				
Employment Status				
Employed (%).	38.9	39.9	81.1	63.4
Unemployed (%)	15.3	11.8	3.9	6.8
Not in LF (%)	45.8	48.3	15.0	29.8
FTFY (%)	17.0	20.0	47.1	35.6
N	288	2965	408	236361
Annual Earnings				
Mean ($)	26716	23455	36941	26888
% Gap vs. Non-Aborig.	27.7	12.8	--	--
% Gap vs. Rest of Cda.	13.9	--	37.4	--
N	45	521	172	73268

Note: Includes individuals living off reserves only.

Table 8 - Territory Coefficients in Employment and Wage Regressions by Aboriginal Ethnic Origin

	MEN		WOMEN	
	Single Origin Aboriginals	Non-Aboriginals.	Single Origin Aboriginals	Non-Aboriginals.
Probits				
Employment	-.080 (.106)	.241 (.080)	.096 (.105)	.318 (.076)
Unemployment	.054 (.120)	-.032 (.008)	.342 (.128)	-.215 (.114)
FTFY	-.040 (.115)	.024 (.063)	.122 (.121)	.241 (.065)
Earnings Regressions				
	.203 (.072)	.170 (.026)	.196 (.076)	.300 (.032)

Note: standard errors in parentheses.

Appendix Table 1 - Probit Coefficients for Employment by Sex and Aboriginal Ethnic Origin

	MEN			WOMEN		
	Single Origin	Multiple Origin	Non-Aboriginal	Single Origin	Multiple Origin	Non-Aboriginal
Nfld	-.243	-.439	-.753	.420	-.435	-.586
	(.196)	(.186)	(.020)	(.205)	(.165)	(.019)
NB/PEI	-.334	.007	-.276	-.062	.158	-.271
	(.298)	(.166)	(.018)	(.298)	(.145)	(.016)
NS	-.301	-.011	-.259	.065	.016	-.324
	(.262)	(.139)	(.017)	(.267)	(.123)	(.016)
Que	-.236	-.261	-.127	.106	.068	-.190
	(.115)	(.093)	(.013)	(.112)	(.080)	(.012)
Man	-.320	.051	.094	-.246	-.057	.059
	(.100)	(.083)	(.018)	(.094)	(.075)	(.016)
Sask	-.353	.038	.225	-.408	.099	.110
	(.104)	(.103)	(.019)	(.097)	(.095)	(.017)
Alta	-.205	.074	.100	-.169	.103	.009
	(.094)	(.069)	(.012)	(.087)	(.060)	(.011)
BC	-.188	.049	-.077	-.297	-.050	-.140
	(.089)	(.063)	(.011)	(.083)	(.056)	(.010)
CMA	.103	.068	.032	.064	.092	.071
	(.058)	(.045)	(.007)	(.053)	(.040)	(.006)
Age	.119	.127	.155	.099	.131	.159
	(.014)	(.011)	(.002)	(.014)	(.012)	(.002)
Age**2	-.149	-.161	-.205	-.129	-.180	-.219
	(.018)	(.015)	(.002)	(.019)	(.016)	(.002)
kidslt6	--	--	--	-.299	-.596	-.620
				(.065)	(.050)	(.008)
kidsge6	--	--	--	-.096	-.310	-.268
				(.063)	(.049)	(.008)
married	.490	.395	.494	.304	.230	.100
	(.068)	(.060)	(.009)	(.069)	(.058)	(.010)
wsepdiv	.112	-.075	.065	.067	.001	.028
	(.116)	(.097)	(.015)	(.093)	(.076)	(.013)
grade 5-8	.176	.349	.277	.188	.795	.131
	(.143)	(.202)	(.024)	(.167)	(.339)	(.027)
grade 9-10	.320	.498	.346	.423	.987	.310
	(.144)	(.198)	(.024)	(.166)	(.334)	(.027)
grade 11-13	.787	1.022	.632	.878	1.513	.718
	(.147)	(.197)	(.024)	(.167)	(.333)	(.026)
training	.657	.948	.743	1.115	1.631	.952
	(.142)	(.196)	(.023)	(.166)	(.332)	(.026)
univ. 1-4	.934	1.194	.910	1.261	1.872	1.101
	(.164)	(.203)	(.024)	(.177)	(.334)	(.027)
univ 5+	--	1.396	.973	1.313	2.057	1.220
		(.270)	(.029)	(.323)	(.361)	(.032)
french	.251	.138	-.131	-.194	-.163	-.113
	(.136)	(.130)	(.015)	(.129)	(.110)	(.014)
biling	.407	.139	-.279	.091	.056	.035
	(.110)	(.070)	(.011)	(.103)	(.057)	(.010)
neither	.385	-.284	-.274	--	--	--
	(.290)	(.962)	(.050)			
ex_inc	1.88	.477	.085	1.35	.308	-2.40
	(1.205)	(.874)	(.115)	(1.175)	(.758)	(.104)
constant	-2.742	-2.685	-2.607	-2.666	-3.290	-2.595
	(.271)	(.267)	(.037)	(.280)	(.381)	(.038)
ln L	-1503.23	-2252.97	-103123.48	-1700.59	-2991.27	-131499.09
N	2525	4476	231811	2920	5104	235213

Notes:
1.Standard errors in parentheses.
2. Variable definitions: Nfld-BC give province of residence. CMA indicates residence in a Census Metropolitan Area. Kidslt6 and Kindsge6 count the number of children aged 0-5 and 6-16 respectively. Wsepdiv indicates widowed, separated or divorced; single denotes never married). Grade 0-4 through Univ 5+ indicate highest level of schooling completed. Official languages currently spoken are indicated by: english (English) french (French only), biling (bilingual), and neither. Age is age in years, and ex_inc is family income net of the respondent’s wage and salary income.

Appendix Table 2 - Coefficients from Wage Regressions by Sex and Aboriginal Ethnic Origin

	MEN			WOMEN		
	Single Origin	Multiple Origin	Non-Aboriginal	Single Origin	Multiple Origin	Non-Aboriginal
nfld	-.037	-.121	-.124	-.034	-.024	-.113
	(.132)	(.104)	(.010)	(.152)	(.117)	(.013)
nb_pei	-.166	-.176	-.151	-.095	-.126	-.131
	(.234)	(.085)	(.008)	(.244)	(.089)	(.010)
ns	-.291	-.087	-.161	-.376	-.221	-.182
	(.157)	(.055)	(.007)	(.187)	(.075)	(.009)
que	.046	-.118	-.093	.010	-.149	-.092
	(.069)	(.038)	(.005)	(.081)	(.042)	(.006)
man	-.056	-.127	-.136	-.128	-.138	-.143
	(.071)	(.037)	(.007)	(.063)	(.048)	(.008)
sask	-.124	-.163	-.140	-.232	-.236	-.171
	(.082)	(.050)	(.008)	(.080)	(.066)	(.009)
alta	.039	-.019	-.034	-.219	-.124	-.066
	(.065)	(.030)	(.005)	(.062)	(.035)	(.006)
bc	-.050	-.034	-.011	-.194	-.028	-.060
	(.059)	(.029)	(.004)	(.062)	(.034)	(.005)
cma	.065	-.021	.059	.110	.121	.129
	(.039)	(.020)	(.003)	(.039)	(.024)	(.003)
age	.074	.086	.077	.070	.078	.067
	(.013)	(.007)	(.001)	(.013)	(.008)	(.001)
age2	-.081	-.091	-.080	-.073	-.089	-.073
	(.016)	(.009)	(.001)	(.016)	(.011)	(.001)
married	.279	.267	.223	-.033	.015	.001
	(.051)	(.028)	(.004)	(.048)	(.029)	(.004)
wsepdiv	.177	.067	.120	-.094	.005	.023
	(.086)	(.044)	(.006)	(.066)	(.040)	(.006)
grd5_8	-.139	-.049	.049	-.030	--	-.013
	(.121)	(.170)	(.015)	(.163)		(.022)
grd9_10	.015	.034	.131	.031	-.161	.085
	(.121)	(.166)	(.015)	(.159)	(.080)	(.021)
grd11_13	.099	.183	.236	.241	.106	.270
	(.119)	(.165)	(.015)	(.157)	(.074)	(.021)
training	.172	.222	.317	.309	.188	.377
	(.116)	(.165)	(.015)	(.156)	(.073)	(.021)
univ1_4	.209	.330	.464	.486	.403	.618
	(.124)	(.166)	(.015)	(.159)	(.075)	(.021)
univ5p	.396	.546	.603	.608	.656	.848
	(.194)	(.173)	(.015)	(.199)	(.092)	(.022)
french	-.108	-.006	-.067	-.163	-.003	-.043
	(.084)	(.060)	(.007)	(.092)	(.067)	(.008)
biling	-.079	.062	.016	-.021	.107	.027
	(.064)	(.029)	(.005)	(.076)	(.032)	(.005)
neither	-.165	--	-.153	.092	--	-.200
	(.213)		(.027)	(.255)		(.028)
constant	8.369	8.163	8.296	8.302	8.253	8.255
	(.252)	(.199)	(.022)	(.273)	(.161)	(.028)
adj. R^2	.21	.34	.30	.24	.28	.28
N	600	1754	103691	521	1387	73268

Notes: Standard errors in parentheses. See Appendix Table A1 for variable definitions.

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