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THE CHANGING LABOR MARKET
POSITION OF CANADIAN IMMIGRANTS

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ABSTRACT

This paper uses pooled 1971, 1981, and 1986 Canadian census data to evaluate the extent to which (1) the earnings of Canadian immigrants at the time of immigration fall short of the earnings of comparable Canadian-born individuals, and (2) immigrants' earnings grow more rapidly over time than those of the Canadian-born. Variations in the labor market assimilation of immigrants according to their gender and country of origin are also analyzed. The results suggest that recent immigrant cohorts have had more difficulty being assimilated into the Canadian labor market than earlier ones, an apparent consequence of recent changes in Canadian immigration policy, labor market discrimination against visible minorities, and the prolonged recession of the early 1980s.

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THE CHANGING LABOR MARKET POSITION OF CANADIAN IMMIGRANTS

Immigration has accounted for slightly more than half of Canada's population increase this century, with the new immigrants' share of population increase having grown steadily since the 1930s (Bloom and Gunderson 1991, p. 327). Especially since the period following World War II, immigration has been a key instrument of Canadian labor market policy. Policymakers have used immigration flows to ameliorate the effects of variations in labor market tightness, both across regions and over time. Policymakers also expect immigration to be an important source of future labor force growth, providing resources that will help satisfy the growing health care and pension needs of an otherwise aging population.

The importance of immigration to the growth and stability of Canada's economy has given rise to a number of related policy issues. First, "visible minorities" are one of four designated groups targeted for affirmative action to promote employment equity.[1] Second, the effects of immigration are being dramatically felt in the education system, especially in larger cities, where increasing numbers of students do not speak English or French as their primary language. Third, immigration has always been a contentious issue with respect to its impact on the

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1. The federal government has passed formal employment equity legislation (including contract compliance) which essentially requires affirmative action for four designated groups: women, aboriginal people, handicapped people, and visible minorities. Such legislation also exists, or is under consideration, in a number of local and provincial jurisdictions.

wages and employment of the native-born population. Finally, multiculturalism has been fostered as a policy to encourage the "vertical mosaic" image of Canadian society, as opposed to the "melting pot" image that is the stereotype in the United States. If the vertical mosaic is to prevail, however, immigrants must have a reasonable opportunity to assimilate throughout the vertical structure and not be segregated at lower rungs of the ladder.

This paper focuses on a topic that cuts across all these issues: the extent to which immigrants assimilate into the Canadian labor market in the sense that their earnings patterns come to match the earnings patterns of otherwise comparable Canadian-born individuals.[2] The paper's contribution is empirical. It provides evidence on such factors as: (a) the extent to which immigrants' earnings at the time of immigration fall short of the earnings of comparable Canadian-born individuals (that is, the entry effect); (b) the extent to which immigrants' earnings grow more rapidly over time than those of comparable Canadian-born individuals (that is, the assimilation effect); (c) the number of years it takes for immigrants' earnings to catch up with those of comparable Canadian-born persons; (d) the extent to which the observed patterns of such assimilation may be biased because they do not adequately control for unobserved quality differences across immigrant cohorts (that

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2. Otherwise comparable is taken here to mean comparable in terms of observed human capital and demographic characteristics.

is, cohort effects)[3]; and (e) the degree of variation in the
labor market assimilation of immigrants according to such factors
as gender, country of origin, period of immigration, and the
state of the economy. This paper expands on Bloom and Gunderson
(1991) by adding evidence from the 1986 census, an important
update because it includes the effect of the prolonged recession
of the early 1980s, and by adding evidence for women and region
of origin.

The paper begins with a brief description of Canadian
immigration policy during the period covered by our data
analyses. The basic empirical model is then set out, followed by
the empirical results and a comparison of the results with those
from other studies. The final section summarizes and discusses
the results.

CANADIAN IMMIGRATION POLICY

A number of key elements of Canadian immigration policy
during the period of our data analyses—the period following World
War II until the 1986 census—are likely to affect the

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3. Quality is taken here to mean conventionally unobserved
attributes like motivation, ambition, and ability that may affect
earnings. Changes in conventionally observed determinants of
worker quality, such as years of education and work experience,
are controlled for by including them as regressors in the
earnings equations.

selectivity, labor market behavior, and assimilation of immigrants.[4] These policy elements include the following:

1. An emphasis on skills and labor market criteria in determining eligibility for immigration;

2. An emphasis on the labor market's capacity to absorb new immigrants without placing undue hardship on the existing domestic work force;

3. A willingness to change criteria in a "tap-on, tap-off" fashion to alter immigrant flows to meet domestic economic needs;

4. The introduction of the point system in 1967, which was skills oriented, but was mainly for the independent class, and which otherwise led to greater emphasis on family reunification;

5. The increased emphasis in the late 1970s on human rights and humanitarian issues as they related to immigrants, especially refugees.

For our purposes, the changes in immigration policy that occurred after the mid-1960s (points 4 and 5 above) are particularly important. The point system introduced in 1967 continued the emphasis on skills orientation and adaptability to the labor market; however, this emphasis applied mainly to the independent class of immigrants (and to a lesser degree, to assisted relatives). Family reunification became more important

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4. The key elements are discussed in an appendix that is available from the authors on request. Green (1976) provides a more detailed discussion of earlier immigration policy, with more recent changes discussed in DeSilva (1992), Green and Green (1993), Stoffman (1993), and Wright and Maxim (1991).

as a criterion, and immigrants arriving to be with their families did not have to meet the skills requirements.[5]

These changes were associated with two notable developments. The first was a decline in the proportion of immigrants in the independent and assisted relative (e.g., brothers, sisters, cousins) categories (both of which have to meet the skills-oriented criteria, with points awarded for having relatives in Canada) and a dramatic increase in the proportion admitted under the refugee and family classes (who did not have to meet the skills criteria, but who entered to be reunited with their families or as refugees).[6] These changes became especially pronounced after the early 1970s. Their dramatic effect is illustrated by the changing distribution of immigrants by entry category. In 1968 approximately 74 percent of immigrants were admitted under the point-related independent and assisted relatives categories, while 26 percent entered under family and refugee status. By the 1980s these proportions had almost reversed themselves, with only 35 percent admitted under the

5. Abbott and Beach (1993) document the fact that Canadian immigration policy became increasingly skills oriented until the late 1960s. Stoffman (1993)and Wright and Maxim (1991) document how it became less skills oriented thereafter.

6. Under the Immigration Act of 1976, which was implemented in 1978, the category of nominated relative was replaced by assisted relative, and the category of sponsored applicant was replaced by the family category. The new categories were essentially the same as the old ones, except that in the earlier designations, parents and grandparents were included as nominated relatives if under the age of sixty and as sponsored applicants if older than sixty. In the 1976 designation, they were categorized as family irrespective of age.

independent and assisted relatives categories and 65 percent under family and refugee status (Wright and Maxim 1991).

The second development was a shift in the country of origin distribution away from the industrial countries (notably European countries and the United States) to the developing countries (see Bloom and Gunderson 1991; Borjas 1988; Wright and Maxim 1991). Wright and Maxim (1991) indicate that in 1968, approximately 80 percent of immigrants were from industrial countries and 20 percent were from developing countries. By 1985, 33 percent came from industrial countries and 67 percent came from developing countries. Presumably, the changes that occurred since the mid-1960s have led to more difficulty in labor market assimilation because of the decreased emphasis on skills orientation and the greater emphasis on family reunification and human rights and humanitarian issues. This hypothesis is tested empirically in the following section.

THE EMPIRICAL FRAMEWORK: ENTRY, ASSIMILATION, AND COHORT EFFECTS

The basic empirical model is a Chiswick (1978) type of immigrant earnings equation, augmented to allow for the cohort-specific effects emphasized by Borjas (1985):

$$y = X\beta + \alpha I + \delta YSM(I) + \Sigma_j \theta_j COH_j(I) \tag{1}$$

where

y = natural logarithm of earnings

X = vector of standard human capital determinants of earnings and other control variables (given in appendix 1)[7], with associated parameter vector ß;

I = dummy variable coded 1 for immigrants, 0 for Canadian-born individuals;

YSM = years since migration for immigrants (= 0 for Canadian-born individuals); and

COH = a vector of time period dummy variables reflecting immigrants' year of entry into Canada, coded in five-year intervals (all dummies coded as 0 for the Canadian-born).

The coefficients of most interest in this specification are:

α = entry effect

δ = assimilation effect

θ_j = vector of immigrant cohort effects

Assuming that $\alpha < 0$ and $\delta > 0$, an estimate of the number of years it takes for immigrants' earnings to catch up with the earnings of otherwise comparable Canadian-born individuals (that

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7. Experience is measured here in the conventional fashion using Mincer's identity (age minus education minus six), because the census data do not contain a direct measure of actual experience. The discrepancy between actual and measured experience could be especially important for women, who are more likely to have interruptions in their labor market experience. Because they use the Canadian National Mobility Survey of 1973, which is unique for Canada in that it has a measure of actual experience, Abbott and Beach (1993), Beach and Worswick (1993), and Meng (1987) can circumvent this problem. The trade-off, of course, is that the 1973 Mobility Survey data contain no information on immigrants' assimilation patterns since the 1970s, which are the focus of this analysis.

is, years to equality) is given by the number of years it takes for the positive assimilation effect to offset the negative entry effect (net of any cohort fixed effect). This is calculated as

$$-\frac{(\alpha + \theta_j)}{\delta}.$$

The entry effect, α, is simply the difference in earnings between immigrants and otherwise comparable Canadian-born individuals at the time of entry of the immigrants into Canada, that is, when YSM = 0, and for the reference cohort that entered prior to 1956. We would expect this difference to be negative, reflecting the depreciated value of human capital that is specific to the origin country, the difficulties immigrants may initially have in communicating in Canada, a possible lack of information among Canadian employers concerning immigrants' credentials and qualifications, the possibility of relatively more labor market discrimination against new immigrants, and a lower reservation wage for immigrants.

The assimilation effect, δ, is the average percentage change in immigrants' earnings for each year spent in Canada, over and above any increases associated with other labor market characteristics (such as experience) that both immigrants and Canadian-born individuals enjoy. We would expect the estimate of δ to be positive, reflecting the assimilation of immigrants into the labor market as they generate credible information about their skills (especially if immigrants are positively selected on the basis of intelligence, ambition, spunk, and so on), as they

secure appropriate job matches, build their language skills, acquire other information valued in Canada, set up their own businesses, and so on.[8]

The cohort effects, θ_j, measure the average unobserved quality of particular immigrant cohorts relative to the omitted reference group of pre-1956 immigrants. For example, if the quality of a given number of school years increased across successive entry cohorts of immigrants, the corresponding estimates of cohort effects would tend to be positive and increase, irrespective of any cross-cohort changes in average years of schooling.

The cohort effects are of interest because they will capture the impact of immigration policy changes such as a shift from a skills-oriented points system to a refugee or family-reunification system, which may influence the labor market adaptability of new cohorts in a manner that is not captured by changes in immigrants' observed labor market characteristics.

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8. Note that the assimilation effect in our analysis is linear, i.e., δ is constant. Chiswick (1978) and several other authors have included a quadratic term for the effect of YSM. We included such a term in some specifications of our model (not shown here). This did not affect the entry and cohort effects significantly. However, for the more recent cohorts, parameter estimates for the specification imply that wage catchup will never occur. Since even the linear specification implies an extremely long catchup period, we chose to report those results.

DATA ISSUES: CROSS-SECTIONAL, LONGITUDINAL, AND QUASI-
LONGITUDINAL DATA

The parameters of the empirical model in equation (1) cannot
all be estimated using a single cross-sectional data set. In
particular, the years since migration (YSM) variable is perfectly
collinear with the vector of cohort effects in a single cross-
section. For example, an immigrant in the 1986 census reporting
four years since migration would automatically have to be
included in the 1981-85 entry cohort. Early work in this area
using cross-sectional data estimated a version of equation (1)
that did not allow for cohort effects (see Chiswick 1978 and
Borjas 1982). However, Borjas (1985) points out that biased
estimates of assimilation effects may result from this
specification. That is, the coefficient of YSM in a single
cross-section is the result of both the earnings growth
associated with YSM for a given cohort (the within-cohort effect)
and the earnings growth that may be associated with different
cohorts of immigrants (the cross-cohort effect).[9]

This problem can be circumvented by the use of longitudinal
data for which YSM does not uniquely determine an immigrants'
entry cohort. For instance, an immigrant with YSM = 10 in 1970
would have arrived in 1960, while an immigrant with YSM = 10 in

9. The coefficient may also reflect non-random patterns of
immigrant outmigration and immigrant mortality (see Lam, 1987 and
Bloom and Gunderson, 1991).

1980 would have arrived in 1970. Unfortunately, to our knowledge such longitudinal data are not available for Canada.

As an alternative, following Borjas (1985) for the United States and Bloom and Gunderson (1991) for Canada, we use cross-sections pooled over the 1971, 1981, and 1986 census years as a "pseudo-longitudinal" data set. While the same individuals cannot be identified across the three census years, different individuals with the same number of years since immigration can be identified as coming from different period of immigration cohorts, that is, the YSM variable is not a linear combination of the period of immigration cohort dummies. This data configuration enables estimation of assimilation effects (within-cohort earnings growth) as well as period of immigration cohort effects (cross-cohort earnings growth).

EMPIRICAL RESULTS

The empirical results are presented first for men (table 1) and then for women (table 2).[10] Separate cross-sectional regressions are reported for each census year. Pooled regressions are also reported to control for possible cohort

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10. The same regression specification is used for both men and women. The usual caveats apply for women, especially in the measurement of experience as noted earlier. Unfortunately, we could not address this issue by including children ever born in the equation because it was not reported the same way in all three censuses. The 1971 and 1981 censuses report the number of children ever born, while the 1986 census reports the number of children by age group currently living in the family.

effects. Appendix 1 defines the variables used in the analysis and reports basic descriptive statistics for the variables. Coefficient estimates for the human capital and other control variables are shown in appendix 2 for men and appendix 3 for women. (The regressions control for weeks worked per year and hours worked per week so that the results can be interpreted in terms of effects on hourly wages.) Separate results by region of origin (Europe and the United States compared to Asia, Africa, and Latin America) are given in table 3 for men and in table 4 for women. For expositional purposes, only the pooled results controlling for cohort effects are presented in tables 3 and 4.[11]

Table 1 (for men) confirms the expected negative entry effect and positive assimilation effect for each of the census year cross-sections. For example, the 1971 census indicates that immigrant men had, on average, a 5 percent earnings disadvantage at the time of their arrival in Canada relative to comparable Canadian-born men. However, their earnings grew by about one-third of one percent faster per year, so that after fifteen years, their earnings had caught up with the earnings of Canadian-born men. The fact that their earnings subsequently exceeded those of otherwise comparable Canadians is consistent with the hypothesis that immigrants are a positively selected group in terms of unobservable characteristics such as motivation and ability.

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11. Complete cross-sectional and pooled regressions by region of origin are available from the authors upon request.

The negative entry and positive assimilation effects become substantially larger (in absolute values) in the 1981 and 1986 censuses. For example, by 1986 the average immigrant had a 22 percent earnings disadvantage at the time of entry. Even though the assimilation effect was also larger—almost 1 percent faster earnings growth per year—it would take immigrants 26.5 years to catch up with Canadian-born men.

The pooled regressions indicate that with the exception of the 1961-65 cohort, each successive cohort of male immigrants had lower earnings at the time of entry, even after controlling for the effect of human capital and other determinants of earnings. This cross-cohort trend is quite pronounced for immigrants arriving in the 1970s and 1980s. For example, immigrants arriving between 1981 and 1986 (years marked by Canada's longest and deepest recession since the 1930s) earned 34 percent less than did comparable Canadian-born men (-30.3 percent cohort effect plus -3.5 percent entry effect).[12] As the next-to-last column in table 1 indicates, if the immigrants who arrived in the 1970s and 1980s assimilate into the Canadian labor market at the same rate as the earlier cohorts of immigrants (that is, have the

12. Nakamura and Nakamura (1992) show that the labor market position of immigrants is more sensitive to business-cycle downturns than the position of comparable native-born individuals, in both Canada and the United States.

same rate of excess wage growth), they will never attain the earnings of otherwise comparable Canadian-born men.[13]

The persistence of this earnings decline throughout the sustained prosperity of the 1970s, however, suggests that the lower earnings were not just caused by the economy's inability to absorb the new immigrants in times of high unemployment. One likely explanation is declining immigrant quality in terms of unobserved characteristics valued in the labor market, reflecting the policy shift away from the skills orientation and towards family reunification and human rights. Discrimination is another possible explanation, given that the composition of immigrants was changing rapidly towards visible minorities from Asia, Africa, and Latin America. Another possibility is that more recent cohorts of immigrants show an even greater tendency to cluster together in networks of families and ethnic

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13. Note that the calculations for the implied years to equality may be somewhat uncertain for the recent cohorts given that they are based on only a few years of experience in Canada. Using a standard approximation formula for the variance of the ratio of two random variables (see Stuart and Ord, 1987, page 325) yields an estimate of 45 years for the standard error of implied years to equality for the 1981-1986 cohort. By contrast, the estimated standard error is roughly 6 years for the cohorts that arrived before 1970. The results for the recent cohorts are therefore not well determined. The recent cohorts might also overtake Canadian-born individuals faster than predicted because of a higher assimilation effect. Our specification of a constant δ does not allow that to happen. We tried other specifications with interaction terms between the assimilation and cohort effects. For some cohorts, the results (available from the authors) showed a substantial reduction in years to equality. However, the range of values of YSM for those cohorts was also quite small, which makes any prediction of years to equality unreliable. For that reason, our preferred specification remained the one with a constant δ estimated with the information obtained from all the cohorts.

neighborhoods, making them feel less pressured to learn a new language and fit into the Canadian labor market.

Once the separate cohort effects are controlled for, the entry and assimilation effects are reduced relative to those of the separate census regressions. Overall, male immigrants into Canada have all entered at an earnings disadvantage and have enjoyed wage catchup at a rate of 0.25 percent per year, so that it takes them, on average, about twenty-seven years to catch up. The overall picture, however, is dominated by the cohort effects, which show a clear pattern of increasingly lower earnings at the time of entry for more recent cohorts such that they can never expect to assimilate fully in the sense of catching up with comparable Canadian-born men. This finding confirms the importance of accounting for cohort effects in the analysis of immigrant labor market assimilation.

The last column of table 1 presents the results of similar calculations done for male immigrants into the United States using the 1970, 1980, and 1990 U.S. censuses. (The full set of results used to prepare these calculations are available on request from the authors). These results also show a tendency for years to equality to increase for the cohorts that arrived in the mid-1960s and later. However, the estimates of years-to-equality are smaller in magnitude for the United States than for Canada, which suggests that recent immigrants to the U.S. are assimilating faster than those entering Canada.

As table 2 shows, the picture for women is fairly similar to that for men. The separate cross-sectional regressions for each census year indicate a pattern of increasingly lower wages at entry and more rapid assimilation, although the time needed to catch up still exceeds twenty years in the 1981 and 1986 censuses.

The pooled regressions for women indicate a pattern of lower entry wages for successive cohorts of immigrants, but not until the 1970s, and especially the 1980s. Cohorts that entered after the 1970s could never expect to assimilate fully in the sense of catching up with comparable Canadian-born women. After controlling for the cohort effects, the overall entry effect indicates that immigrant women earn about 4 percent less than comparable Canadian-born women. Their earnings growth is about 0.17 percent per year greater, but this is sufficiently small that it will take them twenty-seven years (the same as for men) to assimilate fully in the sense of catching up with the earnings of comparable Canadian-born women. As with men, the average twenty-seven years to equality masks large variations in the assimilation prospects of different cohorts. The most disconcerting finding is that recent cohorts of immigrant women, as is the case with immigrant men, can never expect to become fully assimilated.

While the assimilation coefficients for women are all positive, they are uniformly smaller than those for corresponding

samples of men.[14] This finding suggests that migration
selectivity is stronger for men than for women, which is an
unsurprising result because women are more likely than men to be
tied movers (see Mincer 1978).

Finally, the last column of table 2 reports years to
equality for female immigrants into the United States (the full
results are available from the authors). The findings are
interesting, although somewhat puzzling. Contrary to our
expectation, all the female immigrant cohorts have a positive
earnings gap at entry, so that the estimated number of years to
equality is a negative number. This finding, which clearly
deserves further exploration, suggests that female immigrants in
the U.S. do not suffer any economic disadvantage, contrary to
their Canadian counterparts and to men in both countries.

RESULTS BY REGION OF ORIGIN

Table 3 reports results by region of origin for men. The
negative entry effects are much stronger for immigrants from
Asia, Africa, and Latin America than for immigrants from Europe
and the United States. Even though the assimilation effects are
also relatively large for immigrants from Asia, Africa, and Latin
America, they are insufficient to overcome the disproportionately

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14. The difference between the assimilation coefficients for men
and women is statistically significant at the 10 percent level or
less for each of the three cross-sectional regressions, but not
for the pooled regression.

larger negative entry effects. Thus, catchup does not occur for forty-three years, compared to eleven years for European and U.S. immigrants. For both regions of origin, the cohort effects generally show declining assimilation for the more recent generations of immigrants. Each cohort of immigrants from Asia, Africa, and Latin America took longer to assimilate than the corresponding cohort from Europe and the United States. Indeed, the post-1970 cohorts could not be expected to assimilate over a reasonable work life.

Of considerable interest is the large negative cohort effect for the most recent (post-1981) immigrants. Such a large increase in the entry effect after 1981 could not reflect increased discrimination, because it occurred for immigrants from Europe and the United States as well as from Asia, Africa, and Latin America, and it probably does not reflect the effects of changes in immigration policy as few occurred during that period. This leaves the labor market's inability to absorb new immigrants during a prolonged recession as the most plausible explanation.

As indicated in table 4, the results for women by region of origin are qualitatively similar to those for men, with one exception: female immigrants from Asia, Africa, and Latin America assimilate faster (in nineteen years) than their counterparts from Europe and the United States (twenty-four years). Note, however, that these estimates are somewhat imprecise because of the relatively small sample sizes for the separate cohorts.

COMPARISON WITH OTHER STUDIES

The results described above are generally consistent with
those of previous studies based on independent data sets.
(DeSilva 1992 reviews the methodology, data, and results of many
of these and other related studies). For example, based on the
1973 Job Mobility Survey, Abbott and Beach (1993) and Meng (1987)
found that men caught up at thirteen and fourteen years,
respectively, which is comparable to our estimate of fifteen
years from the 1971 census. Based on the same survey, Beach and
Worswick (1993) found the assimilation effect to be much smaller
for women than for men, but the wage disadvantage at the time of
entry was also smaller (in fact a premium) for women than for
men. For the closest comparable year of our data—the 1971
census—we also find smaller assimilation effects for women than
for men, although we find a statistically insignificant entry
effect for immigrant women. Comparisons among more recent
cohorts of immigrants are not possible because the Job Mobility
Survey is for 1973.

Similarly, our results are generally consistent with those
based on census data. Using 1971 data, Tandon (1978) found that
immigrant men in Toronto catch up after sixteen years, which is
comparable to our estimate of fifteen years for immigrants across
Canada when our analysis is restricted to the 1971 census. Using
the 1981 census, Chiswick and Miller (1988) found that men caught
up after 22.0 years, which is similar to our estimate of 23.9

years when restricted to the 1981 census. Based on both the 1971 and 1981 censuses, Borjas (1988) documented the worsening position of immigrants over time, especially as the composition of immigrants changed towards groups that have more difficulty in adjusting to life in Canada. Finally, Baker and Benjamin (1992), Wright and Maxim (1991), and other studies that included the 1986 census also tended to find a worsening position of immigrants over time.

CONCLUSIONS

Our analysis suggests that the Canadian labor market has not been easily able to assimilate more recent cohorts of immigrants given the changing nature of such immigration. Prior to 1965, complete assimilation within fifteen years was the norm for both men and women and for immigrants originating from different regions. Thereafter, assimilation took longer and longer, with complete assimilation appearing completely out of reach for post-1970 immigrants. Assimilation has been particularly slow for immigrant men from Asia, Africa, and Latin America compared to those from Europe and the United States. For all regions of origin, however, assimilation has been slower or nonexistent for more recent cohorts.

Our results suggest that three major factors have contributed to the decline in immigrant assimilation, namely:

1.   Reduced immigrant quality because of changing immigration policies;

2.   Increased discrimination as the composition of immigrants changed towards more visible minorities; and

3.   Reduced absorptive capacity of the labor market, especially for less skilled groups, possibly reflecting the effect of prolonged recession.

The decline in assimilation began in the mid-1960s, just after changes in immigration policy de-emphasized skills and emphasized family reunification and human rights and humanitarian issues. These changes led to a decline in the share of immigrants in the skills-oriented independent category and to an increase in the family category. They also led to a shift in the composition of immigration from industrial to developing countries. These changes may have led to a decline in immigrant quality in terms of attributes that facilitate assimilation into the labor market. They may also have led to increased discrimination because immigrants from developing countries are more likely to be visible minorities.

Increased discrimination cannot be the full explanation, however, because the decline in assimilation occurred for immigrants from Europe and the United States as well as for visible minorities from Asia, Africa, and Latin America. (DeSilva 1992 provides evidence from the 1981 census indicating that there is little discrimination against immigrants purely on the basis of color). Neither can quality changes (emanating from

immigration policy) provide a full explanation, because assimilation deteriorated markedly in the early 1980s, and yet immigration policy did not change significantly at that time.

The large deterioration in assimilation that occurred for the 1981-86 cohort suggests that the recession of the early 1980s had a pronounced negative effect on the labor market position of that cohort, but whether this is a lasting effect we do not know. Recession, however, also cannot be the full explanation given the continuous decline in assimilation prior to the 1980s.

Further research is clearly needed to quantify the relative importance of the various factors contributing to the declining assimilation of immigrants. At this stage, it appears that the three factors considered here - immigration policy, discrimination, and macroeconomic forces - have all contributed to declines in the relative economic position of Canadian immigrants.

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APPENDIX 1

DEFINITION OF VARIABLES AND DESCRIPTIVE STATISTICS
(mean, standard deviation in parentheses when appropriate)

Variable	Description	Men Cross-sections 1971	1981	1986	Pooled sample	Women Cross-sections 1971	1981	1986	Pooled sample
LNWAGE	Logarithm of wages and salaries in previous year	8.677 (1.218)	9.673 (1.157)	9.940 (1.326)	9.452 (1.525)	7.838 (1.578)	9.017 (1.429)	9.371 (1.480)	8.841 (1.818)
EDUC	Education in years	10.26 (6.38)	11.48 (5.66)	11.97 (5.37)	11.26 (5.93)	10.80 (5.39)	11.76 (4.80)	12.18 (4.66)	11.67 (5.00)
EXP	Work experience in years (Age - Education - 6)	21.90 (22.72)	19.68 (22.13)	19.50 (21.39)	20.31 (22.15)	19.45 (22.78)	17.97 (21.55)	18.08 (20.64)	18.40 (21.58)
MARRIED	=1 if currently married	0.758	0.737	0.711	0.735	0.640	0.650	0.657	0.650
WKS0113	Dummy variables for weeks worked during previous year (reference: 49-52 weeks)	0.044	0.025	0.032	0.033	0.121	0.061	0.052	0.073
WKS1426		0.070	0.066	0.077	0.071	0.129	0.096	0.093	0.104
WKS2739		0.090	0.067	0.067	0.074	0.117	0.081	0.079	0.090
WKS4048		0.145	0.152	0.118	0.138	0.146	0.149	0.135	0.143
HRS0119	Dummy variables for hours per week (reference: 40-44 hours)	0.018	0.021	0.026	0.022	0.130	0.112	0.103	0.113
HRS2029		0.014	0.024	0.028	0.022	0.089	0.111	0.118	0.108
HRS3034		0.021	0.030	0.034	0.029	0.057	0.074	0.078	0.071
HRS3539		0.145	0.161	0.143	0.150	0.276	0.301	0.290	0.290
HRS4549		0.121	0.092	0.092	0.101	0.043	0.034	0.040	0.039
INDEX81	Dummy variables for observation taken from 1981 and 1986 censuses respectively	--	--	--	0.342	--	--	--	0.341
INDEX86		--	--	--	0.344	--	--	--	0.392
YSM	Years since immigration (for immigrants)	16.85	18.78	20.67	18.81	16.09	17.92	19.59	18.04
IMMIG	Dummy variable for individuals born outside Canada	0.207	0.198	0.193	0.199	0.210	0.199	0.193	0.200
COH5660	Dummy variables for cohorts of immigrants (reference: immigrants who arrived before 1956)	--	--	--	0.166	--	--	--	0.161
COH6165		--	--	--	0.104	--	--	--	0.115
COH6670		--	--	--	0.197	--	--	--	0.209
COH7175		--	--	--	0.111	--	--	--	0.129
COH7680		--	--	--	0.071	--	--	--	0.082
COH8186		--	--	--	0.026	--	--	--	0.032

(continued)

APPENDIX 1 (continued)

"--" indicates that the information is not available

Note: The data for our analysis come from the public use samples (individual files) of the 1971, 1981, and 1986 Canadian censuses, available from Statistics Canada. The immigrants we analyze represent 1-in-100 samples and the individuals born in Canada represent 1-in-500 samples of their respective populations. All the results are weighted accordingly. The analysis is restricted to individuals aged 20 to 64, who reported positive wages and salaries in excess of 50 cents per hour in the 1971 census, $1.00 per hour in the 1981 census, and $1.25 per hour in the 1986 census, who were not mainly self-employed, and who worked a positive number of weeks during the year prior to the census. Years of education were estimated using categorical information from the census questionnaires. Note that the 1971 census does not use the same categories as the 1981 and 1986 censuses. Therefore, although efforts were made to make the data as consistent as possible, some comparisons should be made with care. The number of years since migration were obtained from information on the calendar year during which a person arrived in Canada. In some cases, this was reported as a single year, while in other cases it was reported as an interval. When the information was reported as an interval, the mid-point of the interval was assumed. For open-ended intervals, the mid-point between the individual's year of birth and the end of that interval was assumed. Categorical dummy variables were defined for weeks per year and hours per week. This was done so that all the results of the analysis could be interpreted in terms of hourly wages. Note, however, that the weeks refer to the year prior to the census, while the hours refer to the week prior to the census (the reference week). Therefore, this transformation may have generated some error.

Further information about data and programs can be obtained from Gilles Grenier.

APPENDIX 2

REGRESSION RESULTS, MEN

Variable	Cross Sections			Pooled Sample
	1971	1981	1986	
CONSTANT	7.800 (379.46)	8.683 (419.60)	8.799 (370.90)	7.712 (611.89)
EDUC	0.051 (43.14)	0.048 (38.07)	0.055 (38.33)	0.052 (69.95)
EXP	0.037 (33.12)	0.043 (38.43)	(0.049 (38.58)	0.043 (63.87)
EXPSQ	-0.00061 (-28.33)	-0.00071 (-31.12)	-0.00074 (-28.73)	-0.00069 (-51.09)
MARRIED	0.2054 (21.18)	0.2088 (22.63)	0.1951 (19.24)	0.2076 (37.05)
WKS0113	-1.6308 (-84.01)	-1.6788 (-71.25)	-1.7808 (-76.74)	-1.694 (-134.20)
WKS1426	-0.9725 (-62.84)	-0.9110 (-60.08)	-0.9310 (-59.24)	-0.9381 (-104.81)
WKS2739	-0.4674 (-34.35)	-0.4521 (-30.41)	-0.5166 (-31.44)	-0.4781 (-55.32)
WKS4048	-0.0999 (-9.12)	-0.1282 (-12.42)	-0.1833 (-14.56)	-0.1362 (-20.90)
HRS0119	-0.6077 (-21.08)	-0.4160 (-16.26)	-0.4485 (-17.63)	-0.4777 (-31.27)
HRS2029	-0.2273 (-7.17)	-0.2635 (-11.04)	-0.3641 (-14.84)	-0.3000 (-19.98)
HRS3034	-0.0367 (-1.39)	-0.0870 (-4.10)	-0.1440 (-6.47)	-0.0995 (-7.50)
HRS3539	0.0464 (4.17)	0.0196 (1.93)	0.0068 (0.58)	0.0240 (3.78)
HRS4549	-0.0168 (-1.44)	0.0084 (0.67)	0.0259 (1.85)	0.0040 (0.54)

APPENDIX 2 (continued)

| Variable | CROSS SECTIONS | | | Pooled Sample |
	1971	1981	1986	
INDEX81	--	--	--	0.9236 (163.42)
INDEX86	--	--	--	1.1894 (201.50)
YSM	0.00353 (4.75)	0.00580 (7.53)	0.00839 (9.73)	0.00248 (3.11)
IMMIG	-0.0535 (-3.46)	-0.1384 (-8.16)	-0.222 (-10.95)	-0.0354 (-1.37)
COH5660	--	--	--	-0.0064 (-0.38)
COH6165	--	--	--	0.0048 (0.23)
COH6670	--	--	--	-0.0234 (-1.13)
COH7175	--	--	--	-0.0839 (-3.53)
COH7680	--	--	--	-0.1491 (-5.20)
COH8186	--	--	--	-0.3030 (-7.78)
R^2	0.558	0.508	0.541	0.694
N	17071	18220	18100	53391

The figures in parentheses are the absolute values of t-statistics.

Note: See appendix 1.

APPENDIX 3

REGRESSION RESULTS, **WOMEN**

Variable	CROSS SECTIONS			Pooled Sample
	1971	1981	1986	
CONSTANT	7.574 (240.04)	8.401 (260.28)	8.451 (253.55)	7.3897 (388.67)
EDUC	0.064 (32.20)	0.067 (31.96)	0.077 (36.32)	0.070 (58.68)
EXP	0.017 (10.66)	0.027 (17.90)	0.039 (25.49)	0.0289 (31.98)
EXPSQ	-0.00029 (-8.68)	-0.00045 (-13.50)	-0.00066 (-19.50)	-0.00048 (-24.69)
MARRIED	-0.0177 (-1.42)	-0.0196 (-1.70)	0.0047 (0.41)	-0.0073 (-1.07)
WKS0113	-1.8868 (-98.43)	-1.8331 (-80.96)	-1.8360 (-76.81)	-1.8642 (-148.48)
WKS1426	-0.9889 (-54.52)	-1.0050 (-54.68)	-1.0373 (-56.18)	-1.0126 (-95.03)
WKS2739	-0.5100 (-26.90)	-0.4971 (-25.38)	-0.5462 (-27.77)	-0.5175 (-46.13)
WKS4048	-0.1890 (-11.17)	-0.2279 (-15.05)	-0.2320 (-14.91)	-0.2198 (-23.93)
HRS0119	-0.8013 (-41.96)	-0.7154 (-39.04)	-0.7274 (-39.14)	-0.7513 (-69.30)
HRS2029	-0.3382 (-16.07)	-0.4559 (-25.12)	-0.4455 (-25.59)	-0.4260 (-39.45)
HRS3034	-0.0754 (-2.98)	-0.2013 (-9.58)	-0.2684 (-13.16)	-0.2039 (-16.09)
HRS3539	0.0225 (1.60)	0.0277 (2.16)	0.0085 (0.67)	0.0201 (2.63)
HRS4549	-0.0726 (-2.542)	0.0393 (1.34)	0.0153 (0.57)	-0.0045 (-0.28)

APPENDIX 3 (continued)

Variable	CROSS SECTIONS			Pooled Sample
	1971	1981	1986	
INDEX81	--	--	--	0.9534 (113.90)
INDEX86	--	--	--	1.2446 (145.23)
YSM	0.00101 (0.90)	0.00354 (3.09)	0.00444 (3.88)	0.00165 (1.40)
IMMIG	-0.0033 (-0.15)	-0.1037 (-4.29)	-0.1063 (-4.13)	-0.0439 (-1.13)
COH5660	--	--	--	0.0289 (1.19)
COH6165	--	--	--	0.0437 (1.49)
COH6670	--	--	--	0.0191 (0.64)
COH7175	--	--	--	-0.0270 (-0.79)
COH7680	--	--	--	-0.0798 (-1.96)
COH8186	--	--	--	-0.1293 (-2.45)
R^2	0.672	0.565	0.545	0.722
N	9504	11835	13405	34744

The figures in parentheses are the absolute values of t-statistics.

<u>Note</u>: See appendix 1.

TABLE 1. Entry, Assimilation, and Cohort Effects, Canadian Immigrants, Men, 1971, 1981, and 1986, with a comparison to the United States

Effect (estimated coefficient)	1971	1981	1986	Pooled data, controlling for cohort effects	Implied years to equality	Implied years to equality (U.S. immi-grants) [a]
Entry Effect, α X 100	-5.35 (3.46)	-13.84 (8.16)	-22.21 (10.96)	-3.54 (1.38)	n.a.	n.a.
Assimilation effect, δ X 100	0.35 (4.75)	0.58 (7.53)	0.84 (9.73)	0.25 (3.11)	n.a.	n.a.
Cohort effect, θ_i X 100						
Cohort pre 1956 (reference)				-	14.3	5.2
Cohort 1956-60				-0.64 (0.38)	16.9	5.2
Cohort 1961-65				0.48 (0.23)	12.3	8.0
Cohort 1966-70				-2.34 (1.13)	23.7	24.8
Cohort 1971-75				-8.39 (3.53)	48.1	31.7
Cohort 1976-80				-14.91 (5.20)	74.5	48.8
Cohort 1981-86				-30.30 (7.78)	136.6	39.5
Years to equality, $-\alpha/\delta$	15.2	23.9	26.5	27.5[b]	n.a.	n.a.

The figures in parentheses are the absolute values of t-statistics.

Note: Coefficients estimated from $y = Xb + \alpha I + \delta \, YSM(I) + \Sigma_i \, \theta_i COH_i(I)$, where y is the log of earnings, X is human capital and other control variables, I denotes immigrants as opposed to Canadian-born individuals, YSM is years since migration, and COH_i is the immigrant entry cohort.

(a) Calculated from the 1970, 1980, and 1990 U.S. censuses. The model specification is the same as for Canada, with the following exceptions: a dummy for black is included; the reference category is immigrants who arrived before 1960; one year must be subtracted from all the cohort definitions (e.g., the 1961-65 Canadian cohort corresponds to the 1960-64 U.S. cohort). The U.S. data also allow us to calculate years to equality for the more recent 1985-89 cohort of immigrants. The result is 61.4 years.

(b) Average years to equality, calculated as a weighted average for the different cohorts, with cohort sample sizes used as weights.

n.a. = not applicable

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TABLE 2. Entry, Assimilation, and Cohort Effects, Canadian Immigrants, Women, 1971, 1981, and 1986, with a comparison to the United States

Effect (estimated coefficient)	1971	1981	1986	Pooled data, controlling for cohort effects	Implied years to equality	Implied years to equality (U.S. immigrants)[a]
Entry Effect, α X 100	-0.33 (0.15)	-10.37 (4.29)	-10.63 (4.13)	-4.39 (1.13)	n.a.	n.a.
Assimilation effect, δ X 100	0.10 (0.90)	0.35 (3.09)	0.44 (3.88)	0.17 (1.40)	n.a.	n.a.
Cohort effect, θ_i X 100						
Cohort pre 1956 (reference)				-	26.6	<0
Cohort 1956-60				2.89 (1.19)	9.1	<0
Cohort 1961-65				4.37 (1.49)	0.1	<0
Cohort 1966-70				1.91 (0.64)	14.9	<0
Cohort 1971-75				-2.70 (0.79)	42.9	<0
Cohort 1976-80				-7.98 (1.96)	74.9	<0
Cohort 1981-86				-12.93 (2.45)	104.9	<0
Years to equality, $-\alpha/\delta$	3.2	29.3	24.0	26.9[b]	n.a.	n.a.

See notes for table 1.

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TABLE 3.   Entry, Assimilation, and Cohort Effects, by Country of Origin, Pooled
            Regressions, Men

Effect (estimated coefficient)	Coefficient estimate		Implied years to equality	
	Europe & U.S.	Asia, Africa & Latin America	Europe & U.S.	Asia, Africa & Latin America
Entry Effect, α X 100	-1.52 (0.54)	-22.27 (2.43)		
Assimilation effect, δ X 100	0.19 (2.18)	0.54 (2.05)		
Cohort effect, θ_i X 100				
Cohort pre 1956 (reference)			8.0	40.9
Cohort 1956-60	-1.00 (0.56)	3.42 (0.45)	13.2	34.6
Cohort 1961-65	-0.18 (0.08)	10.82 (1.43)	8.9	21.0
Cohort 1966-70	-0.28 (0.12)	4.30 (0.59)	9.4	33.0
Cohort 1971-75	-0.04 (0.02)	-1.27 (0.17)	8.2	43.3
Cohort 1976-80	-2.15 (0.56)	-7.60 (0.90)	19.2	54.9
Cohort 1981-86	-16.54 (2.86)	-21.78 (2.24)	94.7	81.0
Years to equality			10.9	43.1

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TABLE 4. Entry, Assimilation, and Cohort Effects, by Country of Origin, Pooled Regressions, Women

Effect (estimated coefficient)	Coefficient estimate		Implied years to equality	
	Europe & U.S.	Asia, Africa & Latin America	Europe & U.S.	Asia, Africa & Latin America
Entry Effect, α X 100	-2.12 (0.49)	-14.40 (1.12)		
Assimilation effect, δ X 100	0.08 (0.62)	0.63 (1.83)		
Cohort effect, θ_i X 100				
Cohort pre 1956 (reference)			25.4	22.8
Cohort 1956-60	2.25 (0.84)	3.75 (0.35)	<0	16.9
Cohort 1961-65	1.85 (0.55)	12.34 (1.17)	3.3	3.3
Cohort 1966-70	0.19 (0.05)	6.52 (0.63)	23.2	12.5
Cohort 1971-75	-2.52 (0.57)	0.91 (0.09)	55.7	21.4
Cohort 1976-80	-8.02 (1.42)	-1.40 (0.12)	121.6	25.0
Cohort 1981-86	-7.72 (0.99)	-7.22 (0.54)	118.1	34.3
Years to equality			24.4	18.9