

Unemployment Incidence of Immigrant Men in Canada

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Nous comparons l'impact du chômage sur les immigrants et les non-immigrants de sexe masculin au Canada en utilisant onze sondages en coupe qui couvrent la période 1982 à 1993. Les nouveaux immigrants ont fait face à des probabilités de chômage plus élevées que les non-immigrants et cette différence s'est accrue au cours des années de recession. Ensuite, les mesures d'assimilation des immigrants en ce qui concerne le chômage dépendent des conditions macroéconomiques pendant la période de l'enquête. L'implication principale de nos résultats en matière de politique est que les nouveaux immigrants bénéficieraient le plus de mesures qui faciliteraient la transition des immigrants chômeurs pendant les recessions à une situation d'immigrants employés.

The unemployment incidence of immigrant and non-immigrant men in Canada is compared using 11 cross-sectional surveys spanning the years from 1982 to 1993. Recent immigrants are found to have higher unemployment probabilities than nonimmigrants with the difference being larger in recession years. Subsequently, measures of unemployment assimilation of immigrants are found to be sensitive to the macroeconomic conditions of the survey years. The main implication of the results for policy is that recent immigrants would benefit most from labour market programs that facilitate the transition of unemployed immigrants back to employment during recessions.

INTRODUCTION

Immigration policy is often evaluated in terms of the success with which immigrants become established in the new labour market. Using a unique data set based on 11 annual cross-sectional surveys, the unemployment experience of immigrants and non-immigrants is compared over recessionary and expansionary periods. The results provide new information on the success of Canadian immigration

policy at selecting immigrants who will find employment in the Canadian labour market. Also, differences in the unemployment probabilities of immigrants and non-immigrants are found to be larger in recessions than in expansions. This indicates that the results from previous studies of (i) the unemployment experience of immigrants (see Miller 1986, Inglis and Stromback 1986, and Beggs and Chapman 1990), (ii) immigrant use of government transfers (see Blau 1984, Borjas and Trejo 1991, and

Baker and Benjamin 1995), and (iii) the net fiscal benefit from immigration (see Simon 1984, and Akbari 1989) may be sensitive to the macroeconomic conditions at the time the data were collected. The sensitivity results from the fact that these studies typically use data from one or two cross-sectional surveys; therefore, the researchers are not able to control for the macroeconomic conditions in the analysis.

Surprisingly few studies have analyzed the unemployment experience of immigrants.¹ Several studies have analyzed the unemployment incidence of immigrants and non-immigrants using Australian data (see Miller 1986, Inglis and Stromback 1986, and Beggs and Chapman 1990). These studies find a negative relationship between the probability of unemployment and the years-since-migration (YSM) of the immigrants.

In this paper, unemployment probabilities of immigrant and non-immigrant men are compared. The difference between the unemployment probability of an immigrant man and an otherwise observationally identical non-immigrant man will be referred to as the *immigrant unemployment differential*. This gives a snapshot view of the relative success of immigrants compared to non-immigrants at finding employment. Two dynamic relationships involving the immigrant unemployment differential are analyzed. First, the change in the immigrant unemployment differential with years of residence in Canada, or the *unemployment assimilation*, is estimated for a number of immigrant arrival cohorts. The unemployment assimilation of an arrival cohort measures the success of members of the cohort at adapting to the new labour market over time. Second, *cohort unemployment effects*, defined to be differences in the immigrant unemployment differential across arrival cohorts for a given number of years of residence in the new country, are analyzed. Cohort unemployment effects measure changes in unemployment probabilities due to differences across immigrant cohorts in the unobserved characteristics of cohort members that will persist over time. These

differences in unobserved characteristics may be due to changes over time in the immigrant admission criteria² and/or to changes over time in the composition of the pool of immigrant applicants.³ The possible existence of these permanent cohort effects will have important policy implications since the relative labour market performance of recent immigrants will not improve as years in the Canadian labour market increase.

A potentially important element in the measurement of both unemployment assimilation and cohort unemployment effects is the need to control for the macroeconomic conditions over the period of observation. If relative employment opportunities for immigrants and non-immigrants differ in expansionary periods compared to recessionary periods, then failing to control for different macro conditions could lead to misleading inferences being drawn about the measurement of cohort effects and unemployment assimilation.

The paper is structured as follows. First, the data are described and the final estimation sample is defined. The econometric model used in estimation is then outlined and results from Probit estimation of the incidence of unemployment for immigrants and non-immigrants are discussed. The unemployment probabilities predicted by the model for immigrants and non-immigrants are used to analyze the unemployment assimilation of different arrival cohorts holding the macroeconomic conditions fixed. The conclusions and implications for public policy are discussed in the final section.

THE DATA AND ESTIMATION SAMPLE

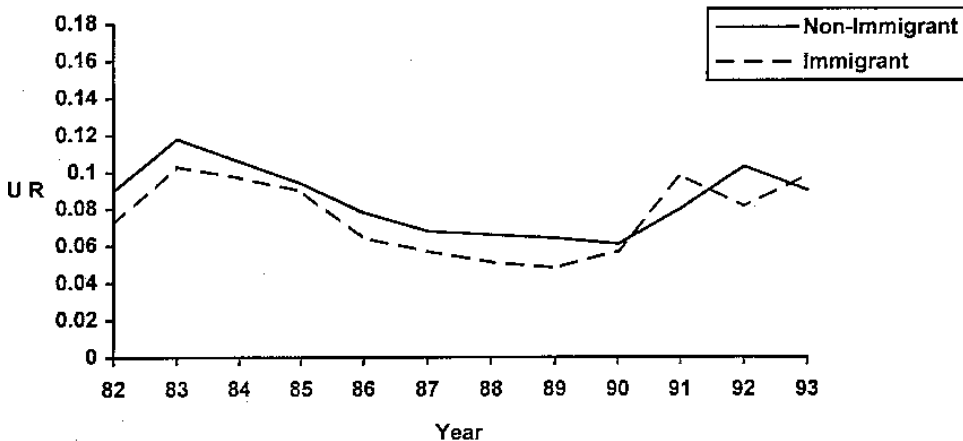
The data used in the estimation come from the microdata tapes titled *Individuals Age 15 and Over, With and Without Income* of the Survey of Consumer Finances of Statistics Canada. The survey was carried out in a two-week period in April of the 11 years 1982, 1983, and 1985 through 1993.⁴

The sample is restricted to men who stated that they were either employed or unemployed in the survey week and between the ages of 24 and 53 in 1982.⁵ The age restriction is intended to place the focus of the analysis on men who are likely to have completed their education but who are not yet at the mandatory retirement age in each of the 11 survey years. In each survey, it is possible to identify immigrants who are members of the following five immigrant arrival cohorts: 1946-55, 1956-65, 1966-70, 1971-75, and 1976-80.⁶

As a preliminary investigation of differences in unemployment incidence of immigrants and non-immigrants over the business cycle, the reference week unemployment rates (UR) of immigrants and non-immigrants are presented in Figure 1 for each survey year. The unemployment rate of non-

immigrants in the two recessions hits peaks of 11.8 percent in 1983 and 10.3 percent in 1992, consistent with unemployment peaks from published data on the aggregate male unemployment rate. The unemployment rate for non-immigrants is higher than for immigrants in each survey year except 1991 and 1993, but the unemployment rates of immigrants and non-immigrants follow similar patterns across the recession of the early 1980s, the expansion of the mid to late 1980s and the recession of the early 1990s. The immigrant unemployment rate is closer to the non-immigrant unemployment rate in the recessions of the early 1980s and early 1990s than in the expansionary period in between indicating that the severity of the business cycle fluctuations is worse for immigrants than for non-immigrants. It is also interesting to note that the immigrant unemployment rate is generally closest to the non-

FIGURE 1
Unemployment Rates by Immigrant Status over the Sample Years



Note: The 1984 values are the average of the 1983 and 1985 values in each case.

Source: Author's compilation based on Statistics Canada (1982, 1983, 1985-93).

immigrant unemployment rate in the recession of the early 1990s indicating that the unemployment rate of immigrants is converging upward to that of the non-immigrants over the sample years.

Differences in the average unemployment rates presented may be due in part to differences in the observable characteristics of immigrants and the native born. The weighted sample means presented in Table 1 indicate that immigrants and non-

immigrants differ significantly along a number of personal characteristics, but that immigrants from successive arrival cohorts have similar personal characteristics. Immigrants are on average more likely than non-immigrants to have completed a university degree or other postsecondary training, and are more likely to reside in large urban centres and in the provinces of Ontario and British Columbia. Immigrants are also much more likely to have spoken a language other than English or French in their

TABLE 1
Sample Means (%)

	<i>Non-Immigrant</i>	<i>Arrival Cohort</i>				
		<i>1976-80</i>	<i>1971-75</i>	<i>1966-70</i>	<i>1956-65</i>	<i>1946-55</i>
<i>Age</i>	41.3 years	39.2 years	41.4 years	44.1 years	45.6 years	47.0 years
<i>Region</i>						
Atlantic	9.1	1.7	1.1	1.5	1.4	1.8
Quebec	29.5	16.9	14.2	15.4	15.1	10.9
Ontario	31.9	45.7	54.6	55.9	58.1	56.6
Prairies	18.3	19.0	13.9	11.1	10.1	15.1
BC	11.3	16.8	16.2	16.1	15.3	15.6
<i>First Language</i>						
English	64.2	33.4	36.4	38.3	32.8	33.4
French	25.3	3.4	3.1	4.0	3.4	2.9
Other	10.5	63.1	60.5	57.6	63.8	63.7
<i>Residence Size</i>						
City	52.5	85.7	87.3	84.6	81.3	71.3
Town	25.8	9.1	8.0	10.0	11.4	16.0
Rural	21.7	5.2	4.7	5.4	7.3	12.7
<i>Education</i>						
0-8 years	12.8	11.5	14.6	14.7	19.4	17.4
High school	46.2	35.4	33.4	33.8	38.4	39.8
Postsecondary	25.7	27.2	25.5	25.8	25.7	24.9
University	16.7	25.4	24.4	23.9	16.7	18.6
<i>Sample Size</i>	24992	2679	3906	4396	5926	4549

Note: The Atlantic region contains the provinces Prince Edward Island, Nova Scotia, New Brunswick, and Newfoundland. The Prairie region contains the provinces Manitoba, Saskatchewan, and Alberta.

Source: Author's compilation based on Statistics Canada (1982, 1983, 1985-93).

childhood. Comparing across arrival cohorts, it appears that males from more recent cohorts are more likely to have tertiary educational qualifications than males from earlier cohorts, and are marginally more likely to speak a first language other than English or French.⁷

Since an individual's probability of unemployment may depend on factors such as age, education, location of residence, and language fluency, the differences in unemployment rates reported in Figure 1 may be due to differences in personal characteristics between immigrants and non-immigrants. In order to identify differences in unemployment probabilities between immigrants and non-immigrants, *ceteris paribus*, estimation of a Binary Choice Model (BCM) is required.

THE MODEL AND MEASUREMENT ISSUES

Estimation of the BCM is carried out over the pooled sample of immigrants and nonimmigrants. In order to allow for the possibility that the immigrant unemployment differential is sensitive to the macroeconomic conditions, a flexible econometric specification is employed that does not impose a particular functional form on the relationship between years-since-migration and the probability of unemployment:

$$I_i(t) = X_i(t)\beta + \sum_{j=1}^J \sum_{t=1}^T \delta^j(t) C_i^j Y(t) + v_i(t) \quad (1)$$

where individual i is unemployed in period t if $I_i(t) \geq 0$, and employed otherwise. Equation (1) will be referred to as our "flexible form" specification. Probit estimation of (1) generates the probability that each individual i will be unemployed in period t given his personal characteristics.

The vector of personal characteristics, $X_i(t)$, contains controls for the individual's education, region of residence, size of centre of residence, first language spoken, and marital status.⁸ A separate set of coefficients on the vector of personal characteris-

tics is estimated for each year in the sample, to allow the effects of these characteristics to vary over the business cycle. For example, during recessions, residents of the Atlantic provinces may be relatively more likely to be unemployed than residents of other provinces. The explanatory variables contained in $X_i(t)$ also include flexible age profiles for each of six age-in-82 cohorts: 24-28, 29-33, 34-38, 39-43, 44-48, and 49-53. To allow unrestricted experience profiles over the business cycle for each age cohort, a separate shift parameter is estimated for each age cohort for each survey year of the sample.

The effects of year of migration on the probability of unemployment are reflected in the dummy variables, C_i^j for $j=1, \dots, J$, that identify immigrants in each of the five arrival year cohorts: 1946-55, 1956-65, 1966-70, 1971-75, and 1976-80. In (1), each immigrant cohort variable is interacted with the eleven survey year dummy variables, $Y(t)$ for $t=1, \dots, T$, as with the age cohort variables defined above. Each coefficient, $\delta^j(t)$, on these interaction terms shifts the intercept of the index for immigrants in each cohort in each year.

It will also be useful to compare results from (1) with results from an alternative specification that is based on the conventional approach adopted in the immigrant earnings assimilation literature. This approach, often termed the fixed-effects model, involves estimating a parametric specification in which immigrant labour market outcomes are a function of years-since-migration and a set of immigrant cohort-specific dummy variables that allow a separate intercept shift for each arrival cohort. (See Borjas 1985, Borjas and Trejo 1991, and Baker and Benjamin 1994, 1995). The specification of the BCM's index in this case is:

$$I_i = X_i(t)\beta + \sum_{j=1}^J \delta_i^j C_i^j + \phi_1 YSM_i + \phi_2 YSM_i^2 + u_i \quad (2)$$

The vector of personal characteristics, X_i , contains controls for the individual's education, region of residence, size of centre of residence, first language spoken, and marital status.⁹ As well, the vector of

personal characteristics includes a separate linear-quadratic experience profile for each of six age-in-82 cohorts: 24-28, 29-33, 34-38, 39-43, 44-48, and 49-53. A YSM-squared term is added to the specification to allow for a non-linear relationship between years since migration and the probability of being unemployed.

Equation (2) can be thought of as a special case of equation (1). In equation (2), differences in the BCM index between immigrants from different arrival cohorts, holding years-since-migration the same, are fixed and are captured by differences in the cohort dummy variables. As will be shown below, specification (1) allows for differences across immigrant cohorts to vary across time even when YSM is held equal. This allows for the possibility that the macroeconomic conditions may have different effects on the unemployment probabilities of immigrants from different arrival cohorts.

RESULTS OF PROBIT ESTIMATION

Specification (1)

Results based on Probit estimation of the model using specification (1) are presented in Table 2.¹⁰ Equation (1) allows a separate shift parameter for each immigrant cohort in each year of the sample. Instead of reporting these coefficient estimates, it is more instructive to use the estimates to generate predicted probabilities of unemployment for a representative individual. Table 2 contains estimates of the immigrant unemployment differential based on these predicted probabilities, for each arrival cohort in each survey year for demographic characteristics evaluated at the following default values: resident in an urban area in Ontario, married, aged 39-42 in 1982, with English as the first language, and with a high school education.¹¹

To illustrate the contents of Table 2, the value .0270 for the 1976-80 arrival cohort in 1986 indicates that an immigrant from this arrival cohort had a probability of being unemployed in 1986 that was

2.7 percentage points larger than a native-born person of similar demographic characteristics. While specification (1) does not model the effects of macroeconomic conditions on the unemployment probabilities of immigrants and nonimmigrants, it can be thought of as a reduced-form relationship. The flexible treatment of differences in unemployment probabilities between immigrants and the native-born by survey year allows for comparisons of these relationships across survey years with similar macroeconomic conditions.

Each row of Table 2 gives the estimated cross-sectional profiles of the immigrant unemployment differentials by cohort in each survey year. Therefore, the rows are comparable with previous studies of unemployment experience of immigrants that use a single cross-sectional survey (see Inglis and Stromback 1986; Beggs and Chapman 1990). The general pattern in each of the annual cross-sections is consistent with the previous results. For example, in the 1983 survey year, immigrants from the 1976-80 cohort have a predicted unemployment probability which is around six percentage points higher than the probability for non-immigrants, while immigrants from the earliest cohort, 1946-55, have a predicted unemployment probability which is around three percentage points lower than the probability of non-immigrants, *ceteris paribus*.

In contrast, when each immigrant cohort is followed across time (or down each column of the table), the immigrant unemployment differentials do not fall monotonically with years of residence. For example, the 1976-80 cohort experience large fluctuations in their unemployment probabilities compared with those of non-immigrants with the difference in these probabilities, or the immigrant unemployment differential, varying from six percentage points in 1983 and five percentage points in 1991 to being near zero in the expansionary period of the mid to late 1980s. The 1971-75 cohort experiences similar counter-cyclical variations. The immigrant unemployment differentials of the 1966-70 and 1956-65 cohorts of immigrants do not have as strong

TABLE 2
Differences in Unemployment Probabilities between Immigrants and Non-Immigrants by Arrival Cohort and Survey Year

Survey Year	Immigrant Cohort				
	1976-80	1971-75	1966-70	1956-65	1946-55
1982	.0041 (.010)	-.0023 (.008)	-.0070 (.007)	-.0084 (.007)	-.0241* (.005)
1983	.0582* (.021)	.0561* (.018)	-.0007 (.013)	-.0075 (.011)	-.0326* (.010)
1985	.0392* (.018)	.0096 (.013)	-.0037 (.011)	-.0072 (.010)	-.0263* (.009)
1986	.0270* (.013)	-.0055 (.006)	-.0087 (.005)	.0013 (.006)	-.0115* (.005)
1987	.0147 (.013)	.0238 (.013)	.0097 (.010)	-.0021 (.008)	-.0043 (.008)
1988	.0064 (.007)	-.0075 (.003)	-.0032 (.004)	.0008 (.004)	.0070 (.006)
1989	.0087 (.006)	.0065 (.004)	-.0028 (.002)	.0002 (.003)	-.0041* (.002)
1990	.0010 (.004)	.0195* (.007)	.0098* (.005)	.0167* (.006)	.0121* (.006)
1991	.0528* (.017)	.0192 (.011)	.0128 (.011)	.0438* (.013)	-.0064 (.008)
1992	-.0224 (.016)	.0055 (.017)	-.0153 (.014)	-.0303* (.011)	-.0276* (.014)
1993	.0028 (.022)	.0884* (.026)	-.0171 (.016)	.0121 (.017)	.0418 (.023)

Notes:

- *indicates statistical significance at the 5 percent level.
- The predicted differences are distributed asymptotically according to the Normal distribution. The asymptotic standard errors are derived using the Delta method and are listed in parentheses (see Greene 1993, p. 297).
- The sample size is 46448. The McFadden R² for the Probit estimation is .383.

Source: Author's compilation based on Statistics Canada (1982, 1983, 1985-93).

a pattern, although there is evidence that the immigrant unemployment differentials for these cohorts rise in the recession of the early 1990s. As well, the immigrant coefficient estimates are generally unaffected by the inclusion of occupational dummy variables.

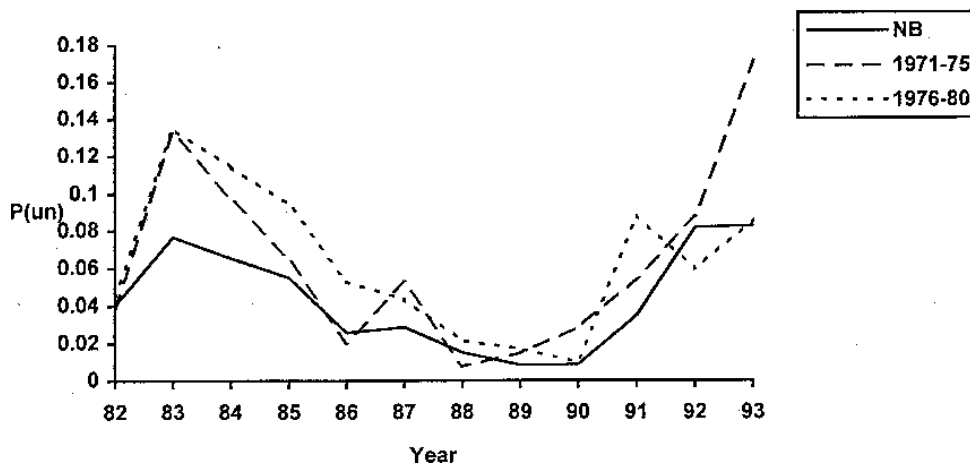
As a first attempt at comparing the unemployment experience of different immigrant arrival cohorts, the average of each column of Table 2 is taken to give the average difference between the unemployment probability of immigrants from each arrival cohort and the unemployment probability of non-immigrants in each survey year, *ceteris paribus*. The averages range from .0175 for the 1976-80 cohort down to -.007 for the 1946-55 cohort; however, in each case, the average is not significantly different from zero at the five percent level. Therefore, the unemployment probabilities of immigrants from each arrival cohort do not differ significantly from those of nonimmigrants on average over the 11 survey years. This is a strong result because we are comparing immigrants who have been in Canada for different durations. The fact that none of the arrival cohorts have significantly higher unemployment probabilities than nonimmigrants is strong evidence that recent cohorts are no less employable than earlier cohorts.¹²

Given the above result, it appears likely that differences in unemployment experience between immigrants from different arrival cohorts will only exist during recessionary periods. This is consistent with the positive and significant differences in unemployment probabilities between immigrants and non-immigrants in the early to mid 1980s and the early 1990s for immigrants from the 1976-80 and 1971-75 cohorts but not for the earlier cohorts. These differences could be due to: (i) differences across immigrant arrival cohorts in terms of their propensity to be unemployed during recessions or (ii) the fact that there may exist an assimilation process over which unemployment probabilities of immigrants in recessions fall with more years-since-migration. The importance of each of these explanations is investigated in the following sections.

An additional illustration of how the immigrant unemployment differentials vary over the business cycle is in plots of the predicted unemployment probabilities for immigrants and non-immigrants in each survey year. These are presented in Figures 2 and 3.¹³ The non-immigrant unemployment probabilities are presented in each graph as a benchmark for comparison (and are represented in the legend by NB).¹⁴ The figures highlight the finding from Table 2 that the unemployment probabilities of recent immigrant cohorts are more sensitive to the business cycle than the unemployment probabilities of non-immigrants. The unemployment probabilities of the 1976-80 and 1971-75 cohorts are in general larger than those of the non-immigrants and these differences are largest in the recessions of the early 1980s and early 1990s. The unemployment probabilities of the 1966-70 and 1956-65 cohorts follow closely the probabilities of the non-immigrants over the business cycle.¹⁵ Therefore, the unemployment probabilities of immigrants over the business cycle appear to converge down onto those of the non-immigrants as we look across groups of immigrants with increasing duration of residence in Canada.

To investigate the sensitivity of the results to the set of personal characteristics used, probabilities of unemployment were recomputed for a number of different demographic groups. Not unexpectedly, both age and level of education are important determinants of unemployment probabilities, although the general result that recent immigrants experience relatively higher rates of unemployment than comparable native born males during recessions is unchanged. In Figure 4, unemployment probabilities of immigrants and nonimmigrants are computed for the default set of characteristics plus university education. Although the unemployment probabilities for both immigrants and the native born are lower than for males with high school education, the immigrant unemployment differential in recessions is still clearly apparent. Similarly, Figure 5 illustrates unemployment probabilities for males aged 24-28 in 1982. Although both immigrant and native born young males are more likely to be unemployed than

FIGURE 2
Unemployment Probabilities for Non-Immigrants and the 1976-80 and 1971-75 Cohorts

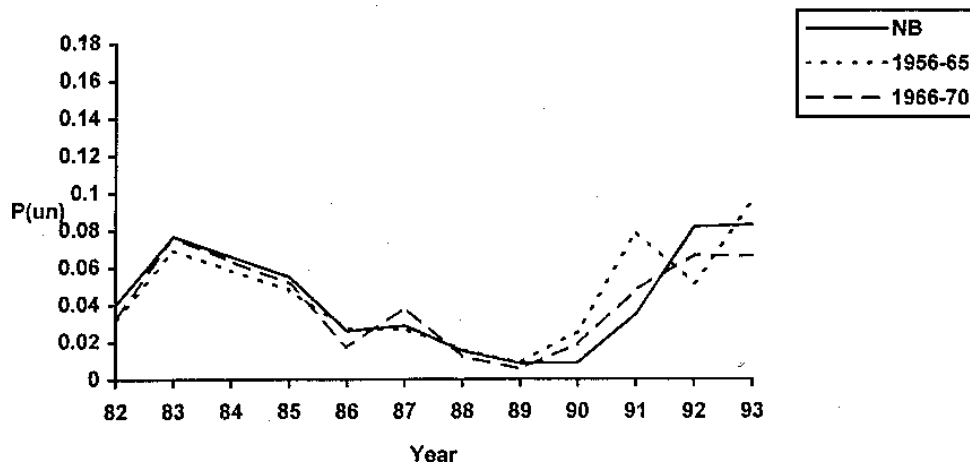


Notes:

1. The 1984 values are the average of the 1983 and 1985 predictions in each case.
2. The estimates are derived from the results of estimation of the BCM using the flexible form specification, (1).

Source: Author's compilation based on Statistics Canada (1982, 1983, 1985-93).

FIGURE 3
Unemployment Probabilities for Non-Immigrants and the 1966-70 and 1956-65 Cohorts

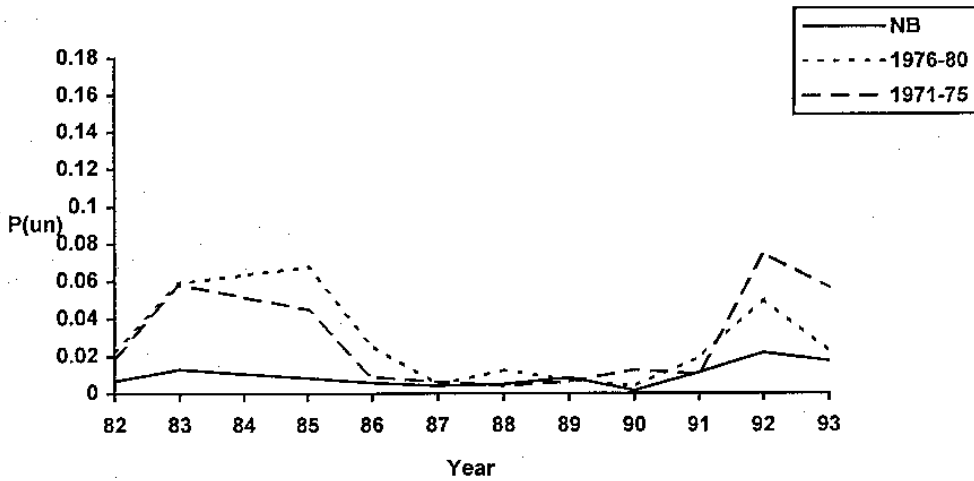


Notes:

1. The 1984 values are the average of the 1983 and 1985 predictions in each case.
2. The estimates are derived from the results of estimation of the BCM using the flexible form specification, (1).

Source: Author's compilation based on Statistics Canada (1982, 1983, 1985-93).

FIGURE 4
 Unemployment Probabilities for Non-Immigrants and the 1976-80 and 1971-75 Cohorts (University Educated)

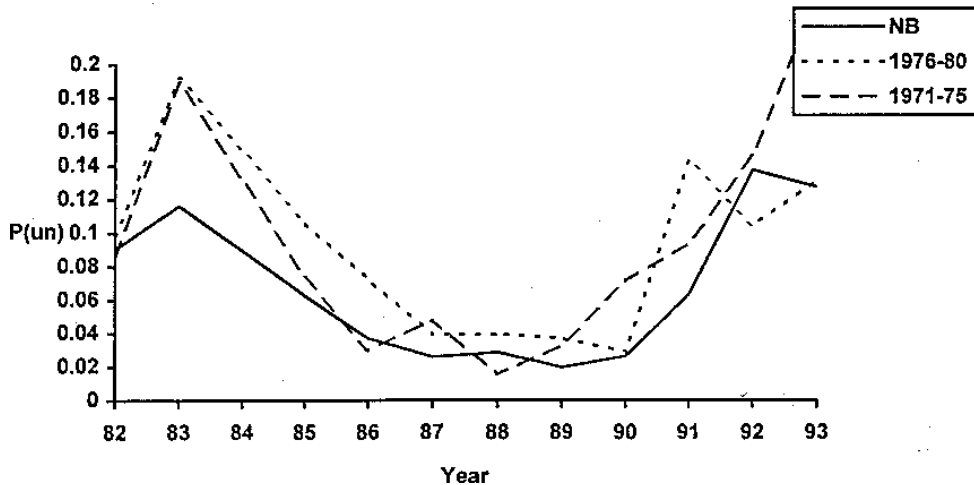


Notes:

1. The 1984 values are the average of the 1983 and 1985 predictions in each case.
2. The estimates are derived from the results of estimation of the BCM using the flexible form specification, (1).

Source: Author's compilation based on Statistics Canada (1982, 1983, 1985-93).

FIGURE 5
 Unemployment Probabilities for Non-Immigrants and the 1976-80 and 1971-75 Cohorts (Age 24-28 Cohort)



Notes:

1. The 1984 values are the average of the 1983 and 1985 predictions in each case.
2. The estimates are derived from the results of estimation of the BCM using the flexible form specification, (1).

Source: Author's compilation based on Statistics Canada (1982, 1983, 1985-93).

older males, the larger immigrant unemployment differential in recessions is again apparent.¹⁶

The fact that the immigrant unemployment differential is larger in recessions than in expansions suggests that it is changes in labour demand rather than in labour supply that are important. One explanation may be that in economic downturns, it will be workers with relatively low job tenure, such as recent immigrants, that will bear the brunt of the job losses. This would be the case, for example, if the employer follows a reverse seniority layoff rule. Earlier immigrant cohorts would have arrived in Canada during periods of low unemployment and steady economic growth, so that opportunities to develop general employment experience and firm specific skills would have been greater.

Another possibility is that employers are uncertain of recent immigrants' skills. Chiswick 1978 argued that foreign education and training credentials may be undervalued in the new labour market. Recent immigrants may find it difficult to find employment in recessionary periods because employers may decide to avoid the risk of hiring a recent immigrant even if he or she is qualified for the job. In expansionary periods, firms may be more inclined to take the chance on an immigrant with foreign educational credentials given the high opportunity cost of waiting for a native-born applicant.

A third possibility is that the counter-cyclical movement of the immigrant unemployment differential may reflect discrimination against immigrants in hiring decisions. In recessionary periods, when employers have many applicants for job vacancies, it may be costless to discriminate against immigrants of a particular ethnic or religious group. However, during expansionary periods, when demand for the firm's products is high, employers may find it very costly to discriminate against immigrants if the discrimination leads to lower production while the firm searches for another job candidate. Given that a higher proportion of immigrants in recent arrival cohorts are from non-English and non-French speak-

ing backgrounds than was the case in earlier arrival cohorts, discrimination against these groups would explain the higher unemployment probabilities during recessions of immigrants from the 1976-80 and 1971-75 cohorts.¹⁷

Fixed-Effects Specification

Most recent research on the earnings assimilation of immigrants has involved estimation of what is termed a fixed-effects model — a parametric specification in which immigrant labour market outcomes are a function of years-since-migration and a set of immigrant cohort-specific dummy variables that allow a separate intercept shift for each arrival cohort. Significant differences in the magnitude of the cohort variables are taken to indicate the existence of cohort effects — differences in unobservable characteristics of the immigrant cohorts that are constant over time; a significant positive relationship between YSM and earnings is taken to indicate the assimilation of immigrants into the domestic labour market. Before proceeding further in interpreting the results from the estimation of equation (1), it is useful to present results based on a comparable methodology to that used in previous research (see for example Borjas 1985; Borjas and Trejo 1991; Baker and Benjamin 1994, 1995).

The first column of Table 3 presents selected regression results from Probit estimation using the fixed effects specification, (2), using pooled cross sections from 1982 and 1992. These years are chosen so as to approximate the data that would be available if census data were used.¹⁸ (Note that in interpreting the regression results, positive coefficients indicate a higher probability of unemployment, *ceteris paribus*.) Neither cohort variables nor the YSM profile are "significant" and the associated immigrant unemployment differentials for all cohorts are extremely small (in the order of 0.5 percent) in both sample years.

However, based on data from Figure 1, the sample years chosen do not represent the same point of the business cycle; rather, more appropriate years

TABLE 3
Results from Probit Estimation of Unemployment versus Employment Using Fixed Effects Specification

Variable	Sample Period		
	1982, 1992	1983, 1992	1982, 1983 and 1985-1993
Y1976-80	.0825 (.106)	.3790* (.107)	.3428* (.065)
Y1971-75	.1764 (.134)	.5620* (.144)	.3775* (.087)
Y1966-70	.1022 (.161)	.3583* (.174)	.1822 (.104)
Y1956-65	.0745 (.181)	.3119* (.197)	.1285 (.118)
Y1946-55	-.0786 (.209)	.0930 (.224)	-.3201* (.134)
YSM	-.0132 (.013)	-.0339* (.014)	-.0294* (.008)
YSM ²	.0002 (.000)	.0007* (.000)	.0010* (.000)
L.R. test for no cohort effects	3.2	12.6*	62.0*
Sample Size	8907	8809	46448

Notes:

1. *indicates significance at the 5% level of significance.
2. The variables are defined in the Appendix.
3. Full regression results are available from the authors.

Source: Author's compilation based on Statistics Canada (1982, 1983, 1985-93).

would be 1983 and 1992, corresponding to the troughs of the two recessions. If the immigrant unemployment differential is sensitive to macroeconomic conditions then it is necessary to account for differences in macroeconomic conditions before determining cohort and assimilation effects. Column 2 of Table 3 reports results based on pooled data from 1983 and 1992, and the sensitivity of the results to the years chosen is clearly evident: the cohort fixed effects are now positive and significant for each immigrant cohort except those arriving in

1946-55, and are largest for the 1971-75 arrival cohort. Assimilation occurs relatively more rapidly, as indicated by the larger (and significant) coefficient on YSM. Estimation of the fixed effects model over the entire sample (reported in column 3) yields similar regression results but with smaller magnitudes of the coefficients.

The sensitivity of cohort effects and the YSM profile to macroeconomic conditions apparent from these results suggest that the simple fixed effects

model is likely to be misspecified. Thus, policy implications derived from results of the standard model, particularly when data are restricted to a small number of cross sections, should be viewed with caution.¹⁹

EXPLANATIONS FOR THE CONVERGENCE OF UNEMPLOYMENT EXPERIENCE

In order to develop policies appropriate for assisting immigrants to find employment in recessions, it is important to understand how the unemployment probability of an immigrant varies with years-since-migration. If the convergence of the profiles in Figures 2 through 5 are due to unemployment assimilation, then the high probabilities of unemployment of the recent cohorts are short run phenomena, and employment assistance programs could be targeted at recent arrivals. Instead, if the convergence seen in the figures is due to cohort effects then recent cohorts may always experience high unemployment probabilities in recessions. Thus, targeting government policies only at the immigrants with low YSM may not be appropriate.²⁰ However, measuring cohort and assimilation effects is more difficult when unemployment probabilities are estimated using the flexible functional form in (1). In the next two sections, methods for measuring immigrant assimilation and cohort effects are developed that take into account the changing macroeconomic conditions over the sample period.

Unemployment Assimilation

In Table 4, predictions of the unemployment assimilation of each immigrant cohort are presented which are based on the estimates from Table 2 using the flexible form specification (1).²¹ Recall that the unemployment assimilation is defined to be the change in the difference between the unemployment probability of an immigrant and a nonimmigrant with years of residence in Canada. In terms of Figure 2 and Figure 3, this gives the change between two survey years in the difference between the immigrant curve and the non-immigrant curve, for each arrival cohort.

TABLE 4
Estimates of Unemployment Assimilation:
The Change in the Unemployment Probability of
Immigrants Due to an Increase in YSM

<i>Cohort</i>	<i>Assimilation 1982 to 1992</i>	<i>Assimilation 1983 to 1992</i>
1976-80	-.0265 (.016)	-.0806* (.026)
1971-75	.0078 (.018)	-.0506* (.025)
1966-70	-.0083 (.015)	-.0146 (.019)
1956-65	-.0219 (.013)	-.0228 (.016)
1946-55	-.0035 (.015)	.0050 (.015)

Notes:

1. Results are based on estimation using specification (1).
2. *indicates statistical significance at the 5 percent level.
3. The predictions are distributed asymptotically according to the Normal distribution.
4. The asymptotic standard errors are derived using the delta method and are presented in the parentheses.

Source: Author's compilation based on Statistics Canada (1982, 1983, 1985-93).

To derive results that are comparable with previous research, the unemployment assimilation of each cohort is predicted over the two survey years, 1982 and 1992, which are closest to standard Census years.²² However, none of the assimilation estimates are statistically significant from zero. As discussed above, the 1982 and 1992 survey years do not represent identical points on the business cycle. More appropriate survey years are 1983 and 1992 since in Figure 1 the non-immigrant unemployment rate is at a peak in these years indicating that they are the worst years of the two recessions.²³ Also, since the immigrant unemployment differentials are

largest in recession years and in general insignificant in other years, assimilation is more likely to be found between the worst years of recessions than between other survey years with the same position on the business cycle.

The assimilation estimates over the period 1983 to 1992 are presented in the second column of Table 4. Since the analysis is done using years which are the worst years of the two recessions, the assimilation is measured from “trough to trough.” From the table, both the 1976-80 cohort and the 1971-75 cohort of immigrants can be seen to experience significant unemployment assimilation. The 1976-80 cohort’s immigrant unemployment differential falls by eight percentage points and the 1971-75 cohort’s immigrant unemployment differential falls by five percentage points over the period.²⁴ Individuals in these two arrival cohorts are more likely to experience unemployment assimilation than members of earlier cohorts since the former have been in Canada fewer years and may still be in the process of learning about employment opportunities or developing new skills.

Taken together, the results of Table 4 also confirm that estimates of unemployment assimilation are sensitive to the survey years used for comparison. Since the immigrant unemployment differential is larger in recessions than in expansions, the estimate of the unemployment assimilation using the 1982 and 1992 survey years is biased downward for recent cohorts due to the different macroeconomic conditions in the two years.

Cohort Unemployment Effects

Correct measurement of cohort unemployment effects, or differences across arrival cohorts in the unemployment probability for a given value of years-since-migration, also requires using two survey years with similar macroeconomic characteristics. For example, using the immigrant unemployment differentials of the 1976-80 cohort in 1992 and the 1966-70 cohort in 1983 allows for the comparison of two cohorts with roughly the same YSM and

in survey years which are at the same point in the business cycle.

Table 5 contains estimates of the differences in cohort unemployment effects that can be derived using the 1983 and 1992 survey years based on the results from the estimation of the flexible form specification (1). The estimates of the cohort unemployment effects in general are close to zero and statistically insignificant.²⁵ Therefore, after controlling for years in Canada and macroeconomic conditions, there does not appear to be evidence of cohort unemployment effects. It should be noted that each of these comparisons is made after the immigrants have spent at least ten years in Canada. Therefore, no long-run cohort effects are found, although

TABLE 5
Long-Run Cohort Unemployment Effects:
Differences in Unemployment Probabilities across
Arrival Cohorts Holding YSM Fixed

	<i>Difference Across Cohorts</i>	<i>YSM</i>
1976-80 in 1992 versus 1966-70 in 1983	-.0217 (.021)	12-17
1966-70 / 1971-75 in 1992 versus 1956-65 in 1983	.0023 (.015)	17-27
1956-65 in 1992 versus 1946-55 in 1983	.0026 (.017)	27-37

Notes:

1. The estimates are based on the results from the flexible form specification, (1).
2. The predictions are distributed asymptotically according to the Normal distribution.
3. The asymptotic standard errors are derived using the delta method and are presented in the parentheses.
4. The 1966-70/1971-75 and 1956-65 comparison uses the average of the immigrant unemployment differentials of the 1966-70 and 1971-75 cohorts in 1992.

Source: Author’s compilation based on Statistics Canada (1982, 1983, 1985-93).

it may be that immigrants from different arrival cohorts differ in their unemployment probabilities, *ceteris paribus*, in the first years after migration.²⁶

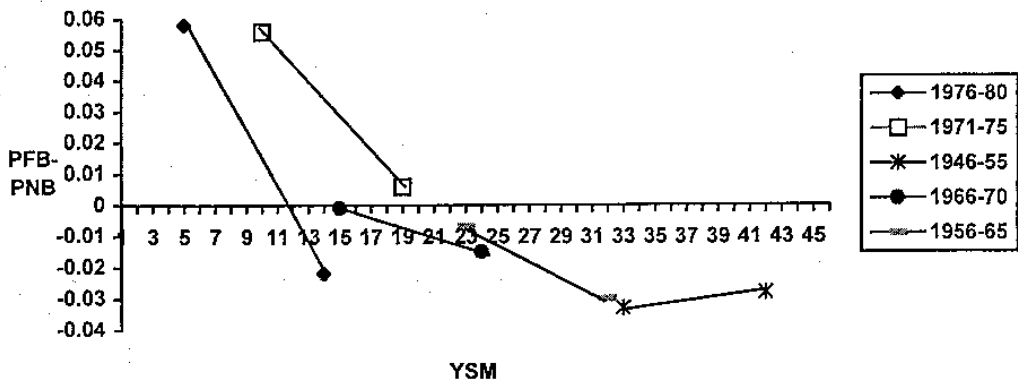
Given the extensive evidence in: (i) the earnings literature of a decline in earnings across immigrant cohorts (see Borjas 1985 for the US and Baker and Benjamin 1994 for Canada) and (ii) the use of government services literature of an increase in government services use across immigrant cohorts (see Borjas and Trejo 1991 for the US and Baker and Benjamin 1995 for Canada), it is interesting that long-run cohort differences do not play an important role in determining unemployment probabilities of immigrants in Canada. However, this result is consistent with McDonald and Worswick (1996b) who find no evidence of cohort effects in earnings assimilation using pooled SCF data over the same period, after controlling for macroeconomic conditions.

Comparison of the Trough-to-Trough Unemployment/YSM Profiles

To provide further illustration of the results on assimilation and cohort effects derived in the previous subsections, Figure 6 plots derived assimilation profiles for each immigrant cohort between 1983 and 1992. In the figure, the immigrant unemployment differential is plotted for each cohort as years since migration increases.²⁷ It should be emphasised that the immigrant unemployment differentials presented in the figure are measured from recession trough-to-trough.

The strong assimilation effect in the figure for the 1976-80 cohort and to a lesser extent for the 1971-75 cohort are apparent. The cohort unemployment effects are estimates of the vertical distance between each cohort's line for the cases where the lines overlap in the survey years. The assimilation effects appear to be of a larger magnitude than the

FIGURE 6
Trough-to-Trough Unemployment/YSM Profiles by Immigrant Arrival Cohort



Note: The estimates are derived from the results of estimation of the BCM using the flexible form specification (1).
Source: Author's compilation based on Statistics Canada (1982, 1983, 1985-93).

cohort unemployment effects indicating that the convergence of the immigrant unemployment profiles down onto the non-immigrant unemployment profiles across immigrant cohorts is due more to unemployment assimilation than to cohort unemployment effects.

CONCLUSIONS AND POLICY IMPLICATIONS

This paper has analyzed the unemployment incidence of immigrants and non-immigrants in Canada. A unique data set was constructed by pooling 11 cross-sectional surveys spanning the years 1982 to 1993. In contrast to previous studies, year-by-year changes in unemployment probabilities were estimated for immigrants and non-immigrants over the recessions of the early 1980s and early 1990s and over the expansionary period of the mid to late 1980s. The empirical results have generated the following three main findings.

First, the magnitude of the difference in the unemployment probabilities of immigrants and non-immigrants — the immigrant unemployment differential — moves counter-cyclically for recent immigrant arrival cohorts. The immigrant unemployment differential is positive and statistically significant in the recession years; however, it is near zero and not significant in the expansionary period of the mid to late 1980s. The fact that the immigrant unemployment differential moves counter-cyclically suggests that it is changes in labour demand rather than in labour supply that are important.

The second main result is that assimilation estimates using two or more cross-sectional data sets are found to be highly sensitive to the macroeconomic conditions at the time of the survey. In order to measure the assimilation holding the macroeconomic conditions constant, the worst years in terms of the unemployment rate of the two recessions, 1983 and 1992, were chosen as the years for comparison. The 1976-80 and 1971-75 cohorts of immigrants experience positive and significant assimilation between

1983 and 1992, although earlier cohorts experienced virtually no assimilation between the two recessions. This is consistent with the idea that much of the adjustment to the new labour market occurs in the first years after migration.

The third finding is that the results in general do not support the existence of differences across immigrant cohorts in their unemployment probabilities, *ceteris paribus*. Unemployment probabilities of immigrants from each arrival cohort are not found to be significantly different from those of non-immigrants when averaged over the 11 survey years. Immigrants from recent arrival cohorts are found to have higher unemployment probabilities than similar non-immigrants in recessionary periods; however, with more years of residence their unemployment probabilities are found to converge to those of nonimmigrants. Thus, there is no strong support for the contention that the “quality” of recent immigrant cohorts, in this case measured in terms of higher unemployment probabilities, has worsened for recent cohorts relative to earlier cohorts.

Taken together, the findings suggest that the large unemployment probabilities of recent immigrant cohorts in recessions are not likely to persist over the entire careers of the immigrants. It may be that future immigrant cohorts will experience difficulty in finding employment or staying employed during recessions which occur soon after arrival in Canada, but with time to adjust to the labour market, they will face lower unemployment probabilities. In addition, it should be emphasized that even recent immigrants do not appear to suffer significantly higher unemployment rates than comparable native-born persons when the economy is in an expansionary phase.

The result that immigrants who arrive during a recession have greater difficulty finding employment in the first years after migration than immigrants who arrive during an expansion should not be taken to mean that the annual immigrant intake should be altered so that fewer immigrants arrive during

recessions than expansions. The costs to the immigrants and to government programs of the unemployment of immigrants who arrive in recessions are only a short-term problem since immigrant unemployment probabilities appear to converge to those of the non-immigrants as years of residence in Canada increase. Also, in order to maintain the same long-run level of immigration, reducing intake in recessions means increasing intake during expansions, which might lead to the rejection of skilled candidates for admission during recessions and acceptance of less skilled applicants during expansionary periods.

Instead, immigrant settlement policies should be tailored more to the short-term concern of finding employment for immigrants who arrive during (or shortly before) recessions. For immigrants who arrive in expansionary periods when suitable jobs are easier to find, immigrant settlement policies should be aimed at the medium to long term. Over this period, government policy can aid the immigrants in acquiring the skills and the domestic credentials to enable them to find employment suited to their abilities.

Finally, an investigation of the variation in other labour market characteristics of immigrants over the business cycle, such as the takeup of social assistance benefits or unemployment duration, would allow for a better understanding of the difficulties faced by recent immigrants in recessions and would complement the results reported in this paper.

NOTES

We would like to thank Charles Beach, Jeff Borland, David Green, Olan Henry, Joe Hirschberg, Ian McDonald and seminar participants at LaTrobe University, the University of Melbourne, the University of New South Wales and the 1996 Australasian Econometric Society Meetings for helpful discussions. We are responsible for any remaining errors.

¹The vast majority of the immigration literature has

focused on comparing the earnings of immigrants with similar non-immigrants (see Chiswick 1978; Borjas 1985; LaLonde and Topel 1992; and Baker and Benjamin 1994). Assessing the labour market experience of immigrants based on earnings data may underestimate the difficulties which immigrants experience in the labour market since the immigrants in the study have already succeeded in the sense of having found employment.

²The admissions criteria have shifted away from admission based on labour market skills and towards family reunification (see Baker and Benjamin 1994, for a discussion). However, recent changes in admissions criteria have moved the emphasis back towards admission based on skills rather than family reunification.

³The distribution of new immigrant applicants by source country has moved away from European countries towards Asian, African, and Caribbean countries.

⁴The survey was not carried out in 1984. Before sample restrictions, the individuals in each survey are a weighted sample of all individuals 15 years of age and older in Canada at the time of the survey. A set of sample weights are provided and are used in the estimation to enable generalizations of results to the Canadian population.

⁵Differences in the proportion of non-labour-force participants of immigrants and non-immigrants in the survey week were analyzed. There was no indication of patterns in these proportions consistent with differences in participation rates between immigrants and non-immigrants over the business cycle.

⁶Immigrants who arrived in Canada prior to 1946 are identified; however, they are excluded from the sample due to the small number of immigrants from this arrival cohort in the selected age range. Data are also available on immigrants who arrived in Canada after 1980; however, the surveys are inconsistent in terms of the year of arrival categories making it impossible to follow the same post-1980 arrival cohort across more than one survey. Therefore, these immigrants are also excluded from the analysis. Due to the large number of non-immigrants in the surveys, a 15 percent random sample is taken of non-immigrants to reduce computing time.

⁷Although not reported in Table 1, there are also differences in the occupational distribution across arrival cohorts and the native born. Immigrants are more likely

than native-born males to be in science, clerical, and processing, and less likely to be in transportation, primary industry, or management. Differences in occupational distribution are generally wider for more recent cohorts than for earlier cohorts.

⁸The education variables are also interacted with a dummy variable for immigrant status allowing for differences in unemployment probabilities between immigrants and non-immigrants arising from imperfect international transferability of skills and credentials as suggested by Chiswick (1978).

⁹The education variables are also interacted with a dummy variable for immigrant status allowing for differences in unemployment probabilities between immigrants and non-immigrants arising from imperfect international transferability of skills and credentials as suggested by Chiswick 1978.

¹⁰A more restricted model was also estimated in which the effects of demographic variables were constrained to be equal across survey years, without qualitative changes in the results. Estimation of (1) was repeated using the Logit estimator with only small changes in the estimated probabilities. All of the maximum likelihood estimation was carried out using the SHAZAM econometrics software package.

¹¹Detailed regression results are presented in the Appendix. The estimates were also recalculated at a number of different sets of characteristics, and selected results are presented later in this section.

¹²Based on the results of Table 2, it is also possible to test whether the unemployment probabilities of pairs of arrival cohorts differ on average over the 11 survey years. Each of these possible tests was carried out and the hypothesis that the unemployment probabilities of the cohorts were the same on average over the 11 years could not be rejected at the five percent level in each case.

¹³As in the previous section, the probabilities are derived for individuals with the following characteristics: age 39-43 in 1982, residence in a large urban centre in Ontario, English was the childhood language, and high school level education.

¹⁴The estimates of the immigrant unemployment differentials of each cohort in each year in Table 2 are equal to the differences between the immigrant curve and the

non-immigrant curve for each cohort and each year in the figures.

¹⁵The curve of the 1946-55 cohort of immigrants is not reported. The unemployment probabilities for this cohort are smaller than those of the non-immigrants in the recession of the early 1980s and are similar to those of the non-immigrants in later years.

¹⁶For males from earlier immigrant cohorts, the immigrant unemployment differentials are close to zero as in Figure 3, and these results are not reported.

¹⁷Since country of birth and ethnicity are not recorded in the SCF data, it is not possible to test the role of these factors in determining the probability of unemployment.

¹⁸The US Census was carried out in 1980 and 1990 and the Australian and Canadian Censuses were carried out in 1981 and 1991. Since most previous studies use census data, an analysis of assimilation using these years is a useful benchmark.

¹⁹Expanding the fixed effects specification to allow the assimilation profile to be affected by macroeconomic conditions confirmed the instability of the assimilation profile over the business cycle.

²⁰This argument has been used to motivate recent changes in the immigrant admissions process in Canada placing a greater emphasis on the human capital of the applicant as opposed to the family ties of the applicant with Canadian citizens (see Simpson 1994).

²¹The predicted unemployment probabilities are evaluated at the same demographic characteristics as in Table 2 and in Figures 2 and 3.

²²These estimates are measured from 1982 to 1992 and do not include the estimates from the years between 1982 and 1992. Since information from years between the census years is not available when analyses are done using census data, this more closely matches previous studies.

²³The unemployment rate of the combined sample of immigrants and non-immigrants also reaches peaks in these years.

²⁴The 1971-75 estimate should be interpreted with caution since in Figure 2 the unemployment probability curve for this group rises sharply in the following year.

²⁵The cohort unemployment effect was recalculated

for the 1966-70/1971-75 cohorts relative to the 1956-65 cohort between the years 1983 and 1993 to take into account the large increase in the 1971-75 cohort's unemployment probability between 1992 and 1993. This difference was positive and significant for both specifications.

²⁶We are unable to investigate whether recent cohorts of immigrants have higher unemployment probabilities than earlier cohorts of immigrants for low YSM without allowing the macroeconomic conditions to vary. Since it appears that immigrants have higher unemployment probabilities than non-immigrants only in recessionary periods, comparing the unemployment probability of immigrants from a recent cohort at say five years of residence during a recession to the unemployment probability of immigrants from an earlier cohort at five years of residence in an expansionary period would be an unfair comparison in that the labour market opportunities are likely to differ. We might find that immigrants from the more recent cohort are more likely to be unemployed when this may in fact be due to the poor labour market conditions they face rather than any unobserved differences in their employability compared with the members of the earlier cohort.

²⁷The YSM value in each case is chosen as the midpoint for the immigrant arrival group in the survey year.

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APPENDIX 1

DEFINITIONS OF VARIABLES LISTED IN TABLES

1. FB: immigrant.
2. NB: born in Canada.
3. YSM: Years-since-migration. The variable equals zero for the native-born.
4. Y1946-55, Y1956-65, Y1966-70, Y1971-75, Y1976-80: indicator variables for immigrants whose year of arrival was between 1946-55, 1956-65, 1966-70, 1971-75, and 1976-80 respectively.
5. ATL: resident of New Brunswick, Newfoundland, Nova Scotia, or Prince Edward Island.
6. QUE: resident of Quebec.
7. ONT: resident of Ontario.
8. PRAIR: resident of Manitoba, Saskatchewan, or Alberta.
9. BC: resident of British Columbia.
10. TOWN: resident of a town of 30,000-100,000 people.
11. RURAL: resident of a rural area.
12. ED08: less than nine years of education.
13. EDSEC: secondary level of education.
14. EDPS: postsecondary level of education but no university degree.
15. EDUNI: university degree.
16. FRENCH: first language spoken is French.
17. OTHLANG: first language spoken is neither English nor French.
18. AGE2428: .age in 1982 is 24-28.
19. AGE2933: age in 1982 is 29-33.
20. AGE3438: age in 1982 is 34-38.
21. AGE3943: age in 1982 is 39-43.
22. AGE4448: age in 1982 is 44-48.
23. AGE4953: age in 1982 is 49-53.

APPENDIX 2

SELECTED COEFFICIENT ESTIMATES – SPECIFICATION (1)

<i>Year</i>	<i>1983 Coef.</i>	<i>Std. Error</i>	<i>1988 Coef.</i>	<i>Std. Error</i>	<i>1992 Coef.</i>	<i>Std. Error</i>
INTERCPT	1.503*	.051	2.230*	.074	1.488*	.078
ATL	-.4249*	.055	-.6700*	.064	-.3574*	.057
QUE	-.2671*	.052	-.4438*	.066	-.1311*	.055
PRAIR	-.0344	.043	-.3349*	.055	.1404*	.050
BC	-.1422*	.047	-.5722*	.056	.1798*	.059
SINGLE	-.4510*	.038	-.7939*	.047	-.3688*	.047
OTHMST	-.5930*	.053	-.4519*	.059	-.4501*	.053
TOWN	.1463*	.036	.0159	.044	-.0144	.042
RURAL	-.0268	.036	.0279	.047	.0195	.045
ED08	.0424	.043	-.4827*	.051	-.3718*	.050
EDPS	.2041*	.039	.0760	.050	.4261*	.042
EDUNI	.7952*	.058	.4093*	.063	.6212*	.058
FRENCH	-.2687*	.051	-.0206	.062	-.1296*	.059
OTHLANG	-.0112	.053	-.0714	.068	.0717	.051
FB-ED08	-.2655*	.094	.2342	.125	-.0978	.127
FB-EDPS	.0876	.097	-.1346	.121	-.3871*	.109
FB-EDUNI	-.3372*	.114	-.1923	.135	-.5384*	.128
Y4655	.2770*	.102	-.1562	.120	.2122	.125
Y5665	.0541	.081	-.0209	.111	.2375*	.105
Y6670	.0048	.091	.0926	.123	.1097	.106
Y7175	-.3144*	.086	.2629	.135	-.0356	.106
Y7680	-.3239*	.096	-.1445	.128	.1669	.134
AGE2428	-.3074*	.052	-.3277*	.070	-.3963*	.075
AGE2933	-.0207	.052	-.2765*	.070	-.1995	.076
AGE3438	-.0701	.053	-.1224	.071	-.0006	.078
AGE3943	-.0754	.055	-.0604	.074	-.0948	.081
AGE4448	-.0997	.055	-.1155	.075	-.3617*	.079

Notes:

1. For brevity, regression results for only 3 of the 11 sample years are reported.

2.*indicates statistical significance at the 5 percent level.