DISCUSSION PAPER SERIES

IZA DP No. 4410

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September 2009

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

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IZA Discussion Paper No. 4410
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ABSTRACT

FSU Immigrants in Canada: A Case of Positive Triple Selection?*

This paper investigates the economic performance of immigrants from the Former Soviet Union (FSU) countries in Canada. The contribution of this paper lies in its use of a natural experiment to detect possible differential labour market performances of Soviet immigrants prior to and after the collapse of the Soviet Union. In short, the collapse of the former Soviet Union allows an exogenous supply change in the number and type of FSU immigrants potentially destined to enter Canada. For this purpose, Census microlevel data from the 1986, 1991, 1996 and 2001 Canadian Census are utilized to estimate earnings and employment outcomes for pre- and post-FSU immigrants.

JEL Classification: J61, F22

Keywords: immigration, integration

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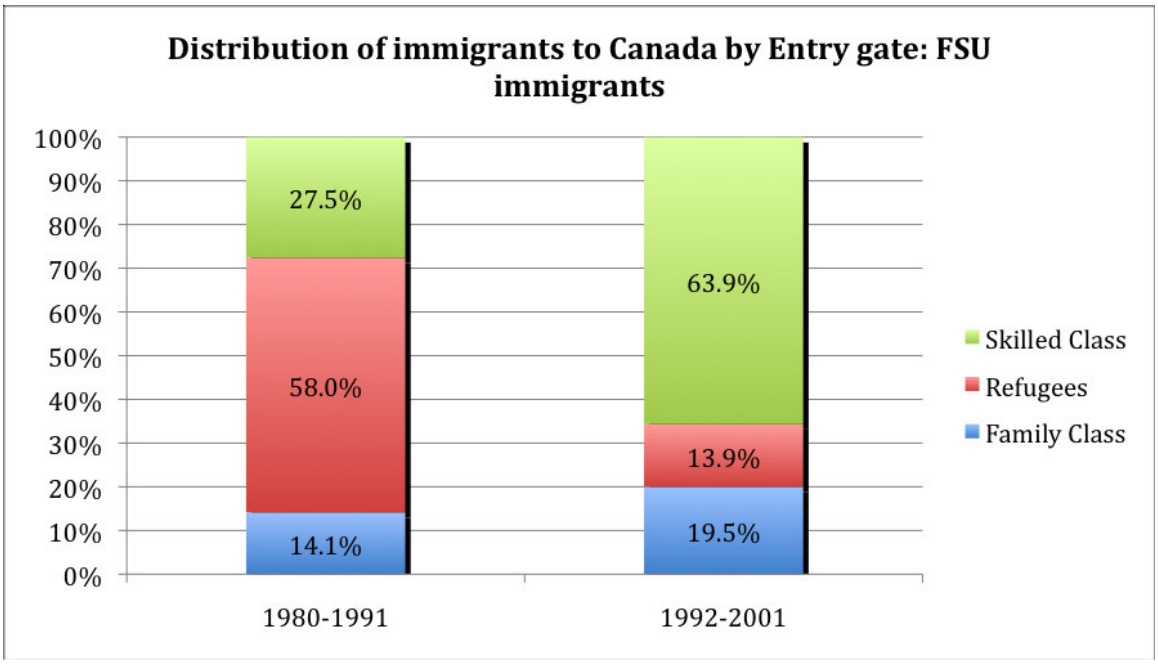
* We note with appreciation the copyediting services by M. Hayden of bestedit@shaw.ca and the financial support provided by the Research Authority, Ruppin Academic Centre, Israel.

Introduction

The post-1990 rise in immigration in general to Canada and from two disparate formerly closed systems—the Soviet Union and China—may have led to profound changes in the paradigm of economic integration into Canada's labour force. Prior to the collapse of the Soviet Union, potential Soviet émigrés could not decide to move to Canada based on an open and easily transparent exit system. Thus, immigrants to Canada from the former Soviet Union (hereafter FSU) were largely designated by Canada as refugees and many came ill-equipped in terms of country-specific human capital to readily integrate into Canada's labour market.

Figure 1

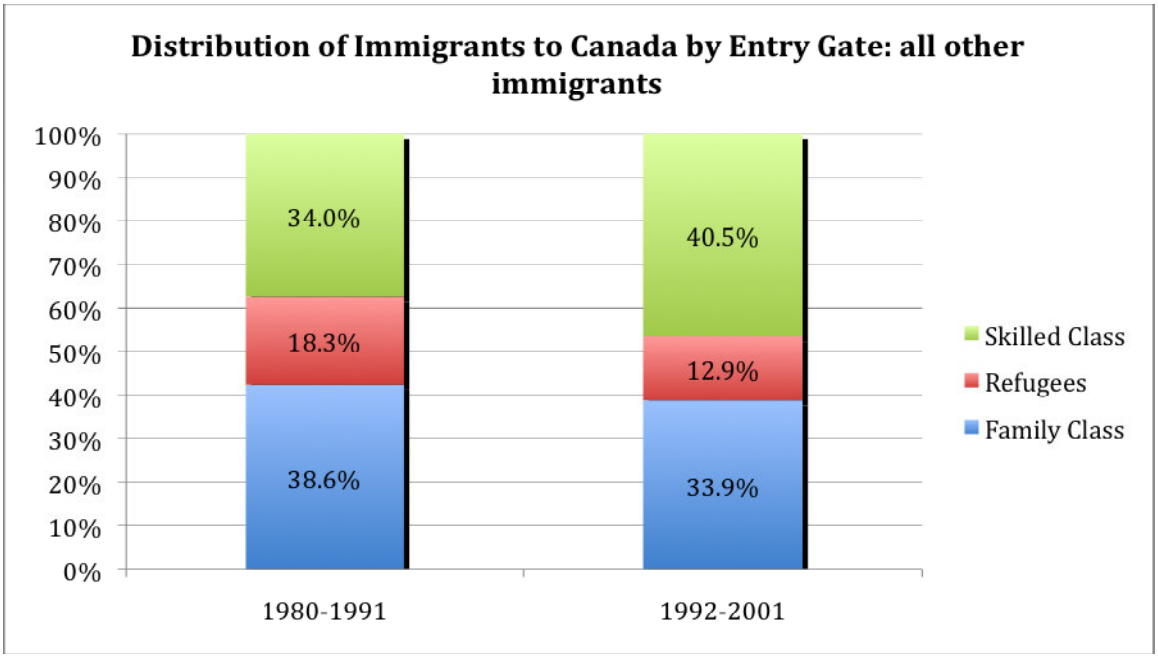


Source: LIDS (Landed Immigrants Data System) from IMDB Immigration Database

Figure 1 illustrates this point graphically. From 1980 through 1991 the distribution of FSU immigrants across entry gates was as follows: 58% refugees, 14.1% family class and 27.5% skilled class.[1] By the year 2000, refugees made up only 13.9% of the entrants with 63.9% of FSU immigrants now appearing in the skilled group. In short, prior to 1992 FSU émigrés to Canada were only self-selected from the refugee portion of the potential pool of all FSU émigrés, while after 1992 FSU immigrants entered under a double selection system.

[1] The skilled class potential entrant is assessed under a "points system" which yielded points for human capital attributes.

Figure 2



Source: LIDS (Landed Immigrants Data System) from IMDB Immigration Database

Figure 2 illustrates the uniqueness of the exogenous shock to FSU immigrant flow circa 1992-2001 when all immigrants to Canada had only a 5.3% drop in the proportion of refugees whilst the FSU immigrant share of refugees fell by 44.1%.

Thus, after the fall of the FSU (as with China circa 1995), immigrants who left the FSU were drawn from a larger pool of potential movers with a different set of observable human capital attributes. This important policy change in the FSU should ultimately reveal itself in differential labour force outcomes of FSU immigrants in Canada after 1991 if our thesis of positive selection holds. After 1991, the immigrants' initial positive self-selection was combined with a second level of selection as these FSU émigrés were subjected to a "points assessment" system which favoured the admission of FSU immigrants with human capital.[2] Thus, looking at the labour market performance of FSU immigrants entering before and after 1991 has the potential of shedding light on the effectiveness of Canada's selection process.
The final or third selection process arises when the immigrant decides to ascend to Canadian citizenship or to remain a non-citizen.[3]

[2] Pivnenko and DeVoretz (2003) note that a majority of Ukrainian immigrants to Canada came through non-economic entry gates prior to 1991.
[3] Pivnenko and DeVoretz (2006) document the positive effect of citizenship status on the labour market outcomes of Ukrainian immigrants.

It should be noted that traditionally only a portion of "points-assessed" immigrants self-select into citizenship, yet almost all refugees naturalize given their inability to return home. Given that refugees often feel compelled to naturalize, some of the economic premium owing to citizenship is often lost due to adverse selection; those FSU émigrés who arrived after 1991, however, were largely not refugees and should reveal a positive selection into citizenship since they were not compelled to naturalize.[4] In fact, we argue that only those post-1991 FSU émigrés who acquired additional Canadian-specific human capital will tend to naturalize and reap the labour market rewards from acquiring this human capital.

In sum, the following thesis is offered in terms of the labour market integration of émigrés from the FSU into the Canadian context: prior to 1991, émigrés from the Soviet Union to Canada were singly selected by themselves and after 1991 the new cohort of FSU emigrants to Canada were often selected three times. This triple selection procedure in turn implies that a greater human capital stock will be embodied in this post-1991 cohort and would lead to more rapid integration into Canada's labour market in the absence of discrimination or other forms of labour market failure. It is the purpose of this study to test this thesis in the context of a "gap analysis" in terms of income and employment.

The traditional immigrant earnings literature owing to Chiswick (1978) argues that upon entry, immigrants suffer an earnings deficit due to the absence of specific and general (language, knowledge of institutions) human capital attributes. It was inferred by Chiswick from census data that over time—generally 8 to 12 years—immigrants overcame these human capital deficits by investing in themselves and their earnings subsequently "caught-up" to and then perhaps surpassed their Canadian-born colleagues.

[4] Pivnenko and DeVoretz (2006) verify this empirically for all Canadian refugees *circa* 2006 in Canada.

Figure 3: Idealised Age-Earnings Profile

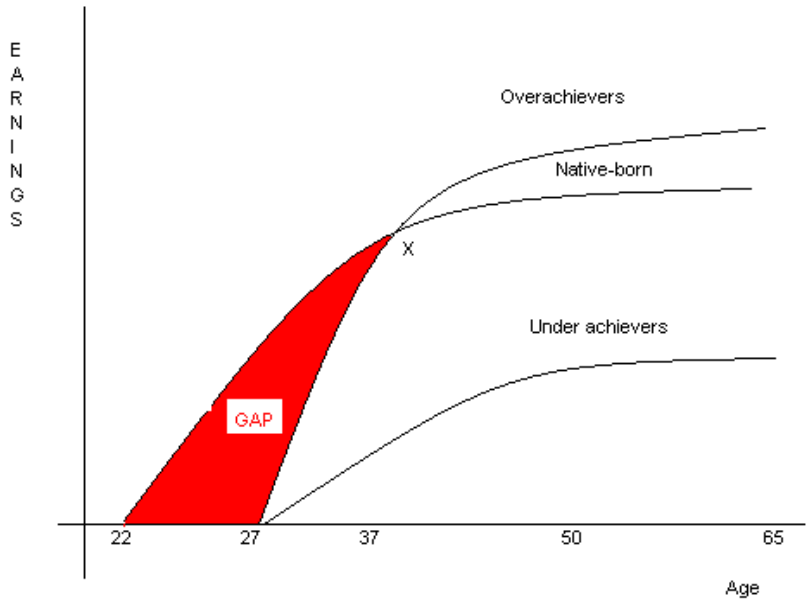


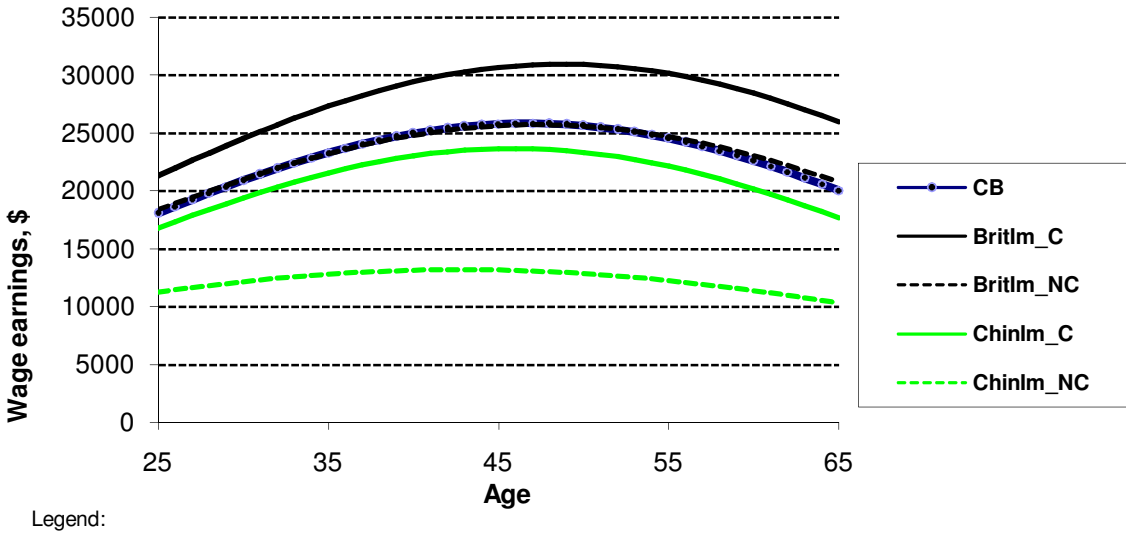
Figure 3 depicts the "gap" hypothesis from both optimistic and pessimistic viewpoints. Given our thesis of "triple selection" we would expect that Figure 1 would apply to highly skilled FSU émigrés to Canada since increased observable human capital attributes owing to triple selection should hasten the diminution in the earnings gap and may lead to its complete evaporation at X. Beyond X, in the optimistic case the immigrant now can overachieve with respect to their Canadian-born cohort's earnings performance. However, if there exist "unobservable" factors which intervene in this process of labour market integration, the case of underachieving may arise. These "unobservables" include inhibitions on the immigrant's desire to self-select into the labour market, employer discrimination of the immigrant's human capital characteristics (i.e. foreign education) and discounting their foreign labour market experience. It is this "gap" framework as depicted in Figure 1 which will inform our labour market integration analysis given the triple selection thesis outlined above. It should be noted that FSU immigrants may achieve over- or under-achievement status depending on the presence or absence of unobservable factors.

Literature Review

Canadian literature on the economics of immigration provides an extensive empirical immigrant labour market integration (Reitz, 2001). The literature has largely focused on Canadian immigrant earnings' performance in general but a series of in-depth studies based on the immigrants' country of origin have recently appeared. Two major findings from the general Canadian immigrant earnings experience appear to date. First, an age

earnings profile analysis based on a human capital model forms the underlying analytical framework for immigrant labour market performance across entry groups and over time in Canada. Secondly, and this is more germane to this study, more recent immigrant entry cohorts have failed to "catch-up" to their Canadian-born cohorts while older vintages of immigrants have overachieved.

Figure 4: Age-earning Profiles



Legend:
CB: Canadian Born; **BritIm_C**: British Immigrants Canadian citizens; **BritIm_NC**: British Immihrants non-citizens of Canada; **ChinIm_C**: Chinese Immigrants Canadian citizens; **ChinIm_NC:** Chinese Immigrants non-citizens of Canada (ChinIm_NC)

Source: Census of Canada, 1996

Figure 4 presents two interesting empirically-based variants of the gap model illustrated in Figure 3 in the Canadian context.[5] First, British immigrants *circa* 1996 could be termed 'overachievers' since they never suffered an earnings entry penalty and upon gaining citizenship outperformed their Canadian-born cohort every year over their life cycle. This overachieving phenomenon is repeated by immigrants from the United States and several other western European immigrant groups in Canada (Pivnenko and DeVoretz, 2003).

However, there exists a large dissenting literature which argues that the post-1990 wave of Canadian immigrants have not performed as described above. These observers report that each successive wave of post-1990 immigrants had a larger earnings entry penalty

[5] Since these findings were derived from a series of pooled Canadian Censuses care in this interpretation must be made since aging, cohort and time in Canada effects are difficult to disentangle.

and rarely overcame this increased penalty with time in Canada (Li, 2003). In addition, work on discriminatory behaviour in the Canadian immigrant labour market argued that institutional barriers prevented credential recognition (Ferrer and Riddell, 2002) and when coupled with overt discrimination (Pendakur and Pendakur 1998) prevented the post-1990 wave of Canadian immigrants from successfully integrating into the Canadian labour market. In Figure 4 these 'underachievers' appear in the form of the most recent wave of highly-educated Chinese immigrants in Canada. In fact, as reported in Figure 4, Chinese immigrants with or without citizenship status never 'catch-up' and if they do not ascend to citizenship they will still live below the poverty line for their entire lifetime.

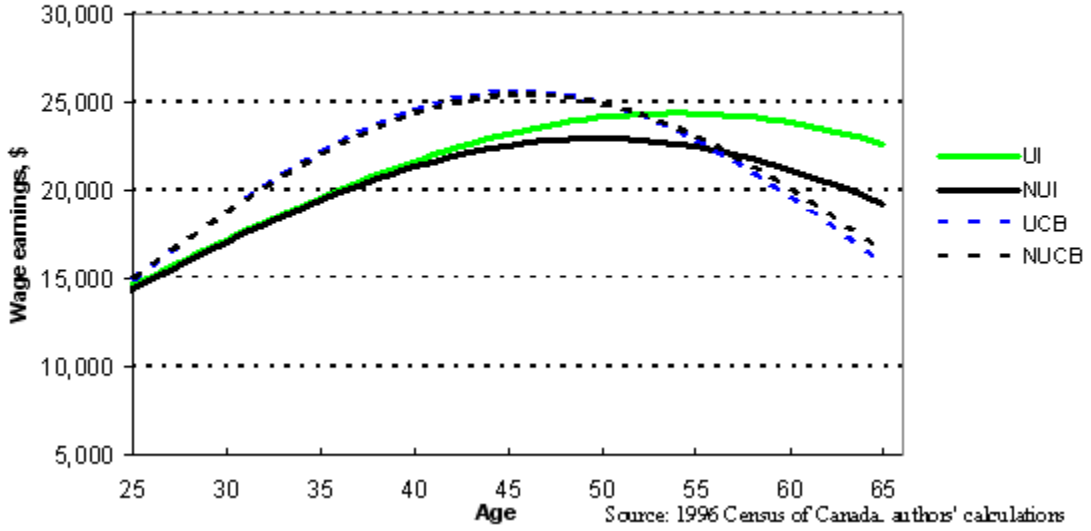
The aim of this condensed literature review is to choose which strain of the above-noted gap analysis –over or underachieving—applies in the context of immigrants from the FSU to Canada. We currently have two econometric studies which address the economic performances of select groups of Canadian immigrants from part of the FSU. Pivnenko and DeVoretz (2003) investigated the economic performance of recent Ukrainian immigrants to Canada and the United States with available census data. Their underlying approach was to test for ethnicity, foreign birth status and destination effects on the economic performance of a pooled set of pre- and post-1990 FSU Ukrainian immigrants in Canada and the United States. In particular, they tested for the existence of earnings overachieving in the context of Ukrainian immigrants in North America. An important sub-hypothesis is also addressed when they speculate that Ukrainian immigrants overachieve because they enjoy a 'sheepskin effect' which raises Ukrainian immigrant earnings relative to other immigrant graduates because employers may value Ukrainian degrees more. Finally, Pivnenko and DeVoretz conducted a comparative analysis of Ukrainian immigrant earnings in the United States versus Canada to detect if Canada's highly selective immigration policy encouraged more productive immigrants to enter Canada from the Ukraine.

Their reported results indicate that recent Ukrainian immigrants to Canada are indeed a select group. For the period 1991-2001, Ukrainian immigrants to Canada arrived with higher educational attainment, a greater propensity to speak English at home and contained the largest percentage of professionals for any immigrant cohort over the 1991-2001 period. These human capital attributes led to above-average earnings performance for Ukrainian immigrants which in turn was explained by their occupational distribution (largely professionals), numbers of weeks worked, and a substantial 'Sheepskin Effect'.[6]

The result of this robust earnings function is that Ukrainian immigrants in Canada outperformed the earnings of all other Canadian immigrants and "caught-up" and surpassed their Canadian-born cohort at age 36 as depicted in Figure 5.

[6] In fact, Pivnenko and DeVoretz (2003) report that this earnings effect derived from completing a university degree was the greatest for Ukrainian immigrants relative to all other Canadian immigrants.

Figure 5. **Age-earnings profile for Ukrainian Immigrants to Canada (UI), Non-Ukrainian Immigrants to Canada (NUI), Ukrainian Canadian Born (UCB) and Non-Ukrainian Canadian Born (NUCB)**



Finally, Pivnenko and DeVoretz (2003, p.13) conclude from their study that:

"*For Ukrainian immigrants, the assimilation process starts at a higher income level that exceeds the income earned by non-Ukrainians with the difference growing over time. The greater intercept reflects the more favorable entry effect for the Ukrainian immigrants. This positive earnings premium implies that…..the quality of the earnings enhancing characteristics Ukrainians have acquired…is relatively higher than for the rest of the immigrant population."*

In other words, Ukrainian immigrants in general were overachievers. They further report that Ukrainian immigrants to the United States do even better because they were endowed with greater human capital than Ukrainian immigrants resident in Canada.

However, we must be cautious not to draw hasty conclusions from this Ukrainian study for the FSU immigrant experience in general. First, the Pivnenko-DeVoretz sample is restricted to Ukrainians only and includes both pre- and post-FSU populations of all skill types. It is possible that the subject of this study, namely post- FSU arrivals, will exhibit a pattern of underachieving that appears in Figure 3.

Dean and DeVoretz (2000) with a similar analysis explored the "gap" thesis for all Jews living in Canada *circa* 1996. Again, this population does not match the former FSU immigrant stock which is the focus of this study but does include many former FSU immigrant arrivals. Dean and DeVoretz (2000) ask whether ethnicity (i.e. Jewish or non-Jewish) is related to the economic performance of immigrants in Canada. Their underlying argument is that income-enhancing non-cultural characteristics (e.g. education) are correlated with cultural characteristics. Using Canadian census data, their study group overlaps with the immigrant sample considered in this study, namely those

immigrants from the FSU.[7] They isolated two Jewish sub-groups: Jewish Canadian-born and Jewish immigrants and estimated earnings functions for these two groups as well as their non-Jewish counterparts. They reported that the stock of human capital characteristics which were normally correlated with higher income (age, education, and English language skills) exceeded all other immigrant groups to such an extent that any earnings entry penalty owing to immigrant status was overcome by Jewish immigrants by virtue of other income correlates. For example, almost 100% of Jewish immigrants reported speaking English at home while only 69% of all immigrants reported a similar capability. In addition, Jewish immigrants are older and more likely to be married than non-Jewish immigrants. However, one glaring inconsistency occurs when they observe that Jewish immigrants have less education than their Canadian-born Jewish counterparts. Nonetheless, Jewish immigrants are highly concentrated in the professions in Canada. In terms of gender, it is reported that *circa* 1990 Jewish immigrant women opted out of the Canadian labour market and, when in the labour force, were more likely to work for wages and salaries.

Their regression analysis of the earnings model allowed Dean and DeVoretz (2000) to conclude that both the substantial human capital endowments of Jews born in Canada and the differential rewards paid to these educational endowments allowed Jewish-Canadian immigrants resident in Canada *circa* 1990 to outperform other immigrants and avoid an earnings penalty upon entry into Canada.

At this point in the review, we conclude that two econometric studies which partially cover our immigrant group of interest (FSU) indicate that prior to 1995 Jewish and Ukrainian immigrants to Canada were exceptional groups. They earned more than their other foreign-born cohorts in Canada due to either greater human capital endowments or a better recognition of their credentials, or both.

Data

Data source

The data we use in this paper are drawn from the individual Public Use Micro Files (PUMF) from the Canadian Census of Population for the years 1986, 1991, 1996 and 2001. These datasets contain information on a representative sample of people living in Canada in the years 1985, 1990, 1995 and 2000 respectively. The total sample sizes of the PUMFs are 500,434 for the 1986 Census, 809,654 for the 1991 Census, 792,448 for the 1996 Census, and 801,055 for the 2001 Census.

The choice to work with census data has a number of inherent disadvantages. Census data is not panel data, so we cannot follow the same people over time, and thus in our econometric estimation we cannot control for unobservables that happen to be correlated with the variable that identifies FSU as the origin region. In addition, stacking four

[7] In fact, in the 1991 Canadian 2% PUST a cross tabulation of the Jewish sample indicates that over 60% of recent Jewish immigrants originated from the FSU.

different Censuses together introduces a number of possible sources of bias which makes the data cleaning process for this paper particularly complex.

Nonetheless, the individual-level Census data seem to be the best choice to analyze our research question. The most important single reason for this conclusion is that it is the only dataset that leaves us with a large number of observations for FSU immigrants that entered Canada before and after 1991. [8]

Construction of our dataset

Unfortunately, a few variables of interest for our study are coded differently across the different censuses. In other words, the coding system adopted for the construction of most of the categorical variables vary across different censuses, so that it is not possible to simply stack the data. The information contained in our data set is ultimately equivalent since we will only include variables for which this is the case. In the very few cases in which the recoding procedure does have an impact on the informational content, these differences will be explicitly mentioned.

The procedure to create a consistent dataset used the 2001 Census coding as a starting point, and subsequently modified the coding of all other Censuses to make it comparable to the 2001 Census. Variables identifying birthplace and those identifying year of immigration do not have a perfectly overlapping coding across census years, however we did recode to avoid any bias.[9]

PUMF files for each census report variables are expressed in Canadian Dollars (CAD) as reported by the respondents for one year prior to the release of the relevant census, therefore all monetary variables employed in our estimates (wages and salaries, self-employment income, total income, government transfers) must be adjusted for inflation. For the reported statistics in our summary tables and our regressions, all monetized variables are expressed in dollars for the year 2000 leaving the monetized values for 2001 unchanged.[10]

Data selection

For the summary statistics and for our wage equations, we restricted our sample to individuals of working age (i.e. aged 20-65) and excluded individuals for whom the primary source of reported income is self-employment income.

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[8] In particular, the publicly available version of the IMDB dataset does not offer a sufficiently large sample size and, even more crucially, does not include immigrants who arrived in Canada before 1981.

[9] Codes for the construction of the merged dataset are available from the authors

[10] For this task, we use a conversion utility offered by Statistics Canada (2006). According to this conversion tables and in comparison with 2000 CAD, values from the 1996 Census ought to be multiplied by 1.10, values from the 1991 Census by 1.21, values from the 1986 Census by 1.51.

Table 1: Relevant Sample Statistics for the period 1986-2001		
Variables	**Canadian born**	**FSU/USSR born**
English speaking	**63%**	**85%**
English and French speaking	21%	9.2%
Percent Married	**44.9%**	**57.3%**
Age	39.4	47.3
# of Years in Canada	Not Applicable	23.0
PERCENTAGE MALE	49.4%	48.1%
Bachelor degree or higher	**20.4%**	**42.6%**
Value dwelling	**$133,524**[a]	**$179,292**
Total personal income	**$29,245**	**$27,149**
Wages and salaries	**$23,386**	**$19,552**
Self employment income	**$1,697**	**$2,109**
Child benefits received	$267	$257
Total government transfers	$2,227	$2,332
Sample Size	1,068,272	3,278
% Living in GTA	**10.5%**	**49%**
% from Census 1986	17.6%	20.6%
% from Census 1991	28.0%	21.9%
% from Census 1996	27.0%	24.1%
% from Census 2001	27.5%	33.4%

Notes: a) All dollar values in constant in year 2000.
Source: Authors' calculations.

It is apparent from even a cursory reading of Table 1 that substantial differences emerge between the Canadian and FSU or USSR-born populations in Canada for these selected socio-economic indicators. First, FSU immigrants are much older (47) than the Canadian-born stock (39). Next, the FSU/USSR-born immigrant group is more likely to be married (57.3%) and more highly educated (42.6%) than their Canadian-born cohort. These

strong human capital characteristics, however, did not translate into greater incomes or wages and salaries for the FSU/USSR group. In fact, FSU/USSR personal income was $1,096 less than their Canadian-born cohort. Nonetheless, the consumption of total government transfers is nearly equal between the two groups. In sum, all the standard variables contained in a typical human capital model of earnings are strong for the FSU/USSR-born group in Canada across the survey period. In spite of this, however, the labour market outcomes in terms of earnings contradict these strong human capital characteristics. We next turn to a regression analysis to explain this anomaly.

Regressions Results

OLS Results

Following the naïve Mincer earnings equation framework, which may include a self-selection bias, we report the results derived from a simple OLS wage regression in log form for people aged 20-65 in Table 2.

Table 2 OLS Earnings equations

Dependent variable: log(wage) in 2000 CAD	(1)		(2)		(3)		4)	
Born in USSR or FSU countries	-0.03	(0.02)	-0.09***	(0.02)	-0.23***	(0.02)	-0.45***	(0.02)
Age			0.16***	(0.00)	0.15***	(0.00)	0.17***	(0.00)
Age^2			-0.001***	(0.000)	-0.002***	(0.000)	-0.002***	(0.000)
Male					0.56***	(0.00)	0.51***	(0.00)
Married and not separated			0.18***	(0.00)	0.19***	(0.00)	0.22***	(0.00)
Dummy for children in the household							-0.12***	(0.00)
Dummy for Toronto CMA							0.19***	(0.00)
Census year fixed effects	No		No		Yes		Yes	
Educational attainment dummies	No		No		Yes		Yes	
Observations	1,047,041		1,047,041		1,047,041		385,104	
R^2	0.000		0.114		0.217		0.227	

Notes: Standard errors in parentheses.
$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

We isolate two areas of birth in this equation: immigrants from the USSR/FSU, and we use the Canadian-born respondents as our control group.[11] It should be noted that this formulation does not take into account the fact that the labour market participation decision is endogenous to other labour market conditions. It is nevertheless an interesting first step to evaluate the overall discrepancy between the wages of Canadian-born and USSR/FSU-born workers, controlling for a few covariates including gender, age, education, and marital status. Our preferred specification is presented in column 4 (which includes dummies for each census year) to control for the fact that the proportion of FSU immigrants varies across census periods.

Table 2 reports several interesting results. First, the estimated wage differential is 45% in favour of the Canadian-born control group and is significant at the one percent significance level. Moreover, the basic human capital model we hypothesized to explain earnings is confirmed by these results. Age (.170) and Age squared (-0.00189) obtain positive and negative signs respectively, confirming the argument that earnings increase at a decreasing rate over their lifetimes. Moreover, the effects derived from an earner being male (.506), and married (0.220), or living in Toronto (0.185) are all positive and these variables significantly raised earnings. However, if the wage earner was born in the USSR/FSU, then as earlier noted their earnings significantly declined (-0.450) relative to the control group of Canadian-born earners.

Table 3. FSU Earnings Equations with all Other Immigrants as control group.

Dependent variable: log(wage) in 2000 CAD	(1)		(2)		(3)		(4)	
Born in USSR or FSU countries	0.11**	(0.03)	0.04	(0.03)	-0.09**	(0.03)	-0.10**	(0.03)
Arrived in Canada after 1991	-0.48***	(0.001)	-0.38***	(0.01)	-0.42***	(0.01)	-0.47***	(0.01)
FSU*post 1991 arrival	-0.06	(0.04)	-0.02	(0.04)	0.07	(0.04)	0.05	(0.05)
Age			0.13***	(0.00)	0.13***	(0.00)	0.13***	(0.00)
Age^2			-0.001***	(0.0000)	-0.001***	(0.000)	-0.001***	(0.000)
Married and not separated			0.14***	(0.01)	0.13***	(0.01)	0.15***	(0.01)
Male					0.50***	(0.003)	0.47***	(0.001)
Dummy for children in the household							-0.10***	(0.01)
Dummy for Toronto CMA							0.16***	(0.01)
Educational attainment dummies	No		No		Yes		Yes	
Observations	248974		248974		248974		147952	
R^2	0.021		0.095		0.181		0.173	

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

[11] We exclude non-wage earners and earners who derived their incomes from self-employment.

Table 3 reports equivalent earning equations using other immigrants as a control group. Using immigrants from other countries as controls allows us to include a dummy for having entered Canada after 1991, as well as an interaction effect for allowing the effect of having entered after 1991 to be different for FSU immigrants and for other immigrants, which is consistent with a change in selection mechanisms for FSU immigrants. Columns 3 and 4 of the table (our preferred specifications) show that it is indeed the case that there is a positive effect for FSU immigrants. Immigrants from the FSU coming after 1991 experience less of an earnings disadvantage when compared to all other immigrants.

We can run equivalent regressions comparing the earnings equations for USSR/FSU-born immigrants who arrived in Canada before 1991 and after 1991. This division is motivated by the supply side change in the composition of FSU immigrants to Canada. These estimations are presented in Table 4. The first column suggests that post-1991immigrants have lower average earnings than those who came before that date. However, this first specification crucially fails to control for the number of years since immigration, which is distributed very differently among the two groups that are compared here. Once we do control for years in Canada by including a series of dummies[12], the estimated sign obtained for our main parameter of interest changes. Our preferred specification, which includes census fixed effects, age and educational attainment (column 4), shows that immigrants from FSU countries who entered Canada after 1991 earn more than their predecessors, although the effect is not significant. The sign obtained by the human capital arguments of interest (age, age2, marital status, years in Canada, gender) all conformed to our theoretical predictions. Again, presence in Toronto significantly increased earnings.

Table 4 Earnings equation, USSR/FSU-born only

Dependent variable: log(wage) in 2000 CAD	(1)		(2)		(3)		(4)	
Entering after 1991	-0.50***	(0.04)	0.22**	(0.07)	0.02	(0.08)	0.06	(0.10)
Age					0.15***	(0.01)	0.12***	(0.02)
Age^2					-0.002***	(0.000)	-0.001***	(0.000)
Male					0.52***	(0.04)	0.49***	(0.05)
Married and not separated					0.09	(0.05)	0.11	(0.06)
Dummy for children in the household							0.01	(0.06)
Dummy for Toronto CMA							0.22***	(0.05)
Census Year Fixed Effects	No		No		Yes		Yes	
Years since immigration Dummies	No		Yes		Yes		Yes	
Educational attainments Dummies	No		No		No		Yes	
Observations	3180		3180		3180		1999	
R^2	0.041		0.100		0.209		0.227	

Standard errors in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

[12] Unfortunately, years since immigration is a categorical variable

Labour Force Activity

The reported regression results in Tables 3 and 4 may contain a serious bias owing to the endogeneity of the choice of labour force activity and the reported wages. Table 5 reports the labour force activity of all Canadians and those who arrived before and after 1992 from the FSU which portrays their respective commitments to the Canadian labour force. For males and females combined, the greatest difference in labour force status appears in the percentage not in the labour force with those from the FSU/Soviet Union reporting an average 33.5% not in the labour force. This percentage absent from the labour market grows to 43% for females from FSU/Soviet Union. In short, whether we cross tabulate the percentage not in the labour force by gender, birth place or year of entry, FSU immigrants to Canada are significantly less likely to report themselves not in the labour force than the rest of the Canadian population.

Table 5 Labour Force Activity Aged 20 to 65 by Gender and Birth Place

Labour Force Status	All Canadians	All FSU/Soviet Union	Pre 1992 FSU	Post 1992 FSU
Males and Females				
%Employed	61%	61%	61.5%	60.7%
%Unemployed	7%	6.5%	9.2%	5%
%Not in Labour Force	**24%**	**33.5%**	**28.3%**	**35%**
Males				
%Employed	79.5%	59%	72.5%	70.9%
%Unemployed	7%	10%	9.4%	5.6%
%Not in Labour Force	**24%**	**31%**	**18.1%**	**23.5%**
Females				
%Employed	65%	51%	52.0%	51.3
%Unemployed	7%	6%	10.5%	4.5%
%Not in Labour Force	**28%**	**43%**	**37.6%**	**44.2%**

Source: Authors' calculations based on census data

Two-Stage Models

FSU vs. Canadian born

As we briefly discussed above, our previously estimated models do not incorporate the decision to enter the labour force which now appears to be an important omission given the reported labour force activity differentials reported in Table 5. In the following regressions, we estimate a probit model to detect the probability of participating in the Canadian labour force. Our binary dependent variable (1= employed, 0=otherwise) is constructed from the variable reporting full-time and part-time participation. Therefore, at this stage we do not distinguish between part-time and full-time employment, and investigate the choice of entering the labour market only for males and females separately. The main parameter of interest corresponds to the effect of being born in the USSR/FSU on the probability of working. We include fixed effects for the Census

reporting year, control for age (and age squared), educational attainment, and presence of children in the households. We run separate regressions for males and females.[13]

Table 6:Heckman's procedure - endogenous participation for FSU Immigrants and Canadian born.

Dependent variable: log(wages) in 2000 CAD	(1) Males		(2) Females		(3) Males		(4) Females	
Age	0.110***	(0.00604)	0.129***	(0.00135)	0.107***	(0.00184)	0.166***	(0.00208)
Age^2	-0.000847***	(0.0000802)	-0.00131***	(0.0000179)	-0.000870***	(0.0000245)	-0.00193***	(0.0000313)
Grade 9 or less	0.181***	(0.0396)	-0.187***	(0.0156)	-0.0364**	(0.0117)	-1.038***	(0.0279)
High School dropouts	0.0221	(0.0186)	-0.108***	(0.00719)	-0.0102	(0.00645)	-0.465***	(0.0119)
Bachelor	0.151***	(0.0139)	0.197***	(0.00564)	0.131***	(0.00650)	0.418***	(0.00725)
Graduate studies certificate	0.277***	(0.0227)	0.347***	(0.00880)	0.260***	(0.00959)	0.641***	(0.0101)
Toronto CMA	0.117***	(0.0141)	0.160***	(0.00535)				
Born in USSR or FSU countries	-0.0924	(0.0715)	-0.190***	(0.0291)	-0.0440	(0.0380)	-0.298***	(0.0289)
Constant	7.767***	(0.119)	7.165***	(0.0267)	7.881***	(0.0359)	6.138***	(0.0475)
Selection (first stage)								
Age	0.116***	(0.00261)	0.108***	(0.00153)	0.0867***	(0.00111)	0.0752***	(0.000965)
Age^2	-0.00173***	(0.0000307)	-0.00167***	(0.0000185)	-0.00138***	(0.0000129)	-0.00116***	(0.0000114)
Grade 9 or less	-0.632***	(0.0181)	-0.887***	(0.0106)	-0.629***	(0.00644)	-0.920***	(0.00624)
High School dropouts	-0.335***	(0.0116)	-0.418***	(0.00651)	-0.308***	(0.00512)	-0.452***	(0.00422)
Bachelor	0.124***	(0.0125)	0.264***	(0.00744)	0.145***	(0.00688)	0.326***	(0.00534)
Graduate studies certificate	0.184***	(0.0204)	0.334***	(0.0125)	0.257***	(0.0106)	0.412***	(0.00946)
Married and not separated	0.526***	(0.0136)	0.0571***	(0.00604)	0.504***	(0.00464)	-0.0878***	(0.00378)
Children in the household	-0.00471	(0.0121)	-0.611***	(0.00610)				
Toronto CMA	0.0862***	(0.0120)	0.132***	(0.00677)				
Born in USSR or FSU countries	-0.699***	(0.0448)	-0.410***	(0.0290)	-0.299***	(0.0298)	-0.321***	(0.0260)
Constant	-0.710***	(0.0481)	-0.456***	(0.0286)	-0.144***	(0.0213)	-0.215***	(0.0185)
mills								
lambda	-2.026***	(0.0888)	-0.722***	(0.0184)	-1.698***	(0.0275)	0.684***	(0.0479)
Observations	152574		335899		650741		696069	

Standard errors in parentheses

Marital status and presence of children (or the former only) used as instruments in the participation equation

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6 reports the results of our selection and earnings equations for the pooled sample of all Canadians and FSU/USSR immigrants residing in Canada for the period 1986-2001. This is our **base** specification, which argues that participation in the labour force is endogenous and depends on prospective earnings. Given that males and females have very different labour market participation rates, we run these regressions separately. In the first stage (or in the selection equation) in addition to the basic human capital

[13] Due to large differences in male-female labour market participation and labour supply elasticities, it is not sensible to impose a restriction that labour force participation is the same for men and women.

variables (age, age squared, gender, education levels) we further isolate residence in Toronto and the individual's foreign birth status (USSR/FSU).

Our chosen instruments for our preferred results (reported in columns 1 and 2) are marital status, the presence of children, and the presence of employment benefits in the individual's reported earnings.[14] All the variables obtain the expected sign and are significant at the 5% level or better for both the male and female specifications. Lambda, or the coefficient of the inverse of the Mill's ratio, is negative as expected with the exception of the female specification in column 4.[15]

In the case of males (columns 1 and 3), the FSU origin dummy has a negative effect on the probability of participating in the labour market but, for people who work, it does not impact wages significantly (there is a negative effect, but it is not significant). Turning to the results reported in column 3 (which are more reliable given the many more observations) male FSU immigrants are 30% less likely to participate in the labour force, controlling for age, education and marital status.

Female FSU immigrants, on the other hand, exhibit both a lower probability of being in the labour market (-32% using column 4) and lower predicted wages than their Canadian-born counterparts (-30% wage earnings) after controlling for the other covariates and for the endogeneity of labour market participation.

In sum, FSU foreign birth status impacts female and male labour market outcomes relative to the entire Canadian population except for FSU male earnings.

[14] The inclusion of Toronto CMA and presence of children while our preferred equation greatly reduces the number of observations.

15. Under this specification without the presence of children or location in Toronto a positive lambda infers negative selection of females into the labour market

FSU Immigrants versus all Immigrants

Table 7: Heckman's procedure - endogenous participation for FSU Immigrants and All Immigrants :1986-2001

Dependent variable: log(wages) in 2000 CAD	(1) Males		(2) Females		(3) Males		(4) Females	
Age	0.0109	(0.0159)	0.0921***	(0.00274)	0.0297***	(0.00715)	0.123***	(0.00520)
Age^2	0.000295	(0.000201)	-0.000860***	(0.0000350)	0.0000200	(0.0000885)	-0.00128***	(0.0000685)
Grade 9 or less	0.0737	(0.0514)	-0.172***	(0.0146)	-0.00280	(0.0224)	-0.330***	(0.0258)
High School dropouts	0.0132	(0.0320)	-0.107***	(0.0106)	-0.00965	(0.0168)	-0.188***	(0.0150)
Bachelor	0.179***	(0.0217)	0.203***	(0.00843)	0.171***	(0.0141)	0.235***	(0.00884)
Graduate studies certificate	0.298***	(0.0299)	0.361***	(0.0125)	0.284***	(0.0177)	0.400***	(0.0129)
Born in USSR or FSU countries	0.0883	(0.0846)	-0.0729*	(0.0294)	0.0136	(0.0477)	-0.117***	(0.0287)
Constant	9.845***	(0.354)	7.691***	(0.0619)	9.504***	(0.159)	6.917***	(0.125)
Selection (first stage)								
Age	0.132***	(0.00315)	0.147***	(0.00197)	0.125***	(0.00202)	0.124***	(0.00178)
Age^2	-0.00173***	(0.0000359)	-0.00196***	(0.0000233)	-0.00164***	(0.0000230)	-0.00161***	(0.0000206)
Grade 9 or less	-0.392***	(0.0160)	-0.499***	(0.00945)	-0.329***	(0.0110)	-0.512***	(0.00910)
High School dropouts	-0.208***	(0.0141)	-0.275***	(0.00878)	-0.174***	(0.0100)	-0.285***	(0.00843)
Bachelor	-0.0309*	(0.0130)	0.119***	(0.00903)	-0.0460***	(0.00975)	0.129***	(0.00851)
Graduate studies certificate	0.0445*	(0.0184)	0.186***	(0.0139)	0.0711***	(0.0129)	0.184***	(0.0131)
Married and not separated	0.263***	(0.0169)	-0.0692***	(0.00810)	0.315***	(0.00862)	-0.146***	(0.00694)
Children in the household	-0.0651***	(0.0124)	-0.394***	(0.00766)				
Born in USSR or FSU countries	-0.304***	(0.0425)	-0.189***	(0.0268)	-0.158***	(0.0292)	-0.200***	(0.0256)
Constant	-1.418***	(0.0598)	-1.683***	(0.0378)	-1.360***	(0.0395)	-1.477***	(0.0351)
mills								
lambda	-2.429***	(0.234)	-0.561***	(0.0334)	-2.115***	(0.100)	-0.0469	(0.0782)
Observations	95179		186053		187707		203146	

Notes: a. Reference group: high school graduate, not from the FSU countries, , single, no children
b. Standard errors in parentheses
c. Marital status and presence of children (or the former only) used as instruments in the participation equation
d. $p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

Our preferred specifications in Table 7 are found under columns 3 and 4 since the under-reported or missing values for the presence of children does not appear in these specifications.

The selection equation which is embedded in the lower half of Table 7 reports the usual feature that labour force participation is increasing in age at a decreasing rate for all foreign-born residents in Canada. In addition, married foreign-born males are more likely to participate in the labour force (holding age and education constant) than unattached males and married foreign-born females are less likely to work if married, as one would expect. Most striking is the fact that FSU-born males have an average expected participation rate that is 15.8 points lower than that of other immigrants. The equivalent figure for females is 20 points lower. Finally, the coefficient obtained on the IMR

(Inverse Mills Ratio) is negative for males and females, although for females it is not significant. Thus, women who work are positively self-selected, but not as strongly as males are.

In the wage equation (upper half of Table 7), all variables obtain the expected sign. It is interesting to note that age and education variables both have a much greater impact on wages for females when compared to males. The age^2 variable actually has no significant effect for males. For males, having completed high school also has no significant wage returns.[16]

Once we control for the fact that participation in the labour force is endogenous (and it is so especially for males), FSU-born males who work have basically the same average wage as all other immigrants. In the case of females, there is a gap against the FSU-born. Controlling for age and education and for the endogeneity of labour market participation, FSU-born females yields a 11.7 percent lower average wage when compared to all other female immigrants.

An additional selection device beyond immigrants self-selecting into (or out of) the labour market is their citizenship status. As we argued above, naturalizing to Canadian citizenship can affect labour force dimensions in terms of job selection and provide a signal to potential employers about a naturalized citizen's integration. Thus, we add a citizenship variable to our reported preferred specifications (reported in Table A-1). In the foreign-born population, a citizenship premium appears and, more importantly, when we interact citizenship status with FSU origin the interaction term is strongly positive yielding our predicted 'citizenship' premium.

[16] Coefficients on "grade 9 or less" and on "High School dropouts" are negative but small and insignificant

Simulations

Our earnings gap thesis outlined in Figure 3 can be reproduced empirically from our reported results and we do so for two control groups and the FSU-born group in Canada. Figure 6 compares Canadians to the FSU group with older and pre-1992 immigrants from the FSU now doing very poorly when we control for years in Canada.
Moreover, the convergence at age 60 may be a by product of the two forces of age and years in Canada with the latter appearing as an added argument only for FSU immigrants.

Figure 6: Age-earning profiles for FSU born and Canadian born, based on the second stage of a Heckman model

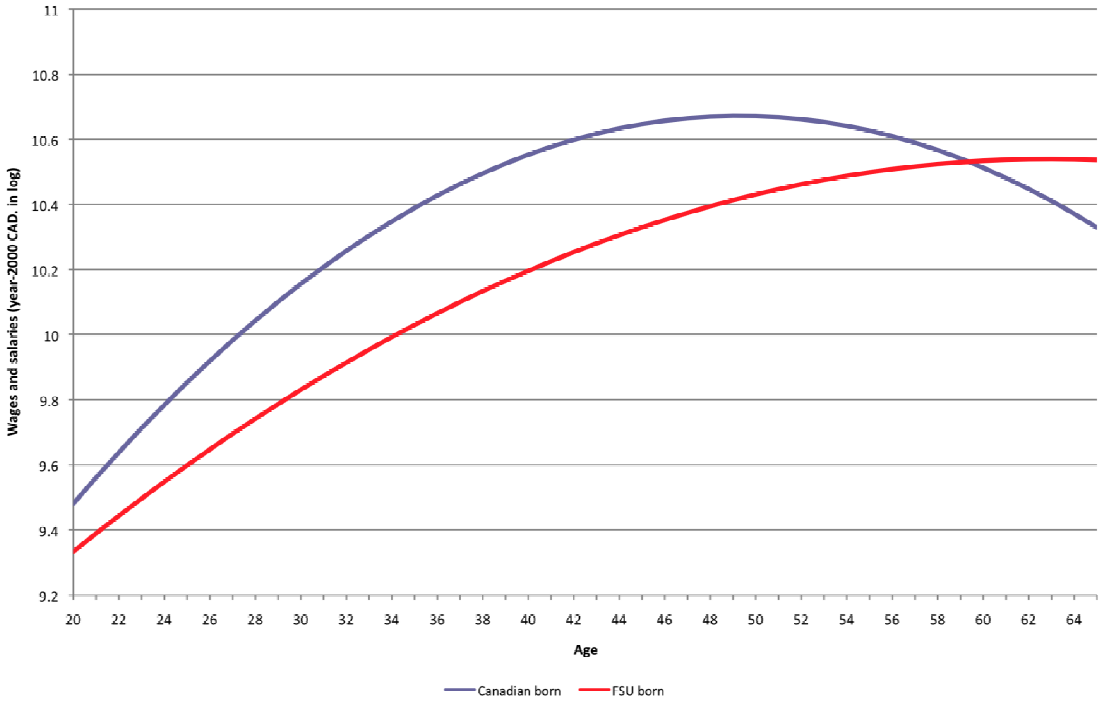
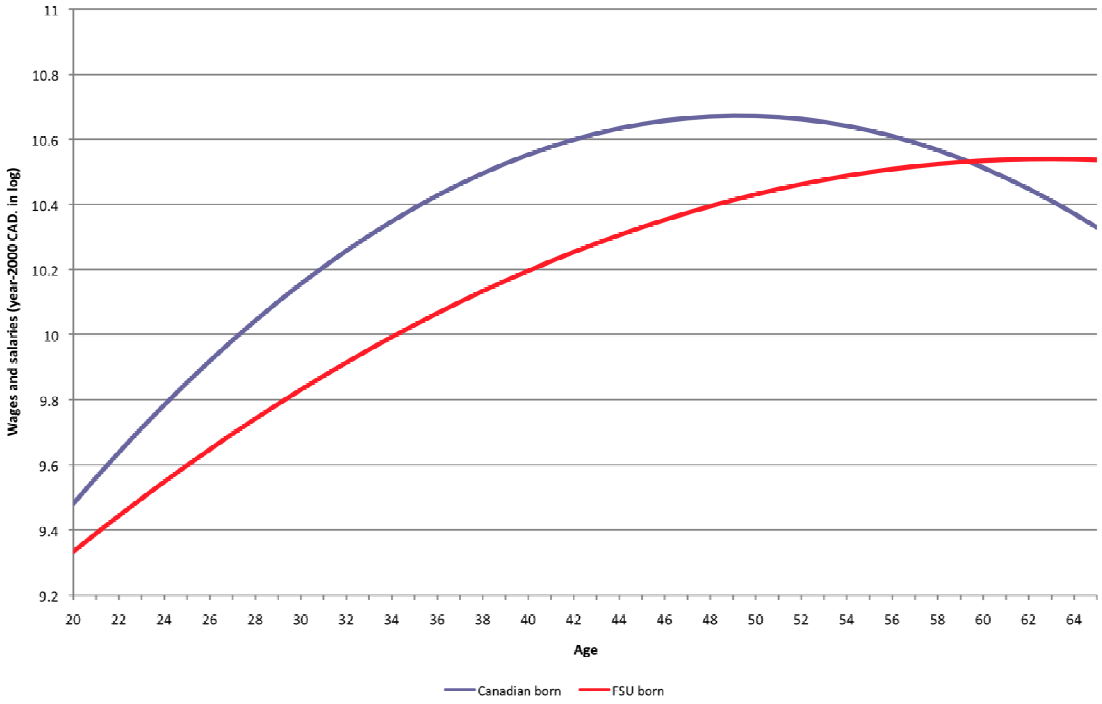


Figure 7 compares the earnings profiles of FSU immigrants relative to all other immigrants in Canada. The results are revealing since regardless of age FSU immigrants earn less than the all other immigrant population.

Figure 7: Age-earning profiles for FSU born and other immigrants to Canada, based on the second stage of a Heckman model



Decomposition Analysis

The simulated wage gap between the two immigrant groups may be owing to differences in individual characteristics and differences in returns to these characteristics. The Oaxaca-Blinder decomposition method (Neuman, S. and R. Oaxaca, 2003) has become a routine method in labour market discrimination studies to explain a segmented group's wage difference *vis a vis* a control group. In our case, we argue that the foreign-birth status of an immigrant segments the labour market, and thus we employ a decomposition analysis. In its simplest version, the idea is to isolate the fraction of the wage differential unexplained by human capital endowments which is usually attributed to labour market discrimination. Accordingly, we have to adopt one of the estimated wage structures as the non-discriminatory norm for the group believed to be dominant in the labour market (Canadian-born) relative to the comparison group (FSU immigrants).

The human capital portion of the overall wage differential is obtained as a sum of the differences in the mean characteristics of the two groups weighted by the estimated coefficients for the non-discriminatory wage standard. The portion of the overall wage differential owing to discrimination will then be the residual left over after netting out for the human capital portion.[17] In our study we adapt this decomposition methodology to

[17] This could also be directly calculated as a sum of the difference in estimated coefficients between the two groups weighted by the mean characteristics of the discriminated group.

explain Canadian/FSU immigrant wage differentials. Further, we treat FSU immigrants as a disadvantaged group since as (initially) non-citizens they are discriminated against in the public sector which blocks job access of non-citizens. Moreover, in the private sector we argue that non-citizenship status serves as a signal: first, it indicates a weak attachment to Canada, and, secondly, it may indicate need for greater cultural integration.

Neuman and Oaxaca (2003) acknowledged that when you introduce a correction for selectivity bias this in turn introduces some fundamental ambiguities in the context of wage decompositions. Thus we follow one of their suggested decomposition modifications below.

Based on the estimates obtained earlier, we define the FSU/non-FSU wage (REF) differential in matrix notation as

$$\Delta \ln(\overline{W}) = \ln(\overline{W}_{REF}) - \ln(\overline{W}_{FSU}) = \overline{X}_{REF}\beta_{REF} - \overline{X}_{FSU}\beta_{FSU}$$
$$= (\overline{X}_{REF} - \overline{X}_{FSU})\beta_{FSU} + \overline{X}_{FSU}(\beta_{REF} - \beta_{F}) + (\overline{X}_{REF} - \overline{X}_{FSU})(\beta_{REF} - \beta_{FSU})$$

where REF stands for the reference group.

In the second line of equation the overall wage effect is decomposed into the effect due to different endowments, the effect due to different returns to these characteristics, and the effect due to the interaction of the difference in endowments and the difference in their returns.

Table 8: Sources of Wage Differentials

	Decomposition	Total Difference	Difference Explained by Endowments	Difference Unexplained by endowments (Returns to Endowments)	Interaction	Number of observations
Canadian born vs. FSU immigrants	Total	-.01307	-.1939	.1431	.0377	961509
	Males	-.01630	-.2177	.1527	.0486	522165
	Females	-.00148	-.1582	.1237	.0330	439344
All other immigrants vs. FSU immigrants	Total	-.01294	-.0550	.0388	.0032	262222
	Males	-.01534	-.0664	.0329	.0182	143113
	Females	-.00474	-.0389	.0447	-.0104	119109
FSU before vs. FSU after 1991	Total	.4948	-.5606	-.0866	1.1421	3180
	Males	.4744	-.7758	-.05812	1.3083	1711
	Females	.5180	-.2893	-.1353	.9426	1469

Table 8 reports several decompositions which use alternative reference groups when analyzing the wage gap with respect to the FSU population. In the first case (Row 1), the wage gap in total or for males between Canadians and all FSU immigrants regardless of entry date is in favour of the FSU population with a 1% premium for males and a trivial premium accruing to FSU females. However, this small wage gap is a product of two offsetting forces: the FSU population in general has a greater human capital endowment (by 19%) than Canadians, but they receive a lower rate of return (14%) on these assets.

The second decomposition experiment is conducted now for FSU immigrants and all other immigrants. Again, only a minor wage gap appears between these two groups whether in total (1%) or males (1%) or females (.4%). This slight wage gain in favour of the FSU population is explained as in the earlier case. The FSU population in general has a slightly greater human capital endowment (5%) than all Canadian immigrants but they receive a lower rate of return (3.8%) on these assets which in turn leads to the small positive wage gap in favour of the FSU population.

A substantial wage gap arises when the control group is defined as the pre-1991 FSU immigrants and the excluded group is post-1991 FSU immigrants. Now a nearly 50% wage gap emerges in favour of pre-1991 FSU immigrants to Canada. FSU immigrants entering Canada after 1991 have a much "better" endowment in human capital (higher level of education, younger) and receive a slightly greater return to those endowments. However, given that the interaction term is large and positive (1.1), the effects derived from a greater human capital endowment and a higher reward to this human capital for the post-1991 FSU cohort are outweighed.[18]

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Summary and Conclusions

This paper argued that the post-1991 changes in the exit rules for potential immigrants from the FSU amounted to a natural experiment with predicable supply side changes. The evidence presented supports this interpretation. First, prior to 1991 FSU immigrants to Canada were largely (76%) unscreened by Canada's points system. By 2000, 65% of FSU immigrants to Canada were screened. This shift to entry under the screened portal, namely as economic immigrants, led to enhanced human capital attributes for post-1991 FSU immigrants to Canada but sample statistics provided by census data did not support the anticipated strong labour market outcomes. These observed weak outcomes are in sharp contrast to the two reported case studies for Jews and Ukrainians in the Canadian contexts which characterized these members of the FSU émigré groups as groups of 'overachievers'. With the aid of a human capital model, we estimate a naïve (OLS) Mincer earnings equation which identifies a 45% negative wage gap relative to the Canadian-born population arising from FSU foreign birth status. A crucial modeling correction is made once it is noted that, for post-1992 FSU immigrants, more than 35% of these immigrants *circa* 1991-2000 were not in the labour force. When we now estimate a two-stage model to correct for the fact that labour force participation and earnings are endogenous, foreign-birth status (FSU-born) impacts labour force participation but not

[18] Note the two terms in the interaction term are negative and thus when cross multiplied become a positive term.

earnings for FSU males. However, female FSU immigrants still experience a 30% wage gap *vis a vis* Canadian females. These gap results are identical when we use all foreign-born as the reference group. In sum, we conclude that FSU immigrants are earnings 'underachievers' relative to either all Canadians or just all immigrants in Canada. When we decompose the sources of the simulated wage gap, we find that although the FSU population has in general a greater human capital endowment, they receive a lower rate of return than either the Canadian-born or all foreign-born reference groups, which suggest discrimination against FSU immigrants in Canada's labour market.

In sum, the 'natural experiment' of free movement after 1991 did lead to a shift in entry gates to economically assessed immigrants who possessed greater human capital attributes than resident Canadians. However, this 'double selection' process did not lead to economic 'overachieving' since FSU immigrants opted out of the labour market and, when in the labour market, did not receive the same returns as other Canadians. Nonetheless, the third selection process—ascension to citizenship—positively affected FSU immigrant earnings as predicted.

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Appendix A

Table A-1 FSU Immigrants by Entry Gate 1980-2005

Year of landing		Family class	Skilled immigrants	Refugees	Total
1980	Count	56	108	1914	2079
	% within LYR Year of Landing	2.7%	5.2%	92.1%	100.0%
1981	Count	98	59	715	872
	% within LYR Year of Landing	11.2%	6.8%	82.0%	100.0%
1982	Count	131	66	174	377
	% within LYR Year of Landing	34.7%	17.5%	46.2%	100.0%
1983	Count	74	35	98	212
	% within LYR Year of Landing	34.9%	16.5%	46.2%	100.0%
1984	Count	73	39	26	140
	% within LYR Year of Landing	52.1%	27.9%	18.6%	100.0%
1985	Count	51	<20	39	111
	% within LYR Year of Landing	45.9%		35.1%	100.0%
1986	Count	42	23	40	109
	% within LYR Year of Landing	38.5%	21.1%	36.7%	100.0%
1987	Count	60	65	101	227
	% within LYR Year of Landing	26.4%	28.6%	44.5%	100.0%
1988	Count	79	191	345	616

	% within LYR Year of Landing	12.8%	31.0%	56.0%	100.0%
1989	Count	174	471	971	1618
	% within LYR Year of Landing	10.8%	29.1%	60.0%	100.0%
1990	Count	255	1015	1200	2472
	% within LYR Year of Landing	10.3%	41.1%	48.5%	100.0%
1991	Count	451	928	735	2126
	% within LYR Year of Landing	21.2%	43.7%	34.6%	100.0%
1992	Count	769	1056	967	2847
	% within LYR Year of Landing	27.0%	37.1%	34.0%	100.0%
1993	Count	1065	1455	731	3372
	% within LYR Year of Landing	31.6%	43.1%	21.7%	100.0%
1994	Count	999	2173	900	4221
	% within LYR Year of Landing	23.7%	51.5%	21.3%	100.0%
1995	Count	973	2883	1223	5207
	% within LYR Year of Landing	18.7%	55.4%	23.5%	100.0%
1996	Count	1186	4212	1147	6742
	% within LYR Year of Landing	17.6%	62.5%	17.0%	100.0%
1997	Count	1392	6596	1283	9538
	% within LYR Year of Landing	14.6%	69.2%	13.5%	100.0%
1998	Count	1437	8149	1098	11012

	% within LYR Year of Landing	13.0%	74.0%	10.0%	100.0%
1999	Count	1638	6255	646	8740
	% within LYR Year of Landing	18.7%	71.6%	7.4%	100.0%
2000	Count	2006	6020	852	9132
	% within LYR Year of Landing	22.0%	65.9%	9.3%	100.0%
2001	Count	2381	6668	1076	10364
	% within LYR Year of Landing	23.0%	64.3%	10.4%	100.0%
2002	Count	2343	6425	921	10075
	% within LYR Year of Landing	23.3%	63.8%	9.1%	100.0%
2003	Count	2283	5264	1045	9165
	% within LYR Year of Landing	24.9%	57.4%	11.4%	100.0%
2004	Count	2046	5491	1148	9270
	% within LYR Year of Landing	22.1%	59.2%	12.4%	100.0%
2005	Count	1510	5912	1598	9560
	% within LYR Year of Landing	15.8%	61.8%	16.7%	100.0%

Note: the total by year is higher than the sum of the three columns because the categories entrepreneur and the category other are excluded due to very low numbers, which cannot be released by IMDB.

Source: special tabulations of LIDS (Landed Immigrants Data System) from IMDB Immigration Database