

# Vancouver Centre of Excellence



## Research on Immigration and Integration in the Metropolis

Working Paper Series

#00-05

**A Taste of Canada: An Analysis of Food Expenditure Patterns for  
Canadian-born and Foreign-born Consumers**

**Christiane Werner**

**May 2000**

## RIIM

### Research on Immigration and Integration in the Metropolis

The Vancouver Centre is funded by grants from the Social Sciences and Humanities Research Council of Canada, Citizenship & Immigration Canada, Simon Fraser University, the University of British Columbia and the University of Victoria. We also wish to acknowledge the financial support of the Metropolis partner agencies:

- Health Canada
- Human Resources Development Canada
- Department of Canadian Heritage
- Department of the Solicitor General of Canada
- Status of Women Canada
- Canada Mortgage and Housing Corporation
- Correctional Service of Canada
- Immigration & Refugee Board

Views expressed in this manuscript are those of the author(s) alone. For more information contact the Co-Directors of the Centre, Dr. Don DeVoretz, Department of Economics, SFU (e-mail: [devoretz@sfu.ca](mailto:devoretz@sfu.ca)) or Dr. David Ley, Department of Geography, UBC (e-mail: [davidley@unixg.ubc.ca](mailto:davidley@unixg.ubc.ca)).

**A Taste of Canada:  
An Analysis of Food Expenditure Patterns  
for Canadian-born and Foreign-born Consumers**

by

Christiane Werner  
Researcher, RIIM  
Simon Fraser University  
Burnaby, BC, V5A 1S6  
(604) 291-5351 (Voice)  
(604) 291-5336 (Fax)  
E-mail: cwerner@sfu.ca

August 9, 2000

The critical comments of Dr. Con DeVoretz, Dr. Krishna Pendakur, and Jutta Heinrichs are noted with appreciation. The author also thanks Sydney Preston for her copyediting services.

**Abstract:** Between 1968 and 1986 the composition of immigrants to Canada changed significantly. The racial, ethnic and cultural characteristics of the “new immigrants” are very distinct from their earlier, more homogeneous counterparts, widening the gap in tastes, preferences, and economic backgrounds between Canadian-born and immigrant consumers. The principal objective of this paper is to identify and analyze the main factors that influence the food budgeting decisions of both foreign-born and Canadian-born households. The effects of birth status are examined, controlled for by demographic and socio-economic variables such as age, gender, marital status, period of immigration, family composition, employment status of spouse, region of residence, etc. The study will investigate whether food expenditure patterns differ between Canadian-born and Foreign-born citizens, and whether convergence in tastes takes place with increased length of residence in Canada. The econometric model used in this study is the Almost Ideal Demand System. The major findings confirm that consumption patterns, income and price elasticities do differ by ethnic origin and arrival cohort for almost all major food groups. Convergence of tastes was present for some of the investigated food groups, the time frame for convergence ranging from five to twenty years. Other significant factors influencing the food budgeting decision were found to be spousal work status, family size and family composition.

## I. Introduction

Immigrants affect urban markets upon arrival and during the acculturation process. One largely unresearched market is food expenditures in Canada. In particular, the food consumption patterns of immigrants can measure the speed of convergence or divergence in foreign-born consumption patterns after arrival. Armed with this knowledge, it is possible to predict changing food prices and consumption patterns owing to an influx of immigrants.

This particular study of food expenditure patterns is motivated by several additional factors. First, the 1986 Family Expenditure Survey reports that food accounts for a large share of total household expenditures, 19.93 percent for Canadian-born consumers and 20.23 percent for immigrants. This makes food the second largest expenditure share among 13 dominant expenditure categories.<sup>1</sup> Thus, given this large share of food alone warrants further investigation into the underlying issues determining consumption patterns of immigrants. Second, although an extensive body of literature exists examining the various economic and social effects of immigrants on Canada, to date, expenditure studies have been limited to broad categories (Marr and McCready, 1986) or asset management (Shamsuddin, 1995). In fact, very few studies exist which deal exclusively with food consumption patterns of foreign-born, and this study is the first to focus on this one specific expenditure item, food, in detail.<sup>2</sup>

This study will also raise a series of fundamental questions, including whether differences in consumption patterns are linked to the immigrant's origin, and whether convergence in tastes takes place with increased length of residence in Canada.

---

<sup>1</sup> The other categories are shelter, household operation, furniture and equipment, clothing, transportation, health, personal care, recreation, reading, education, tobacco and alcohol, and miscellaneous.

<sup>2</sup> This pertains to research conducted electronically as of March 15<sup>th</sup>, 2000.

### *Canadian Immigration Policy – Post 1945*<sup>3</sup>

Canada is an immigrant-receiving country. Throughout the past century, Canada actively recruited farmers and farm workers to help settle the western part of the country. Since one of the sentiments was that the composition and culture of the Canadian population remain unchanged, immigration policy targeted immigrants from Britain, the United States and, on a more limited basis, from northwestern Europe, because these people were deemed to be closest to Canadians in their cultural identity.

This rather exclusive and racist immigration policy was maintained until after 1945, when labour shortages increased the demand for labour (Green and Green 1996: 14). As immigration from Britain and the United States began to recede, Canada eased its entry restrictions on other European immigrants, resulting in an increased influx of immigrants from Southern and Eastern Europe. Despite this loosening of restrictions, the prejudices against Asian immigrants remained. This can be seen in a statement given by Mackenzie King before the House of Commons in 1947:

“There will, I am sure, be general agreement with the view that the people of Canada do not wish, as a result of mass immigration, to make a fundamental alteration in the character of our population. Large-scale immigration from the Orient would change the fundamental composition of the Canadian population. . .”(Green and Green 1996: 13).

A major shift in this attitude occurred in 1951, when the Canadian government established small but symbolically significant quotas for immigrants from India, Pakistan, and Ceylon. In the early 1960s, the economy went into recession. In response, a major policy shift occurred in 1962. From now on, all independent applicants would be evaluated “on the basis of individual skills, or, more precisely, Canadian market needs” (Chiswick 1992: 33). However, it was not specified which skills were needed, and the vagueness of the act left a great deal of discretionary power in the hands of the immigration officers.

These problems were addressed through the introduction of the points system in 1967, which assessed applicants according to objective criteria such as age, education, work

---

<sup>3</sup> This section provides only a rudimentary review of Canada’s immigration policy. For a more detailed account see Green and Green (1996) or Chiswick (1992).

experience, language, etc. This emphasis on human capital criteria now skewed the immigration system towards highly trained immigrants, but effectively eliminated all racial biases for specific national groups.

The result was a “new immigrant wave” (Simmons 1990). After 1968, the composition of immigrants into Canada changed, as can be seen in Table 1. Whereas prior to 1968, immigrants from Europe and the United States composed almost three-quarters of all arriving immigrants, by 1986 the inflow from Europe and the United States had dwindled to less than one-third of the total. In contrast, immigrant levels from Asia, Africa and Latin America increased dramatically. Immigration levels from Asia grew from 13 percent of the 1968 total to about 42 percent in 1986 while inflows from the Caribbean increased from 5.5 percent to over 13 percent circa 1968–1986. Latin American immigrants constituted less than 1 percent of all immigrants in 1968, in 1986 they had jumped to almost 9 percent. Lastly, Africa sent less than 4 percent of all immigrants in 1968, but by 1986 this proportion had grown marginally to 5.4 percent.

**Table 1. Distribution of New Immigrants by Source Region**

<b>SOURCE REGION</b>	<b>1968 (% of total immigration)</b>	<b>1986 (% of total immigration)</b>
<b>Europe &amp; USA</b>	73.66	29.35
<b>Asia</b>	13.19	41.77
<b>Caribbean</b>	5.52	13.45
<b>Latin America</b>	0.88	8.77
<b>Africa</b>	3.82	5.38
<b>Other</b>	2.93	1.28

Source: Simmons (1990). “New Wave” Immigrants: Origins and Characteristics. In *Ethnic Demography - Canadian Immigrant, Racial and Cultural Variations*, p.143.

The racial, ethnic and cultural characteristics of the “new immigrants” are distinct from their earlier, more homogeneous counterparts, potentially widening the gap in tastes, preferences, and economic backgrounds between Canadian-born and immigrant consumers. Given these ethnic and cultural differences, and the fact that Canada’s immigrant population is large and fast-growing, a question arises: what impact – if any – will these immigrants have on income and consumption patterns in Canada? Among the first to address this question were Marr and McCready (1986) who analyzed expenditure patterns by birth status

and found that immigrants allocate a significantly higher proportion of their income to food, shelter, household furnishings, clothing, and transportation.

Marr and McCready have also drawn parallels between consumption and other economic integration phenomena. For example, it is known that immigrants do assimilate into the Canadian labour market and that a typical immigrant's earnings profile matches or even exceeds a Canadian worker's earnings profile after a period of time, usually between ten and fifteen years. Just as forces exist to adapt immigrant earning patterns after arrival, equally strong forces might exist to adapt foreign-born consumption patterns. After arrival in Canada, immigrants typically experience an increase in income, a different set of relative prices, larger family size as the head of household ages, and changing tastes due to acculturation. All of these factors, alone or in combination, could significantly attribute to heightened conformity in consumption patterns between Canadian-born and foreign-born households. Presumably, as length of residence in Canada increases, the foreign-born household should become increasingly accustomed to Canadian culture and consumption patterns should converge to the Canadian norm. However, it is also possible that divergence could arise.

This convergence (divergence) phenomenon gives rise to several questions:

- What underlying factor(s) lead(s) to this convergence (divergence) behaviour? Is it just ethnicity or might other factors such as income, age, or family size and composition be the dominant forces?
- Are these factors applicable to all arrival cohorts, including the latest Asian cohort?
- How long does it take for convergence (divergence) to take place, if at all?
- Does convergence (divergence) occur in all expenditure categories or just some? Which categories and why?

The principal objective of this paper is to explore the existence of an assimilation effect of food expenditure patterns with increased years of residence in Canada. As mentioned before, although an extensive body of literature exists examining the various economic and social effects of immigrants on Canada, only a few studies exist dealing exclusively with food consumption and what role foreign birth status plays in its



consumption decision.<sup>4</sup> This study attempts to address this neglect in the literature by examining the food consumption patterns of Canadians, utilising the 1986 Food Expenditure Survey, published by Statistics Canada. The study will investigate whether food expenditure patterns differ between Canadian-born and foreign-born citizens, and whether convergence in tastes takes place with increased length of residence in Canada.

In addition, I will identify and analyze the main factors that influence the food budgeting decisions of both foreign-born and Canadian-born households. The effects of birth status are examined, controlled for by demographic and socio-economic variables such as age, gender, marital status, period of immigration, family composition, employment status of spouse, region of residence, etc. Since immigrants are not a homogeneous group in themselves, it would be informative to explore how expenditure patterns of Asians differ from expenditure patterns of Africans and Latin Americans. Unfortunately, the nature of the data does not lend itself to such investigation. These data restrictions, as well as additional shortcomings mentioned in Chapter III, raise doubts as to whether any significant differences can be detected, but the attempt will nevertheless be made.

The paper is organized as follows: Chapter II gives a cursory literature review. In Chapter III, methodology and data will be discussed, Chapter IV provides an analysis of the empirical results, and Chapter V concludes.

## **II. Review of Literature**

Numerous studies have been undertaken, examining expenditure patterns of consumers. Among the earlier researchers of expenditure systems was Tobin (1950) who, in his study estimates household food expenditures in the United States, using a single loglinear equation. His results indicate that food consumption is not responsive to changes in family composition since per capita food expenditure was determined by per capita income. No disaggregation was undertaken to examine the composition of food purchases.

Following soon after Tobin's study, Stone, in his ground-breaking article in 1954, examined British demand patterns for food as well as other household expenditures using a

---

<sup>4</sup> This pertains to research conducted electronically as of March 15<sup>th</sup>, 2000.

linear expenditure system that would become the basis for numerous subsequent studies dealing with consumer demand.

Working (1943) and Leser (1963) modified semi-logarithmic Engel curves<sup>5</sup> to estimate budget shares and elasticities for food. An important feature of this functional form is that, if estimated by the Ordinary Least Squares (OLS) regression procedure, the parameter estimates  $\beta_i$  allow us to classify the estimated goods into luxuries ( $\beta_i > 0$ ), necessities ( $\beta_i < 0$ ), and inferior goods (see Figure 1 for a graphical exposition).<sup>6</sup>

The Almost Ideal Demand System (AIDS)<sup>7</sup> was developed by Deaton and Muellbauer in 1980 as an extension to the semi-logarithmic model of Working and Leser, incorporating prices. It has been widely adopted in the field of consumer demand theory, with special emphasis on food consumption patterns.

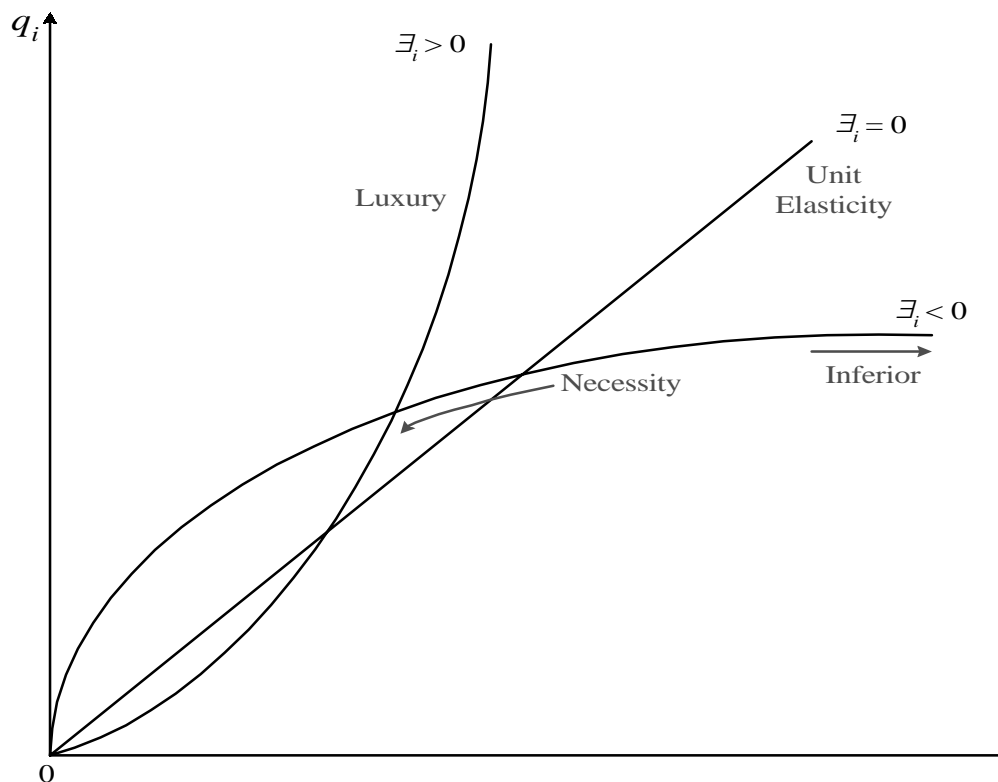
---

<sup>5</sup> An Engel curve is a relationship between income and the expenditure of a specific commodity, *ceteris paribus*, i.e., assuming all prices remain constant.

<sup>6</sup> Luxuries are goods whose budget share increases with income (total expenditure), and necessities are goods whose budget share decreases with increases in income (total expenditure). Inferior goods are goods whose purchase - in absolute terms, not just the share - declines with increases in income (total expenditure).

<sup>7</sup> The acronym AIDS, although an unfortunate choice today, will be employed henceforth in accordance with the existing literature.

**Figure 1. Engel Curves for Working-Leser Model**



Various studies on food expenditure patterns utilizing the Almost Ideal Demand System or some variant thereof exist. For example, Blanciforti and Green (1983) estimated the U.S. demand for food for four categories (meats, fruits and vegetables, cereal and bakery, and miscellaneous foods). Fan, Wailes, and Cramer (1995) estimated the household demand for rural China and divided food into eight commodities: rice, wheat, coarse grains, meat, vegetables, alcohol, tobacco, and other food items. Karagiannis and Velentzas (1997) used an AIDS-ECM (Error Correction Model) to explain food consumption patterns in Greece. Their analysis consisted of seven categories: bread and cereals; meat; fish; milk, cheese and eggs; oils and fats; fruit and vegetables; and others.

Moschini (1998) estimated overall expenditure patterns with emphasis on food consumption in Canada using a semiflexible AIDS model. His analysis included 10 categories: beef and pork, poultry and fish, dairy, fruit, vegetables, bread and bakery, other food, beverages, food away from home, and a residual nonfood category. Finally, Huang (1988) uses an inverse demand system to estimate the demand for food in the U.S.. His analysis consists of 14 categories: beef and veal, pork, poultry, fish, eggs, dairy, fats, fruits, vegetables, processed fruits and vegetables, nonalcoholic beverages, and a nonfood category.

Several Canadian studies exist that examine various aspects of consumer's expenditure behaviour and which focus on differences in birth status. For example, Shamsuddin and DeVoretz (1997) investigate wealth accumulation of Canadian and foreign-born households in Canada using a wealth equation including life-cycle and transfer motives, which are assumed to differ across cultures. The optimal wealth holdings presumably differ with birth status due to several factors:

- (i) Differences in the endowment of household characteristics such as lifetime resources (inheritance, earnings profile and annuities), the stage in the household's life cycle and mortality risk; and
- (ii) differences in household tastes and preferences, which are crucial in determining the sensitivity of wealth accumulation with respect to each of the above observed factors, and
- (iii) differences in eligibility to Canada's publicly financed social security programs.

Shamsuddin and DeVoretz (1997) conclude that immigrants behave differently in that they accumulate wealth at a higher rate during the earlier stages in their life-cycle, but dissipate it faster upon retirement. Furthermore, the transfer motive is stronger for foreign-borns, implying that foreign-borns transfer more of their wealth to their children than do the Canadian-born.

Another study by Shamsuddin (1995) analyses "the effect of immigration on Canada's household savings and public pension scheme" (p. 84). His findings suggest that asset demand differs by birth status. Shamsuddin concludes that a typical immigrant household will have accumulated the same amount of wealth as Canadian-born households after 12 years of residence, a rate of assimilation that is considered very fast.

Marr and McCready (1986) use simple regression analysis to investigate whether the average propensity to consume different goods differs for Canadian immigrants by their region of origin. They conclude that "recent foreign-born allocate a significantly higher percentage of their income to" food, shelter, household furnishings, clothing, and transportation than do Canadian-born (p.20).

Carroll, Rhee, and Rhee (1994) analyze whether there are cultural effects on savings using cross-sectional consumption data. They find evidence that, “independent of their origin, recent immigrants save less than Canadian-born citizens, and that over time the distinction between the behaviour of immigrants and that of native-born citizens diminishes” (p.687).

Lastly, DeVoretz and Salvanes (1995) examined Canadian household demand for protein using a life-cycle approach. They estimated budget shares for different protein categories using an AIDS model and investigate differences in consumption patterns for Canadian-born versus Foreign-born. They conclude that foreign-born over their lifetime consume more meat than Canadian-born and their tastes converge only with respect to meat and dairy products.

### III. Methodology and Data

The model used in this paper is the Almost Ideal Demand System (AIDS). For the  $i$ th commodity, the model can be written as:

$$w_i = \alpha_i + \beta_i \log \frac{Y}{P^*} + \sum_{j=1}^{n-1} \gamma_{ij} \log \frac{p_j}{p_n} + \sum_{k=1}^r \delta_{ik} X_k + \sum_{s=1}^m (\phi_{is} + \theta_{is} D) R_s$$

where  $w_i = p_i q_i / Y$  is the budget share of the  $i$ th good,  $p_j$  is the price of the  $j$ th good,  $Y$  is total expenditure and  $P^*$  is approximated by the Stone price index,

$$P^* = \sum_{i=1}^n w_i \ln p_i .$$

$X_k$  is a set of demographic variables that measure the life-cycle stage of household  $h$ .  $R_s$  is a dummy variable that is equal to one if household  $h$  belongs to immigrant group  $s$ , and equal to zero otherwise.  $D$  denotes the duration of residence in Canada for household  $h$  since immigration. The parameters  $\phi_{is}$  can thus be interpreted as country-specific cultural effects at

the time of entry, or an immigration effect.  $\theta_{is}$  can be seen as the speed of convergence/assimilation.

To adhere to economic theory, the parameters of the share equations must satisfy the following restrictions:

1. Adding up:

$$\sum_i w_i = 1 ,$$

$$\sum_i \alpha_i = 1 ,$$

$$\sum_i \beta_i = 0 ,$$

$$\sum_i \gamma_{ij} = 0$$

2. Homogeneity:

$$\sum_j \gamma_{ij} = 0 \text{ and}$$

3. Symmetry:

$$\gamma_{ij} = \gamma_{ji}, i \neq j$$

The data source for this study is the Public Use Microdata tapes of the 1986 Canadian Food Expenditure Survey. It gives a detailed description of food purchases of 10,919 individual, randomly selected households over a two-week period, with different subsamples per quarter and a description of the household socio-demographic characteristics.

For purposes of this study, the expenditure data were aggregated into larger groups. Prices for the individual food items were calculated by dividing expenditure on that item by the purchased quantity. Prices for the larger groups were then calculated by means of a

weighted price index. Missing prices were estimated by running a regression on the price of the category utilizing only positive observations and then forecasting the missing prices.<sup>8</sup>

Households were deleted from the survey if they reported a positive expenditure but zero 'quantity purchased' on any expenditure item in the survey.<sup>9</sup> Furthermore, households with zero total food expenditure and the 10 extreme income records<sup>10</sup> were also eliminated. The final sample size used for estimation thus reduced to 7,909 observations. Some selected statistics are reported in Tables 2 - 5.

**Table 2. Expenditure and Income Statistics for Households by Region of Origin**

	ALL	CB	IMMIGRANTS					
			Northern Europe & US		Southern Europe		Other Areas of Origin	
			<i>pre</i> 1971	<i>post</i> 1971	<i>pre</i> 1971	<i>post</i> 1971	<i>pre</i> 1971	<i>post</i> 1971
<b>Sample Size</b>	7909	6837	490	85	249	33	72	143
<b>Income</b>	30,465.-	30,240.-	30,445.-	33,679.-	32,681.-	34,979.-	36,796.-	31,292.-
<b>Total Expend.</b>	165.4	164.89	154.2	188.72	187.88	166.15	169.19	173.3
<b>Expenditure on:</b>								
<b>Beef</b>	12.74	12.61	11.07	9.19	19.51	9.18	13.41	15.59
<b>Pork</b>	3.58	3.61	2.42	2.56	4.60	5.16	2.53	5.05
<b>Poultry</b>	4.99	4.91	3.94	4.22	7.05	3.60	6.01	9.67
<b>Other Meat</b>	9.82	9.78	9.53	10.36	13.47	10.39	6.42	7.62
<b>Fish</b>	2.77	2.60	3.27	3.07	4.90	4.50	4.51	4.42
<b>Shellfish</b>	0.87	0.85	0.63	0.92	1.07	0.23	2.08	1.69
<b>Dairy</b>	22.04	21.91	21.56	24.10	26.30	23.67	18.49	22.94
<b>Bakery</b>	11.07	11.03	10.77	12.21	13.12	12.81	10.06	10.14
<b>Cereal</b>	5.07	5.01	4.83	5.84	5.93	6.27	4.52	7.00
<b>Fruits</b>	8.47	8.05	8.75	8.78	13.92	15.17	15.65	12.95
<b>Vegetables</b>	9.48	9.37	8.92	9.47	12.17	14.27	9.76	10.90
<b>Coffee &amp; Tea</b>	3.4	3.35	4.27	3.10	4.44	3.82	2.78	1.71
<b>Beverages</b>	8.45	8.40	7.77	9.40	9.97	10.51	8.13	9.52
<b>Other Store</b>	17.52	17.80	16.41	16.02	15.49	13.15	14.61	14.47
<b>Restaurant</b>	45.11	45.62	40.07	69.49	35.94	33.42	50.25	39.65

<sup>8</sup>The regression run was

$p_i = \alpha_i + \beta_i Y + \gamma_j R_j + \delta_k C_k + \phi_s Q_s$ , where Y is household income, the  $R_j$ 's are regional dummies (with base 'Atlantic Provinces'), the  $C_k$ 's are city size dummies (with base '30,000-99,999'), and the  $Q_s$ 's are quarterly seasonal dummies (with base 'First Quarter').

<sup>9</sup> Since these households exhibited inconsistencies in their data recording, the validity of the remaining information given by them is put into question, therefore, it was deemed necessary to delete this household from the sample. The results for the regression estimates improved significantly (i.e., they were more in line with the *a priori* expectations), confirming the validity of deleting those observations.

<sup>10</sup> These households were not considered representative of the overall population, furthermore, information on their geographical location was masked for these records to retain the anonymity of the household.

Average total food expenditure for all households during the sample period was \$165,40. When breaking up the sample by region of origin and period of immigration, total expenditures vary. Newer Northern European and older Southern European arrival cohorts spent about 14 percent more than the overall average, whereas older Northern European arrival cohorts spent about 7 percent less than average. The remaining cohorts did not deviate greatly from the average.

Absolute expenditures for individual food groups are very similar across immigrant cohorts for some food groups, and differ greatly across cohorts for other food groups. For example, expenditures on coffee and tea are small and do not differ greatly by immigrant cohort. The same applies to shellfish, cereals, and other store-bought food. In contrast, absolute expenditures on restaurant food differ substantially across immigrant cohorts. Even though the more recent Northern European immigrant cohort earns a lower average income than the recent Southern European immigrant cohort, it spends more than twice as much money on restaurant food - \$69.49 for the two-week period as opposed to \$33.42.

Budget shares are computed by dividing absolute expenditure on category  $i$  by total food expenditure of the household. The budget shares are distributed as shown in Table 3.



Table 3. Mean Budget Weights per Food Category (in % of Total Food Expenditure)

	<b>ALL</b>		<b>CB</b>		<b>IMMIGRANTS</b>			
			<b>Northern Europe &amp; US</b>		<b>Southern Europe</b>		<b>Other Areas of Origin</b>	
			<i>pre</i> <b>1971</b>	<i>post</i> <b>1971</b>	<i>pre</i> <b>1971</b>	<i>post</i> <b>1971</b>	<i>pre</i> <b>1971</b>	<i>post</i> <b>1971</b>
<b>Sample Size</b>	7909	6837	490	85	249	33	72	143
<b>Income</b>	30,465.-	30,240.-	30,445.-	33,679.-	32,681.-	34,979.-	36,796.-	31,292.-
<b>Total Expend.</b>	165.4	164.89	154.2	188.72	187.88	166.15	169.19	173.3
<b>Expenditure on:</b>								
<b>Beef</b>	12.74	12.61	11.07	9.19	19.51	9.18	13.41	15.59
<b>Pork</b>	3.58	3.61	2.42	2.56	4.60	5.16	2.53	5.05
<b>Poultry</b>	4.99	4.91	3.94	4.22	7.05	3.60	6.01	9.67
<b>Other Meat</b>	9.82	9.78	9.53	10.36	13.47	10.39	6.42	7.62
<b>Fish</b>	2.77	2.60	3.27	3.07	4.90	4.50	4.51	4.42
<b>Shellfish</b>	0.87	0.85	0.63	0.92	1.07	0.23	2.08	1.69
<b>Dairy</b>	22.04	21.91	21.56	24.10	26.30	23.67	18.49	22.94
<b>Bakery</b>	11.07	11.03	10.77	12.21	13.12	12.81	10.06	10.14
<b>Cereal</b>	5.07	5.01	4.83	5.84	5.93	6.27	4.52	7.00
<b>Fruits</b>	8.47	8.05	8.75	8.78	13.92	15.17	15.65	12.95
<b>Vegetables</b>	9.48	9.37	8.92	9.47	12.17	14.27	9.76	10.90
<b>Coffee &amp; Tea</b>	3.4	3.35	4.27	3.10	4.44	3.82	2.78	1.71
<b>Beverages</b>	8.45	8.40	7.77	9.40	9.97	10.51	8.13	9.52
<b>Other Store</b>	17.52	17.80	16.41	16.02	15.49	13.15	14.61	14.47
<b>Restaurant</b>	45.11	45.62	40.07	69.49	35.94	33.42	50.25	39.65

As can be seen, the budget shares also vary greatly by region of origin for some food items. For example, the new Northern European arrival cohort allocates twice the average share to restaurant food than recent Southern European immigrants. Southern Europeans allocate almost twice the overall budget share to fruit. Furthermore, Southern Europeans and the new arrival cohort from other regions outside Canada allocate a significantly larger share to pork than any other cohort.

These large cross-entry differentials are the main motivator of this study. Through regression analysis, I hope to find an explanation for these differences by controlling for income, prices, and other explanatory variables. Tables 4a and 4b outline some descriptive statistics of the prices.

Table 4a. Selected Statistics of Raw Prices

Category	% zero observations	Mean Price (excl. 0 obs.)	Std. Dev.	Var.	Min.	Max.
Beef	32.08	5.89	2.29	5.24	0.99	23.44
Pork	64.42	5.41	1.84	3.39	1.04	14.1
Poultry	54.36	3.81	1.75	3.08	0.91	17.19
Other Meat	22.29	6.73	2.79	7.83	1.4	25.51
Fish	59.03	7.55	2.89	8.38	0.88	27.58
Shellfish	89.62	13.01	6.36	40.44	1.9	38.36
Dairy	3.24	3.35	1.76	3.12	0.57	18.02
Bakery	7.61	3.57	1.72	2.95	0.54	21.89
Cereal	29.66	3.78	1.92	3.7	0.39	15.86
Fruits	18.85	2.22	1.34	1.78	0.06	17.16
Vegetables	12.61	2.32	1.17	1.38	0.17	27.69
Coffee & Tea	55.87	16.24	9.76	95.19	1.69	69.78
Beverages	21.23	1.65	0.82	0.67	0.23	8.12
Other Store	9.09	6.15	4.28	18.31	0.33	111.87
Restaurant	26.77	6.78	6.7	44.94	0.4	262.23

Table 4b. Selected Statistics of Estimated Prices

Category	Mean Price	Std. Dev.	Var.	Min.	Max.
Beef	5.85	0.558	0.312	4.52	7.86
Pork	5.42	0.379	0.144	4.44	7.14
Poultry	3.83	0.227	0.051	3.21	4.66
Other Meat	6.73	0.78	0.609	4.12	10.01
Fish	7.57	0.557	0.31	6.21	10.05
Shellfish	13.1	1.34	1.795	8.42	16.78
Dairy	3.35	0.324	0.105	2.74	4.69
Bakery	3.56	0.313	0.098	2.75	5.41
Cereal	3.77	0.211	0.045	3.06	4.69
Fruits	2.22	0.167	0.028	1.85	2.89
Vegetables	2.33	0.234	0.055	1.75	3.3
Coffee & Tea	16.22	1.636	2.677	12.49	21.15
Beverages	1.66	0.122	0.015	1.45	2.02
Other Store	6.15	0.474	0.225	5.1	8.61
Restaurant	6.72	0.585	0.342	5.49	9.57

A summary of selected statistics divided by region of origin is listed in Table 5. The most important demographic variables are family size and family composition. Family composition refers to the number of household members in certain age ranges. The ranges chosen here are: Seniors over 65 years of age, Adults aged 16 to 64, Children aged 5 to 15, and infants under 5 years of age. Average family size ranges from 2.35 (Northern Europeans arrived before 1971) to 3.36 (Other Areas of Origin arrived after 1971), the overall average is 2.66 members of a household. The average number of seniors in the old arrival cohorts is significantly larger than in the newer arrival cohorts, directly corresponding to the higher average age of the head of household. Immigrants from Other Areas of Origin have the largest average number of children under five years of age and are also the cohort with the lowest percentage of working spouses, about 15 percent lower than the overall average.

About 14 percent of the head of households were foreign-born, of these the majority immigrated from Northwestern Europe or the United States before 1971. However, the number of immigrants coming from Northwestern Europe or the United States after 1971 is significantly smaller than new immigrants from other countries (the category which includes Asians). Females headed only about 30 percent of the households (the number ranges from 18% to 34%).

**Table 5. Demographic Characteristics by Region of Origin**

	ALL	CB	IMMIGRANTS					
			Northern Europe & US		Southern Europe		Other Areas of Origin	
			pre 1971	post 1971	pre 1971	post 1971	pre 1971	post 1971
Avg. Family Size	2.66	2.66	2.35	2.61	2.79	2.79	2.89	3.36
65+ years	0.27	0.25	0.53	0.14	0.4	0	0.21	0.06
15 to 64 years	1.76	1.77	1.39	1.81	1.87	2.06	1.83	2.25
5 to 15 years	0.44	0.44	0.34	0.53	0.44	0.55	0.72	0.71
under 5 years	0.2	0.21	0.09	0.13	0.08	0.18	0.13	0.34
Avg. Age HH	45.35	44.52	55.49	39.12	55.18	39.24	47.93	37.15
Female HH (%)	29.9%	30.0%	31.8%	34.1%	26.5%	18.2%	30.6%	25.2%
Married (%)	63.8%	63.8%	60.2%	58.8%	69.9%	63.6%	54.2%	71.3%
Avg. Age Spouse	42.48	41.81	51.63	39.32	49.32	36.05	42.49	35.89
Spouse @Work (%)	39.31%	38.91%	47.80%	36.00%	46.55%	42.86%	25.64%	25.49%
Post-Secondary Educ. (%)	22.8%	21.9%	23.3%	54.1%	16.9%	42.4%	38.9%	41.3%
Avg. Years In Canada HH	N/A	N/A	35.81	8.75	32.77	9.06	27.17	9.07
Urban Residence (%)	78.56%	77.3%	80.82%	84.71%	90.36%	96.97%	90.28%	96.5%

#### IV. Analysis of Results

This chapter gives a detailed account of the results of the estimation procedures and tests performed in this study. First, I will estimate Engel curves and calculate Engel (total expenditure) elasticities.<sup>11</sup> *A priori*, according to the existing body of literature<sup>12</sup> and my own expectations, it is anticipated that the following categories are luxuries: beef (incl veal and lamb), pork, fish, shellfish, coffee and tea, and restaurant food. Poultry, other meat, (non-alcoholic) beverages, and other store foods are expected to be approximately unitary elastic, and dairy, bakery, cereal, fruits, and vegetables are, *a priori*, expected to be necessities. For the estimation of price elasticities, all Hicksian (compensated) own-price elasticities are expected to be negative, due to the absence of an income effect.<sup>13</sup> Marshallian (uncompensated) own-price elasticities can be either negative or positive - the latter is the case if the good is grossly inferior, so that the (positive) income effect outweighs the

<sup>11</sup>Recall from section III that goods with total expenditure elasticities greater than one are classified as luxuries and elasticities below one as necessities. Elasticities that are very close to one are considered neither luxuries nor necessities.

<sup>12</sup> See, for example, Chan (1983), DeVoretz (1990), DeVoretz and Salvanes (1995), and Moschini (1998).

<sup>13</sup> The total effect on the budget share due to a change in price is comprised of two effects: the substitution effect and the income effect. The substitution effect is always negative. The income effect will be negative for normal goods, and positive for inferior goods.

(negative) substitution effect. The cross-price elasticities have no prior sign expectation, however, goods are considered substitutes to each other if their cross-price elasticity is positive and complements if their cross-price elasticity is negative.

The presence of a working spouse is expected to increase household income and the opportunity cost of preparing a meal and have a positive impact on the restaurant share. Furthermore, it is expected that region of origin, period of arrival, family size and family composition play a significant role in the household budgeting process.

### *Engel Curves*

Following the Working (1943) and Leser (1963), a system<sup>14</sup> of modified semilogarithmic Engel curves was employed to estimate budget shares and expenditure elasticities for different subsamples of the data. Specifically, to take into account likely differences in preference ordering for households with different characteristics, data were divided into subsamples, grouped by region or origin and period of immigration to keep the groups fairly homogeneous. The resulting Engel curves will provide initial insight into the (otherwise uncontrolled) consumption patterns of these groups, and provide information on expenditure elasticity differences between ethnic groups.

Table 6 lists the Engel (total expenditure) elasticities for the different subsample regressions. The findings largely conform to the existing literature: beef, pork, fish, shellfish, and restaurant expenditures are considered luxuries (or unit elastic in three cases) by almost all ethnic groups. However, two notable exceptions occur: shellfish is classified as a necessity for the more recent Northern European cohort, and restaurant expenditures are a necessity for the older immigrant cohort from Other Areas of Origin. Also, the elasticity values for coffee and tea are unexpectedly low. Elasticities for beverages range from 0.44 (necessity) to 1.45 (luxury). These results give us some preliminary insight into the wide variations in consumption behaviour across the different ethnic groups, but the reader should

---

<sup>14</sup> Regressions were run both using normal OLS and the system approach. The results were identical, indicating that employing a system of equations rather than the traditional approach does not improve the efficiency of the estimates. Therefore, OLS regressions were employed, because they directly estimate the whole system.

keep in mind that these values do not control for demographic factors (beyond the division into different ethnic groups) and do not include price effects.

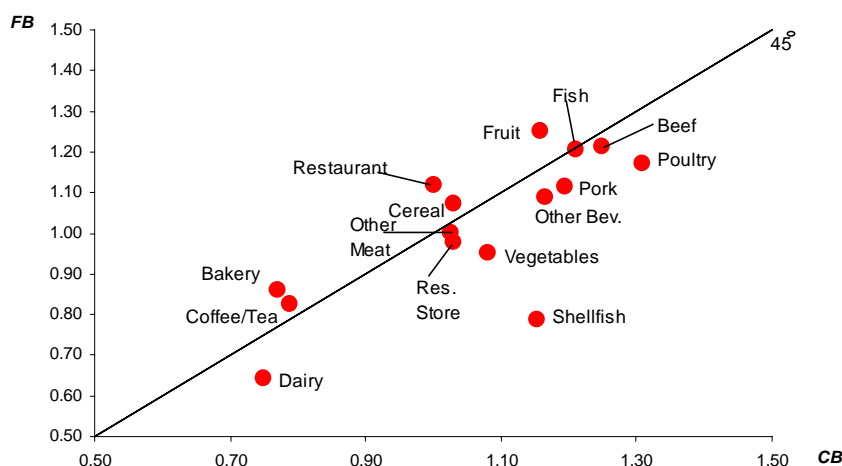
**Table 6. Engel Curve Elasticities at the Mean Budget Shares**

	ALL	CB	IMMIGRANTS						
			All FB	Northern Europe & US		Southern Europe		Other Areas of Origin	
				<i>pre</i> 1971	<i>post</i> 1971	<i>pre</i> 1971	<i>post</i> 1971	<i>pre</i> 1971	<i>post</i> 1971
<b>Beef</b>	1.24	1.24	1.24	1.27	0.99	1.25	0.98	1.41	1.07
<b>Pork</b>	1.22	1.23	1.19	1.23	1.70	0.99	1.18	1.07	1.27
<b>Poultry</b>	1.15	1.17	1.06	1.01	0.97	1.11	0.81	1.01	1.06
<b>Other Meat</b>	1.05	1.04	1.06	1.12	0.90	1.06	0.83	1.17	0.75
<b>Fish</b>	1.11	1.11	1.12	1.07	1.17	1.26	0.98	1.06	1.09
<b>Shellfish</b>	1.36	1.38	1.29	1.41	0.62	1.50	1.65	1.20	1.16
<b>Dairy</b>	0.73	0.74	0.67	0.58	0.90	0.68	0.61	1.04	0.76
<b>Bakery</b>	0.78	0.78	0.84	0.90	0.87	0.72	1.01	0.88	0.64
<b>Cereal</b>	0.98	0.97	1.06	1.12	0.90	1.06	0.96	0.81	1.10
<b>Fruits</b>	0.98	0.97	1.04	1.01	1.08	0.97	0.93	1.24	1.05
<b>Vegetables</b>	0.96	0.97	0.90	0.83	1.03	1.00	0.67	0.90	0.87
<b>Coffee &amp; Tea</b>	0.86	0.86	0.85	0.90	1.02	0.66	0.90	1.19	0.91
<b>Beverages</b>	1.00	1.01	0.93	1.02	0.44	0.79	1.45	0.85	1.17
<b>Other Store</b>	1.00	1.01	0.94	0.98	0.71	0.94	0.77	1.09	0.97
<b>Restaurant</b>	1.13	1.12	1.23	1.27	1.26	1.42	1.69	0.85	1.23

### *Restricted Systems Estimated Separately by Region of Origin*

Tables 7 a-f give a detailed list of the results obtained by estimating the complete model<sup>15</sup> for the whole sample and also for the subsamples of only Canadian-born and only foreign-born consumers. Pork, fish, fruit and restaurant Marshallian own-price elasticities are positive; for the Hicksian own-price elasticities, other meat is also positive, if very close to zero and insignificant at the 90 percent level of confidence. These positive results are theoretically unacceptable in the case of Hicksian elasticities. Poultry, and coffee and tea exhibit unexpectedly high own-price elasticities, whereas shellfish is in line with results obtained by DeVoretz (1990).

<sup>15</sup> Other specifications as well as different sample sizes were attempted, but found to yield even worse results than this model. Results for those models are available upon request.

**Figure 2. Comparison of Expenditure Elasticities - CB and FB Consumers**

Shellfish is reported a strong substitute for beef, poultry, fish, bakery, vegetables and coffee & tea, and a complement to pork, dairy, and Other Beverages. While the meat and fish inferences are intuitively plausible, the remaining conclusions are counterintuitive. Fish exhibits a more consistent pattern, its complements include vegetables and fruit (everyone who ever had salmon with raspberry sauce would concur). Vegetables and fruit are substitutes to each other.

Figure 2 is an easy graphical exposition of the expenditure elasticities for Canadian-born and foreign-born consumers. The figure reads as follows: If Canadian-born and foreign-born consumers had the same expenditure elasticities, the data points would be on the 45 degree line. The larger the difference in expenditure elasticity between Canadian-born and foreign-born, the farther away the data point would be from the 45 degree line. If the data point lies below the 45 degree line, the Canadian-born expenditure elasticity is higher than the foreign born, and vice versa.

As Figure 2 shows, expenditure elasticities vary widely between Canadian-born and foreign-born consumers. For example, the expenditure elasticity for shellfish is 1.15 for Canadian-born versus only 0.79 for foreign-born, implying shellfish to be a luxury good for Canadian-born and a necessity for foreign-born consumers.<sup>16</sup>

<sup>16</sup> However, the author questions whether shellfish can really be considered a necessity. Rather, the low expenditure elasticity is more likely due to the small number of non-zero expenditures in that category, leading to misleading results.

Both the Marshallian and Hicksian own-price elasticities for Canadian-born consumers again vary widely and the magnitude and signs of some categories remains questionable. Even though the own-price elasticity for fish now exhibits the right sign, pork, fruit and restaurant expenditures remain positive, which is, as mentioned before, theoretically unacceptable. The conclusions about substitutes and complements remain the same as for the overall sample.

The own-price elasticity results for the foreign-born subsample show some drastic changes. Beef, other meat, shellfish, cereal and vegetables are positive, the own-price elasticity for restaurant food is positive as well. The most obvious contrasts to the elasticity estimates obtained for Canadian-born consumers are pork, shellfish, and cereals - the signs are reversed, and the magnitudes, while similar in absolute terms for shellfish, differ drastically, for example, the Hicksian own-price elasticities for pork are +7.9 for Canadian-born consumers, but -58.22 for foreign-born consumers.

Vegetables are complementary to pork and Other meat, and substitutes for beef, poultry, and shellfish. Dairy and shellfish seem to be particularly strong complements, but again the reader is cautioned as to the validity of these results.

The regression results furthermore indicate that the main factors influencing the food budgeting decision for the overall sample are (real) total expenditure, family composition, age of the head of household, some regional and seasonal dummies and whether the spouse works or not. All of these variables are significant at the 90 percent level of confidence or higher. Total expenditure is significant for all categories except other meat, shellfish, and restaurant food and has a positive influence on the budgeting decision for all except dairy, bakery, and surprisingly restaurant food. Age of the head of household increases the budget weights of all meat categories, vegetables, and coffee and tea, and decreases the weights for cereal and restaurant food.

The most significant family composition variables are the number of persons between 15 and 64, and the number of children between 5 and 15. The coefficients for these variables are mainly positive, except for fish, shellfish fruit (for adults 15 to 64), coffee and tea (for children 5 to 15) and restaurant food. The presence of children under the age of 5 significantly increases the consumption of dairy, bakery, cereal, fruit, vegetables and



decreases restaurant food. The coefficient for spouse at work in the restaurant equation is negative and positive for the remaining equations (where significant), which is contrary to the a priori assumptions. Coefficient estimates for the Canadian-born subsample exhibit an almost identical pattern, which is not surprising given that Canadian-born consumers make up over 85 percent of the sample.<sup>17</sup>

The number of significant coefficient estimates decreases drastically in the foreign-born subsample regression. However, the main factors influencing the foreign-born food budgeting decision remain the same: (real) expenditure, the number of people aged 15 to 64 and the number of children under 5 present in the household, and the spouse at work variable. Again, this variable is negative, contrary to a priori assumptions. The number of significant birth status variables is rather low, indicating that region of origin does not really matter for foreign-born consumers. However, this question is tested in further detail in the next section.

### *Existence and Speed of Convergence*

Heretofore, only price and expenditure elasticities were analyzed, giving a crude picture of the behavioural differences inherent among the culturally diverse population in Canada. However, the central question of this paper is whether there exist immigration and cultural effects in the food budgeting decision, and whether convergence of tastes to the Canadian average takes place with increased length of residence in Canada. Other studies show that immigrants' behaviour does differ from that of Canadian-borns in a variety of spheres – for example, Shamsuddin (1995) shows that immigrants accumulate wealth at a different rate and in different forms than Canadian-born. Furthermore, as Table 3 indicates, the mean budget weights do differ widely both by immigrant group and period of immigration, and between immigrants and Canadian-born. To investigate whether these differences can be attributed to different initial tastes, the system was re-run on the whole sample. In this model, immigrants are assumed to arrive in Canada with a set of culturally distinct tastes and preferences, reflected in the possibility of non-zero values for  $\phi_{is}$ . With increased length of residence in Canada, acculturation is assumed to take place for at least some of the food

---

<sup>17</sup> Tables are available from the author upon request

categories, reflected in the possibility of non-zero values for  $\theta_{is}$ , implying a sign opposite of  $\phi_{is}$ 's sign. If both signs are opposite of each other, then, after  $-\phi_{is}/\theta_{is}$  years, complete convergence should have taken place.

Thus, as already mentioned, the parameters  $\phi_{is}$  can thus be interpreted as country-specific cultural effects at the time of entry, or an immigration effect, and  $\theta_{is}$  can be seen as the speed of convergence/assimilation. If all  $\phi_{is}$ 's are jointly significantly different from zero, there exists an immigration effect on good  $i$ , if they differ significantly across immigrant group  $s$ , then there exist cultural effects on good  $i$  at the time of entry. Similarly, if the speed of assimilation does not differ across immigrant group, then  $\theta_{is}$  will be identical across immigrant groups, but if they differ significantly, then there exists a cultural effect on the speed of assimilation.

If, however, both all  $\phi_{is}$ 's and all  $\theta_{is}$ 's are equal to zero, we cannot conclude that there are either immigration or cultural effects on good  $i$ , in fact, it would appear that immigrants do not differ from Canadian-born consumers. If the aforementioned hypothesis can be rejected, but the hypothesis that all  $\phi_{is}$ 's and all  $\theta_{is}$ 's are the same other cannot be rejected, then there is evidence for an immigration effect, but not for a cultural effect. The results of these hypothesis tests are reported in Tables 8 a-d. When both cultural effects at point of entry and different speeds of assimilation are allowed, the hypothesis that all  $\phi_{is}$ 's and all  $\theta_{is}$ 's are equal to zero (i.e., no immigration or cultural effects) can be rejected for poultry, fish, shellfish, and fruit, all at the 99 percent level of significance. This result is furthermore substantiated by the findings that all  $\phi_{is}$ 's and all  $\theta_{is}$ 's are significantly different from each other for these categories, plus the Other Beverages category, indicating that both immigration and cultural effects exist for these good, and the speed of assimilation differs across immigrant group.

Finally, speed of convergence is calculated by immigrant group, and significant differences become apparent. The time frame for complete convergence ranges from 5 years to 55 years, any values beyond 55 years indicate that convergence will not take place within the span of one lifetime. Negative values indicate divergence, but is rare for the statistically significant variables. In fact, only for fish does there seem to be divergence in tastes for Other Foreign-born consumers. The fastest adaptation takes place for Southern European

immigrants in the poultry category, initially, they consume less poultry, but assimilate after five years. The slowest (significant) speed of assimilation can be observed for Southern European immigrants in the fish category. Initially they consume more fish than their Canadian-born counterparts, but converge after 48 years. Most immigrant groups experience convergence in tastes between ten and twenty years.

## **VII. Summary and Conclusion**

Between 1968 and 1986, Canada's composition of immigrants changed due to a relaxation in the immigration policy. These "new immigrants" potentially differ from earlier, more homogeneous, immigrants. Given the increasing ethnic and cultural differences among immigrants the question of interest was: What impact - if any - will these differences have on food consumption patterns in Canada? Earlier studies taking up this question (e.g., Marr and McCready (1986)) concluded that immigrants differ in their consumption behaviour across broad expenditure categories. Numerous studies of the labour market show that a typical immigrant's earnings profile converges to or even exceeds a Canadian worker's earnings profile after a period of time, usually between ten and fifteen years. Just as forces exist to adapt immigrant earnings patterns after arrival, equally strong forces might exist to adapt foreign-born consumption patterns. The central hypothesis in this paper was that, as length of residence in Canada increases, the foreign-born household should become increasingly accustomed to Canadian culture and food consumption patterns should converge to the Canadian norm.

The principal objective of this paper was to analyze the differences in expenditure patterns and the existence of an assimilation effect on food expenditure patterns. The results indicated that food expenditure patterns differ between Canadian-born and foreign-born citizens for at least some food groups. The most prominent differences could be found in the restaurant food category, where, for example, the recent Northern European arrival cohort allocated twice the average share to restaurant food than did recent Southern European immigrants. Furthermore, Southern Europeans allocated almost twice the overall budget share to fruit, and they and the new arrival cohort from other regions outside Canada allocated a significantly larger share to pork than any other cohort. The questions asked in the introduction could only be partially answered due to the small sample size for some

immigrant groups. The most significant factors influencing the food budgeting decision of a household were total food expenditure, family composition, age of head of household, and the work status of the spouse. Differences between different immigrant cohorts could not be detected.

Analysis of Engel curves revealed large differences in the total food expenditure elasticities across immigrant cohorts. Especially noticeable were the elasticity differences in the largest expenditure category, restaurant food. Its Engel elasticity varied from 0.85 to 1.42.

The introduction of prices and demographic variables leads to contradictory results. The Hicksian own-price elasticities for pork, other meat, fish, fruit, and restaurant expenditure, while insignificant, are positive. In addition, price-elasticities vary greatly between Canadian-born and foreign-born consumers, indicating very different sensitivity to relative price changes.

Given these initial differences, I tested whether these differences can be explained by initial cultural differences and whether these differences disappear with increased length of stay in Canada. The results indicate that cultural differences are significant in determining the differences in consumption behaviour for the following categories: poultry, fish, shellfish, fruit, and beverages. Significant convergence in tastes also takes place for these categories, usually between 5 and 20 years after arrival into Canada. Here, region of origin plays an important role in determining the speed of convergence. Southern Europeans' tastes converge the most quickly for poultry and shellfish, both in five to six years, and they also take longest to adapt their fruit budget, about 20 years. Other foreign-born's tastes for poultry, cereal and beverages converge in 10 to 14 years.

If the assumption is made that future immigrants to Canada resemble immigrants from those regions that entered Canada between 1971 and 1986, then the data indicate that the proportion of total food expenditure spent on pork, poultry, fruit, and especially restaurant expenditure will increase significantly in the near future. Given that the vast majority of immigrants are now centred in large urban centres, and their incomes as well as total expenditure elasticities are higher than that of the average Canadian-born for those categories, any impact of these culturally induced differences in consumption behaviour,

especially the potential impact on the restaurant industry, will be concentrated in the major urban centres.

Overall, however, the reader is cautioned that several problems exist with the data, making exact interpretation of the results questionable. The aggregation of immigrants into groups by Statistics Canada does not ensure that these groups are homogeneous in themselves, for example, the 'Other Foreign-born' group includes, among others, Asians, Africans and Latin Americans. These groups are likely to have very distinct tastes, and consolidating them will blur these differences; in fact they might cancel each other out.

In conclusion, further research should be conducted with a better data source to more precisely analyze possible cultural differences in food expenditure patterns among Canadian consumers. The conclusions reached in this paper should be viewed as tentative, but can be taken as a starting point for further analysis.

### VIII. Bibliography

- Akbari, A. and D.J. DeVoretz. 1992. The Substitutability of Foreign-born Labour in Canadian Production: Circa 1980. *Canadian Journal of Economics* 25, no. 3 (August): 604–614.
- Berndt, E. 1991. *The Practice of Econometrics*. USA: Addison-Wesley Publishing Co.
- Berndt, E. R., M. N. Darrough, and W. E. Diewert. 1977. Flexible Functional Forms and Expenditure Distributions: An Application to Canadian Consumer Demand Functions. *International Economic Review* 18:3 (October): 651– 675.
- Blanciforti, L. and R. Green. 1983. The Almost Ideal Demand System: A Comparison and Application to Food Groups. *Agricultural Economics Research* 35, no. 3 (July): 1–10.
- Carroll, C.; B. K. Rhee, and C. Rhee. 1994. Are there Cultural Effects on Saving? Some Cross-Sectional Evidence. *The Quarterly Journal of Economics* 109, no. 3 (August): 685 – 699.
- Christensen, L. R., D. W. Jorgenson, and L. J. Lau. 1975. Transcendental Logarithmic Utility Functions. *American Economic Review* 65, no. 3 (June): 367–383.
- Deaton, A. And J. Muellbauer. 1980. An Almost Ideal Demand System. *American Economic Review* 70, no. 3 (June): 312–324.
- DeVoretz, D. and K. Salvanes. 1997. Household Demand for Fish and Meat Products: Separability and Demographic Effects. *Marine Resource Economics* 12, no.1 (Spring): 57–75.
- DeVoretz, D. and K. Salvanes. 1995. Canadian Household Demand for Protein: A Lifecycle Approach. Ms.
- Falconi, Cesar. 1991. Estimation of an Almost Ideal Demand System for U.S. Food with Household and Aggregate Data . Ph.D. diss., University of Minnesota.
- Fan, S., E. Wailes, and G. Cramer. 1995. Household Demand in Rural China: A Two-Stage LES-AIDS Model. *American Journal of Agricultural Economics* 77 (February ): 54–

62.

- Green, A. and D. Green. 1996. The Economic Goals of Canada's Immigration Policy, Past and Present. Working Paper Series 96-04. Burnaby, B.C.: Simon Fraser University, Centre for Excellence: Research on Immigration and Integration in the Metropolis.
- Heien, D., and C. Wessels. 1990. Demand Systems Estimation with Microdata: A Censored Regression Approach. *Journal of Business and Economic Statistics* 8, no.3 (July): 365–71.
- Huang, K. 1988. An Inverse Demand System for U.S. Composite Foods. *American Journal of Agricultural Economics* 70, no.4 (November): 902–909.
- Karagiannis, G. and K. Velentzas. Explaining Food Consumption Patterns in Greece. *Journal of Agricultural Economics* 48 (1): 83–92.
- Kennedy, Peter. 1998. *A Guide to Econometrics- 4th edition*. Cambridge: MIT Press.
- Laryea, S.A. 1998. The Impact of Foreign-born Labor on Canadian Wages: A Panel Analysis. Working Paper Series 98-06. Burnaby, B.C.: Simon Fraser University, Centre for Excellence: Research on Immigration and Integration in the Metropolis.
- Laryea, S.A. 1998. The Substitutability and Complementarity of Canadian and Foreign-born Labour: Circa 1990. Working Paper Series 98-09. Burnaby, B.C.: Simon Fraser University, Centre for Excellence: Research on Immigration and Integration in the Metropolis.
- Leser, C.E.V. 1974. *Econometric Techniques and Problems*. New York: Hafner Press.
- Marr, W.L. and P.L. Siklos. 1995. Immigration and Unemployment: A Canadian Macroeconomic Perspective. In *Diminishing Returns: The Economics of Canada's Recent Immigration Policy*, ed. D.J. DeVoretz 293–330. Toronto: C.D. Howe Institute.
- Marr, W.L., and D.J. McCready. 1986. The Expenditure Patterns of the Canadian-Born and the Foreign-Born in Canada, 1982. Department of Economics Working Paper #8691. Wilfrid Laurier University.

- Moschini, G. 1998. The Semiflexible Almost Ideal Demand System. *European Economic Review* 42:349–364.
- Moschini, G., D. Moro, and R.D. Green. 1994. Maintaining and Testing Separability in Demand Systems. *American Journal of Agricultural Economics* 76 (February): 61–73.
- Pendakur, K. and R. Pendakur. The Colour of Money: Earnings Differentials Among Ethnic Groups in Canada. Working Paper Series 96-03. Burnaby, B.C.: Simon Fraser University, Centre for Excellence: Research on Immigration and Integration in the Metropolis.
- Phlips, Louis. 1983. *Applied Consumption Analysis*. Amsterdam: Elsevier Science Publishers B.V.
- Pollak, R. and Wales, T. 1978. Estimation of Complete Demand Systems from Household Budget Data: The Linear and Quadratic Expenditure Systems. *American Economic Review* 68, no.3 (June): 348–359.
- Pollak, R. and Wales, T. 1992. *Demand Specification and Estimation*. Oxford: Oxford Press.
- Roy, A.S. 1997. Job Displacement Effects of Canadian Immigrants by Country of Origin and Occupation. *International Migration Review* 31, no. 1 (Spring): 150–161.
- Saha, A., O. Capps Jr., and P. Byrne. 1997. Calculating Marginal Effects in Models for Zero Expenditures in Household Budgets using a Heckmann-Type Correction. *Applied Economics* 29:1311–16.
- Salvanes, K. and DeVoretz, D. 1997. Household Demand for Fish and Meat Products: Separability and Demographic Effects. *Marine Resource Economics* 12:37–55.
- Shamsuddin, A. 1995. Asset Demand of Immigrant and Canadian-born Households. In *Diminishing Returns: The Economics of Canada's Recent Immigration Policy*, ed. D.J. DeVoretz 83–112. Toronto: C.D. Howe Institute.
- Shamsuddin, A. and D.J. DeVoretz. Wealth Accumulation of Canadian and Foreign-Born Households in Canada. Working Paper Series 97-03. Burnaby, B.C.: Simon Fraser University, Centre for Excellence: Research on Immigration and Integration in the Metropolis.



- Silberberg, Eugene. 1990. *The Structure of Economics – A Mathematical Analysis*. New York: McGraw-Hill, Inc.
- Simmons, A. 1990. “New Wave” Immigrants: Origins and Characteristics. In *Ethnic Demography - Canadian Immigrant, Racial and Cultural Variations*, eds. Halli, S., F. Trovato, and L. Driedger. 141–59. Ottawa: Carleton University Press.
- Stone, R. 1954. Linear Expenditure Systems and Demand Analysis: An Application to the Pattern of British Demand. *Economic Journal* 64 (September): 511–27.
- Theil, H. and K. Clements. 1987. *Applied Demand Analysis*. Cambridge: Ballinger Publishing Company.
- Tobin, J.. 1950. A statistical demand function for food in the U.S.A. *Journal of the Royal Statistical Society Series A* 113, Part II: 113–41.
- White, K. 1997. *Shazam User’s Reference Manual Version 8.0*, McGraw-Hill, NY.

Table 7a Uncompensated Price and Expenditure Elasticities - Whole Sample (AIDS with Demographic Variables)

	Beef	Pork	Poultry	Oth. meat	Fish	Shellfish	Dairy	Bakery	Cereal	Fruit	Vegs.	Coffee	Bev.	Res. St.	Rest.	Exp.
Beef	<b>-2.30</b>	2.92	1.67	-1.41	-2.90	1.58	1.99	0.57	-1.72	-1.81	-0.27	-2.45	2.96		-2.74	1.24
Pork	9.95	<b>1.66</b>	-5.56	-1.42	5.68	-5.36	-10.62	-0.82	10.39	7.10	-0.70	6.23	-15.74		4.29	1.19
Poultry	3.85	-3.77	<b>-9.83</b>	3.84	1.77	1.40	0.62	-1.20	-4.43	2.99	7.07	0.48	6.67		-4.75	1.29
Oth. meat	-1.56	-0.46	1.87	<b>-0.06</b>	-2.64	0.24	0.92	-2.79	-1.92	1.26	-1.71	0.27	2.17		1.91	1.02
Fish	-11.82	6.79	3.13	-9.63	<b>0.80</b>	6.08	16.19	11.34	7.36	-10.93	-3.72	-10.91	12.27		-19.58	1.21
Shellfish	23.62	-23.49	9.04	3.18	22.29	<b>-20.65</b>	-53.73	30.19	7.23	3.63	27.36	21.14	-43.57		3.31	1.11
Dairy	0.91	-1.38	0.13	0.38	1.77	-1.60	<b>-6.01</b>	0.09	0.22	-0.55	0.68	1.94	-0.71		1.69	0.74
Bakery	0.55	-0.21	-0.45	-2.24	2.52	1.83	0.17	<b>-2.33</b>	-1.45	-0.88	-0.17	-1.05	2.00		1.93	0.78
Cereal	-3.61	6.45	-4.05	-3.62	3.82	1.02	0.86	-3.40	<b>-3.44</b>	-4.88	1.14	-4.90	10.07		-2.19	1.03
Fruit	-2.27	2.62	1.63	1.41	-3.37	0.31	-1.62	-1.26	-2.91	<b>4.19</b>	2.55	0.67	-4.79		-2.05	1.17
Vegetables	-0.30	-0.23	3.45	-1.72	-1.02	2.06	1.68	-0.23	0.61	2.29	<b>-5.18</b>	-0.60	-2.12		-2.00	1.06
Coffee	-7.15	5.38	0.62	0.71	-7.86	4.16	12.86	-3.40	-6.80	1.59	-1.55	<b>-4.94</b>	8.62		-9.81	0.79
Other Bev.	3.84	-6.00	3.76	2.52	3.91	-3.79	-2.14	2.85	6.19	-4.95	-2.46	3.80	<b>-5.73</b>		-1.79	1.16
Res. Store	1.66	-2.14	-1.59	0.81	0.22	-0.44	2.34	-0.69	1.66	1.83	1.24	1.42	-0.55	<b>-6.49</b>	-1.30	1.02
Restaurant	-0.72	0.34	-0.54	0.46	-1.29	0.06	0.98	0.56	-0.28	-0.43	-0.47	-0.90	-0.36		<b>2.15</b>	1.01

Table 7b Compensated Price Elasticities - Whole Sample (AIDS with Demographic Variables)

	Beef	Pork	Poultry	Oth. meat	Fish	Shellfish	Dairy	Bakery	Cereal	Fruit	Vegs.	Coffee	Bev.	Res. St.	Rest.
Beef	<b>-2.22</b>	2.95	1.71	-1.34	-2.88	1.59	2.17	0.66	-1.68	-1.75	-0.20	-2.42	3.02		-2.43
Pork	10.03	<b>1.68</b>	-5.52	-1.35	5.70	-5.35	-10.44	-0.73	10.43	7.17	-0.63	6.25	-15.68		4.59
Poultry	3.93	-3.75	<b>-9.79</b>	3.92	1.79	1.40	0.81	-1.10	-4.39	3.06	7.15	0.51	6.74		-4.43
Oth. meat	-1.49	-0.44	1.90	<b>0.01</b>	-2.62	0.24	1.07	-2.71	-1.88	1.32	-1.65	0.29	2.23		2.17
Fish	-11.74	6.82	3.16	-9.56	<b>0.82</b>	6.09	16.37	11.43	7.40	-10.87	-3.64	-10.88	12.34		-19.28
Shellfish	23.69	-23.47	9.07	3.25	22.31	<b>-20.65</b>	-53.56	30.27	7.27	3.69	27.43	21.16	-43.51		3.59
Dairy	0.96	-1.36	0.16	0.43	1.78	-1.59	<b>-5.90</b>	0.14	0.25	-0.51	0.73	1.96	-0.67		1.87
Bakery	0.60	-0.19	-0.43	-2.19	2.54	1.83	0.28	<b>-2.27</b>	-1.42	-0.84	-0.12	-1.03	2.04		2.12
Cereal	-3.54	6.47	-4.02	-3.56	3.84	1.03	1.01	-3.33	<b>-3.41</b>	-4.83	1.20	-4.87	10.13		-1.93
Fruit	-2.19	2.65	1.66	1.48	-3.35	0.31	-1.44	-1.17	-2.87	<b>4.25</b>	2.62	0.70	-4.73		-1.76
Vegetables	-0.22	-0.21	3.48	-1.65	-1.00	2.06	1.84	-0.16	0.64	2.34	<b>-5.11</b>	-0.57	-2.07		-1.73
Coffee	-7.10	5.40	0.64	0.76	-7.85	4.16	12.98	-3.34	-6.78	1.63	-1.50	<b>-4.92</b>	8.66		-9.62
Other Bev.	3.92	-5.98	3.79	2.59	3.93	-3.79	-1.97	2.93	6.23	-4.88	-2.39	3.83	<b>-5.67</b>		-1.50
Res. Store	1.73	-1.12	-1.56	0.87	0.23	-0.44	2.50	-0.62	1.70	1.88	1.30	1.44	-0.49	<b>-6.38</b>	-1.04
Restaurant	-0.65	0.36	-0.52	0.52	-1.27	0.06	1.13	0.63	-0.25	-0.38	-0.41	-0.88	-0.31		<b>2.41</b>

Table 7c Uncompensated Price and Expenditure Elasticities - Canadian Born Consumers (AIDS with Demographic Variables)

	Beef	Pork	Poultry	Oth. meat	Fish	Shellfish	Dairy	Bakery	Cereal	Fruit	Vegs.	Coffee	Bev.	Res. St.	Rest.	Exp.
Beef	<b>-2.29</b>	2.64	2.46	-1.19	-4.18	1.64	2.66	0.40	-2.12	-1.87	-0.64	-2.28	2.83		-2.61	1.25
Pork	8.86	<b>7.88</b>	-10.93	-2.21	0.06	-4.86	-8.34	-2.57	4.86	11.28	0.20	4.92	-9.51		6.19	1.19
Poultry	5.77	-7.65	<b>-7.70</b>	4.30	6.14	0.42	-2.69	-1.41	-2.22	-1.94	6.48	2.12	3.31		-2.79	1.31
Oth. meat	-1.30	-0.73	2.04	<b>-0.12</b>	-2.15	0.50	0.80	-3.04	-1.47	1.44	-1.36	0.34	1.03		1.64	1.03
Fish	-17.81	0.07	11.15	-8.27	<b>-2.21</b>	6.01	16.33	19.36	5.79	-9.99	-5.38	-10.92	15.51		-24.05	1.21
Shellfish	25.01	-22.02	2.74	6.90	21.48	<b>-26.99</b>	-47.46	32.48	18.74	7.72	23.59	23.90	-43.42		2.43	1.15
Dairy	1.21	-1.09	-0.49	0.34	1.70	-1.38	<b>-5.60</b>	-0.31	0.55	-0.32	0.78	1.70	-0.27		1.62	0.75
Bakery	0.39	-0.68	-0.52	-2.45	4.08	1.92	-0.63	<b>-2.14</b>	-1.88	-1.35	-0.32	-1.23	2.40		2.03	0.77
Cereal	-4.47	3.06	-1.98	-2.80	2.87	2.59	-0.88	-4.43	<b>-8.87</b>	-4.43	0.12	-5.32	13.25		-0.62	1.03
Fruit	-2.42	4.37	-1.07	1.68	-3.05	0.66	-0.99	-1.99	-2.74	<b>8.51</b>	3.11	0.44	-6.03		-2.80	1.16
Vegetables	-0.71	0.07	3.11	-1.39	-1.42	1.74	1.94	-0.43	0.06	2.69	<b>-5.83</b>	-0.69	-0.96		-1.90	1.08
Coffee	-6.70	4.34	2.69	0.92	-7.57	4.64	11.34	-4.06	-7.45	1.01	-1.79	<b>-4.79</b>	6.81		-9.02	0.79
Other Bev.	3.66	-3.66	1.83	1.19	4.71	-3.69	-0.84	3.43	8.13	-6.00	-1.11	2.97	<b>-5.23</b>		-3.15	1.16
Res. Store	2.01	-2.26	-0.89	0.74	0.46	-1.04	2.03	-0.28	3.11	0.55	1.41	1.80	-1.58	<b>-6.41</b>	-1.69	1.03
Restaurant	-0.66	0.48	-0.30	0.39	-1.47	0.04	0.91	0.57	-0.08	-0.55	-0.44	-0.80	-0.62		<b>2.24</b>	1.00

Table 7d Compensated Price Elasticities - Canadian Born Consumers (AIDS with Demographic Variables)

	Beef	Pork	Poultry	Oth. meat	Fish	Shellfish	Dairy	Bakery	Cereal	Fruit	Vegs.	Coffee	Bev.	Res. St.	Rest.
Beef	<b>-2.21</b>	2.66	2.50	-1.11	-4.16	1.65	2.85	0.49	-2.09	-1.80	-0.57	-2.25	2.89		-2.29
Pork	8.94	<b>7.90</b>	-10.90	-2.14	0.07	-4.85	-8.16	-2.49	4.90	11.34	0.27	4.94	-9.45		6.50
Poultry	5.86	-7.62	<b>-7.66</b>	4.38	6.16	0.43	-2.50	-1.31	-2.18	-1.88	6.56	2.15	3.38		-2.45
Oth. meat	-1.23	-0.71	2.07	<b>-0.06</b>	-2.13	0.51	0.96	-2.96	-1.44	1.49	-1.30	0.36	1.08		1.91
Fish	-17.73	0.10	11.19	-8.20	<b>-2.19</b>	6.02	16.51	19.45	5.83	-9.93	-5.31	-10.89	15.57		-23.74
Shellfish	25.09	-22.00	2.78	6.97	21.50	<b>-26.98</b>	-47.29	32.56	18.77	7.78	23.65	23.93	-43.36		2.72
Dairy	1.26	-1.08	-0.47	0.38	1.72	-1.38	<b>-5.48</b>	-0.25	0.58	-0.28	0.83	1.72	-0.23		1.81
Bakery	0.44	-0.66	-0.50	-2.40	4.10	1.92	-0.51	<b>-2.08</b>	-1.85	-1.32	-0.28	-1.21	2.44		2.23
Cereal	-4.40	3.08	-1.95	-2.74	2.88	2.60	-0.72	-4.35	<b>-8.84</b>	-4.38	0.18	-5.30	13.31		-0.35
Fruit	-2.34	4.39	-1.04	1.75	-3.03	0.67	-0.81	-1.91	-2.70	<b>8.57</b>	3.18	0.46	-5.97		-2.51
Vegetables	-0.64	0.09	3.15	-1.32	-1.40	1.75	2.10	-0.35	0.09	2.75	<b>-5.76</b>	-0.67	-0.91		-1.63
Coffee	-6.65	4.35	2.71	0.96	-7.56	4.65	11.46	-4.00	-7.43	1.05	-1.75	<b>-4.77</b>	6.85		-8.82
Other Bev.	3.74	-3.64	1.86	1.26	4.73	-3.68	-0.67	3.52	8.16	-5.94	-1.04	3.00	<b>-5.17</b>		-2.85
Res. Store	2.07	-1.24	-0.86	0.80	0.47	-1.04	2.19	-0.21	3.15	0.60	1.47	1.83	-1.53	<b>-6.29</b>	-1.42
Restaurant	-0.60	0.50	-0.27	0.45	-1.45	0.05	1.06	0.65	-0.04	-0.50	-0.38	-0.78	-0.57		<b>2.50</b>

Table 7e Uncompensated Price and Expenditure Elasticities - Foreign Born Consumers (AIDS with Demographic Variables)

	Beef	Pork	Poultry	Oth. meat	Fish	Shellfish	Dairy	Bakery	Cereal	Fruit	Vegs.	Coffee	Bev.	Res. St.	Rest.	Exp.
Beef	<b>2.84</b>	3.92	-3.33	-4.62	5.66	-0.11	-9.32	2.24	0.72	-1.30	4.78	-0.85	-2.36		-1.38	1.22
Pork	14.45	<b>-58.24</b>	50.45	13.64	37.56	-13.48	-33.87	13.87	40.16	-22.89	-11.04	19.76	-60.00		-3.72	1.12
Poultry	-6.93	28.52	<b>-28.06</b>	-6.20	-17.13	15.54	24.66	-7.28	-17.45	26.32	13.67	-16.19	27.89		-17.10	1.17
Oth. meat	-5.37	4.32	-3.47	<b>4.03</b>	-4.99	-2.49	6.53	-3.91	-2.89	-0.21	-3.67	-1.16	13.01		2.81	1.00
Fish	18.10	32.62	-26.31	-13.70	<b>-1.09</b>	1.59	18.00	-16.36	17.32	-16.33	4.19	-4.60	-3.70		-0.57	1.21
Shellfish	-1.48	-48.52	98.99	-28.27	6.60	<b>29.35</b>	-100.99	24.02	-73.21	-12.21	25.29	0.32	-65.05		3.94	0.79
Dairy	-4.10	-4.07	5.28	2.51	2.51	-3.38	<b>-8.20</b>	2.70	-2.44	-1.87	-1.82	3.17	-1.70		2.45	0.64
Bakery	2.12	3.52	-3.26	-3.12	-4.77	1.69	5.64	<b>-0.22</b>	3.54	3.15	1.51	-1.29	2.13		-0.81	0.86
Cereal	1.53	23.11	-17.77	-5.27	11.48	-11.71	11.12	8.02	<b>31.53</b>	-10.85	10.66	-0.41	-5.15		-14.10	1.07
Fruit	-1.34	-6.43	13.07	-0.20	-5.28	-0.96	-4.46	3.45	-5.30	<b>-8.03</b>	-1.33	1.68	0.69		1.33	1.25
Vegetables	5.29	-3.30	7.24	-3.47	1.45	2.10	-4.55	1.78	5.55	-1.40	<b>2.20</b>	2.14	-13.56		-1.20	0.95
Coffee	-2.35	15.02	-21.75	-2.78	-4.02	0.07	19.93	-3.87	-0.53	4.57	5.45	<b>-3.38</b>	13.81		-12.16	0.83
Other Bev.	-3.11	-21.53	17.70	14.75	-1.53	-6.49	-5.12	2.99	-3.21	0.90	-16.27	6.51	<b>-0.15</b>		3.16	1.09
Res. Store	1.35	1.34	-7.24	-2.15	-2.28	7.45	5.56	-8.07	-11.05	8.09	-0.78	-2.23	5.49	<b>-1.78</b>	4.30	0.98
Restaurant	-0.45	-0.34	-2.72	0.79	-0.06	0.10	1.76	-0.31	-2.21	0.44	-0.37	-1.45	0.79		<b>0.89</b>	1.12

Table 7f Compensated Price Elasticities - Foreign Born Consumers (AIDS with Demographic Variables)

	Beef	Pork	Poultry	Oth. meat	Fish	Shellfish	Dairy	Bakery	Cereal	Fruit	Vegs.	Coffee	Bev.	Res. St.	Rest.
Beef	<b>2.93</b>	3.95	-3.29	-4.55	5.69	-0.11	-9.13	2.33	0.76	-1.21	4.86	-0.82	-2.29		-1.13
Pork	14.53	<b>-58.22</b>	50.49	13.71	37.58	-13.47	-33.69	13.95	40.20	-22.81	-10.97	19.79	-59.94		-3.49
Poultry	-6.85	28.54	<b>-28.02</b>	-6.13	-17.10	15.55	24.85	-7.19	-17.42	26.40	13.74	-16.16	27.95		-16.85
Oth. meat	-5.30	4.34	-3.43	<b>4.09</b>	-4.96	-2.48	6.69	-3.83	-2.86	-0.14	-3.60	-1.13	13.06		3.02
Fish	18.19	32.64	-26.27	-13.63	<b>-1.06</b>	1.60	18.19	-16.27	17.36	-16.25	4.27	-4.57	-3.64		-0.31
Shellfish	-1.42	-48.51	99.02	-28.22	6.61	<b>29.36</b>	-100.87	24.08	-73.18	-12.16	25.34	0.34	-65.01		4.11
Dairy	-4.05	-4.06	5.30	2.55	2.52	-3.38	<b>-8.10</b>	2.75	-2.42	-1.83	-1.77	3.18	-1.66		2.59
Bakery	2.18	3.54	-3.23	-3.07	-4.75	1.70	5.78	<b>-0.15</b>	3.57	3.20	1.57	-1.27	2.17		-0.63
Cereal	1.61	23.13	-17.73	-5.20	11.51	-11.70	11.29	8.10	<b>31.57</b>	-10.78	10.73	-0.38	-5.09		-13.87
Fruit	-1.26	-6.41	13.12	-0.12	-5.25	-0.95	-4.27	3.55	-5.26	<b>-7.95</b>	-1.25	1.71	0.76		1.60
Vegetables	5.35	-3.28	7.27	-3.41	1.47	2.11	-4.40	1.85	5.58	-1.34	<b>2.26</b>	2.17	-13.51		-1.00
Coffee	-2.29	15.04	-21.72	-2.73	-4.00	0.07	20.06	-3.80	-0.50	4.62	5.50	<b>-3.36</b>	13.85		-11.98
Other Bev.	-3.03	-21.51	17.74	14.81	-1.50	-6.48	-4.95	3.08	-3.17	0.97	-16.20	6.54	<b>-0.09</b>		3.40
Res. Store	1.42	2.36	-7.21	-2.09	-2.26	7.46	5.71	-7.99	-11.02	8.15	-0.71	-2.20	5.54	<b>-1.68</b>	4.51
Restaurant	-0.37	-0.31	-2.69	0.86	-0.03	0.10	1.93	-0.22	-2.17	0.51	-0.30	-1.42	0.85		<b>1.13</b>

Table 8a AIDS with Demographic Variables - Allow for Cultural Effects, but no Assimilation

	Beef	Pork	Poultry	Oth. meat	Fish	Shellfish	Dairy	Bakery	Cereal	Fruit	Vegs.	Coffee	Bev.	Rest.
<i>Immigrant Group Dummies (phi)</i>														
NW Europe	-0.0068 (-1.07)	0.0030 (-2.7)	0.0038 (-0.84)	0.0047 (1.29)	0.0025 (1.08)	0.0018 (0.00)	0.0078 (0.66)	0.0047 (0.97)	0.0031 (-0.37)	0.0042 (0.07)	0.0040 (-0.56)	0.0032 (-0.71)	0.0045 (1.77)	0.0173 (0.11)
SE Europe	0.0145 (1.35)	0.0051 (0.36)	0.0064 (2.73)	0.0079 (0.81)	0.0041 (2.99)	0.0031 (-1.28)	0.0131 (2.26)	0.0079 (-0.15)	0.0052 (-0.3)	0.0070 (1.88)	0.0068 (2.48)	0.0054 (1.18)	0.0076 (-1.41)	0.0291 (-2.55)
Other FB	0.0084 (0.87)	0.0045 (0.36)	0.0057 (2.56)	0.0071 (-0.74)	0.0037 (3.41)	0.0027 (3.52)	0.0118 (-0.54)	0.0070 (0.21)	0.0046 (0.52)	0.0063 (4.29)	0.0061 (0.86)	0.0048 (-2.39)	0.0068 (-0.29)	0.0261 (-1.61)
<i>p-values</i>														
$\phi(i)=0$	1.0000	0.0505	0.0022	0.3962	0.0002	0.0021	0.1159	0.7948	0.9119	0.0001	0.0641	0.0494	0.1374	0.0331
$\phi(i)=\phi(j)$	1.0000	0.0825	0.0026	0.3535	0.0234	0.0012	0.1001	0.8000	0.7752	0.0011	0.0428	0.0379	0.0762	0.0501
R-squared	0.0644	0.0301	0.0513	0.0423	0.0359	0.0221	0.1348	0.091	0.051	0.1065	0.045	0.0491	0.0252	0.2043

Table 8b AIDS with Demographic Variables - Allow for Cultural Effects, but Speed of Assimilation is the Same for all Immigrant Groups

	Beef	Pork	Poultry	Oth. meat	Fish	Shellfish	Dairy	Bakery	Cereal	Fruit	Vegs.	Coffee	Bev.	Rest.
<i>Immigrant Group Dummies (phi)</i>														
NW Europe	-0.0080 (-0.63)	-0.0065 (-1.09)	-0.0043 (-0.57)	-0.0117 (-1.25)	0.0015 (0.31)	-0.0002 (-0.06)	0.0089 (0.56)	0.0031 (0.32)	0.0106 (1.72)	0.0129 (1.54)	0.0034 (0.42)	0.0019 (0.29)	0.0057 (0.62)	-0.0085 (-0.25)
SE Europe	0.0132 (0.84)	0.0035 (0.47)	0.0163 (1.74)	-0.0121 (-1.04)	0.0112 (1.84)	-0.0041 (-0.93)	0.0336 (1.74)	-0.0027 (-0.24)	0.0107 (1.4)	0.0263 (2.55)	0.0227 (2.28)	0.0107 (1.34)	-0.0131 (-1.18)	-0.0850 (-1.99)
Other FB	0.0075 (0.59)	0.0028 (0.47)	0.0138 (1.84)	-0.0184 (-1.98)	0.0118 (2.43)	0.0095 (2.64)	-0.0036 (-0.24)	0.0004 (0.04)	0.0111 (1.82)	0.0361 (4.39)	0.0094 (1.18)	-0.0085 (-1.34)	-0.0036 (-0.42)	-0.0497 (-1.46)
<i>Duration of Residence (theta)</i>														
	0.0001 (0.1)	-0.0001 (-0.31)	0.0001 (0.17)	0.0014 (2.18)	0.0001 (0.26)	0.0000 (0.06)	-0.0003 (-0.28)	0.0001 (0.18)	-0.0009 (-2.21)	-0.0010 (-1.75)	-0.0004 (-0.81)	-0.0003 (-0.75)	0.0002 (0.29)	0.0008 (0.35)
<i>p-values</i>														
$\phi(i)=0$	1.0000	0.1912	0.0052	0.2709	0.0148	0.0025	0.1888	0.9273	0.2589	0.0001	0.0542	0.0636	0.1651	0.0647
$\phi(i)=\phi(j)$	1.0000	0.0949	0.0027	0.7279	0.0229	0.0019	0.0978	0.8037	0.9961	0.0059	0.0421	0.0288	0.0785	0.0528
R-squared	0.0644	0.0301	0.0513	0.0429	0.0359	0.0221	0.1348	0.0910	0.0516	0.1068	0.0451	0.0492	0.0252	0.2043

Table 8c AIDS with Demographic Variables - No Cultural Effects, but Speed of Assimilation is Allowed to Vary Amongst Immigrant Groups

	Beef	Pork	Poultry	Oth. meat	Fish	Shellfish	Dairy	Bakery	Cereal	Fruit	Vegs.	Coffee	Bev.	Rest.
<i>Immigrant Group Dummies (phi)</i>	0.0017 (0.14)	-0.0015 (-0.29)	0.0069 (1.01)	-0.0138 (-1.63)	0.0058 (1.31)	0.0017 (0.52)	0.0099 (0.7)	0.0010 (0.12)	0.0115 (2.09)	0.0222 (2.97)	0.0092 (1.26)	-0.0003 (-0.05)	-0.0016 (-0.2)	-0.0368 (-1.19)
<i>Duration of Residence (theta)</i>														
NW Europe	-0.0005 (-0.52)	-0.0004 (-1.00)	-0.0006 (-1.15)	0.0016 (2.43)	-0.0002 (-0.62)	-0.0001 (-0.46)	-0.0003 (-0.29)	0.0003 (0.4)	-0.0009 (-2.21)	-0.0015 (-2.71)	-0.0008 (-1.41)	-0.0002 (-0.52)	0.0006 (0.9)	0.0024 (1.02)
SE Europe	0.0009 (0.86)	0.0002 (0.34)	0.0010 (1.63)	0.0015 (1.91)	0.0004 (0.9)	-0.0004 (-1.49)	0.0012 (0.98)	-0.0002 (-0.26)	-0.0010 (-1.92)	-0.0009 (-1.38)	0.0004 (0.67)	0.0004 (0.75)	-0.0005 (-0.76)	-0.0021 (-0.77)
Other FB	0.0001 (0.08)	0.0001 (0.11)	0.0000 (-0.06)	0.0010 (1.01)	0.0008 (1.53)	0.0008 (2.19)	-0.0017 (-1.08)	0.0002 (0.16)	-0.0012 (-1.97)	0.0002 (0.18)	-0.0007 (-0.82)	-0.0009 (-1.33)	0.0005 (0.52)	0.0008 (0.23)
<i>p-values</i>														
<i>theta(i)=0</i>	0.0000	0.3907	0.0156	0.0777	0.0497	0.0014	0.2070	0.8991	0.1246	0.0041	0.1112	0.1880	0.2903	0.2328
<i>theta(i)=theta(j)</i>	0.0000	0.2685	0.0058	0.7336	0.0202	0.0006	0.1037	0.7610	0.8180	0.0308	0.0676	0.0916	0.1654	0.1319
R-squared	0.0642	0.0298	0.0511	0.0428	0.0359	0.0224	0.1348	0.0910	0.0516	0.1064	0.0449	0.0489	0.0250	0.2041

Table 8d AIDS with Demographic Variables - Allow for both Cultural Effects and Different Speeds of Assimilation Amongst Immigrant Groups

	Beef	Pork	Poultry	Oth. meat	Fish	Shellfish	Dairy	Bakery	Cereal	Fruit	Vegs.	Coffee	Bev.	Rest.
<i>Immigrant Group Dummies (phi)</i>														
NW Europe	-0.0152 (-0.97)	-0.0103 (-1.38)	-0.0082 (-0.89)	-0.0144 (-1.24)	0.0030 (0.49)	0.0001 (0.02)	0.0045 (0.23)	0.0024 (0.2)	0.0060 (0.79)	0.0073 (0.71)	-0.0004 (-0.04)	0.0056 (0.71)	0.0145 (1.3)	0.0139 (0.0)
SE Europe	0.0075 (0.28)	0.0053 (0.42)	-0.0119 (-0.74)	-0.0064 (-0.32)	0.0172 (1.64)	0.0031 (0.4)	0.0305 (0.91)	0.0043 (0.21)	0.0083 (0.63)	0.0417 (2.35)	0.0201 (1.17)	0.0082 (0.6)	-0.0122 (-0.64)	-0.0901 (0.32)
Other FB	0.0269 (1.34)	0.0096 (1.02)	0.0423 (3.6)	-0.0168 (-1.13)	0.0044 (0.57)	0.0037 (0.65)	0.0078 (0.31)	-0.0029 (-0.2)	0.0225 (2.33)	0.0370 (2.82)	0.0195 (1.53)	-0.0147 (-1.46)	-0.0231 (-1.64)	-0.0938 (-1.23)
<i>Duration of Residence (theta)</i>														
NW Europe	0.0007 (0.58)	0.0002 (0.32)	0.0004 (0.59)	0.0016 (1.94)	0.0000 (-0.07)	0.0000 (-0.02)	0.0000 (0.03)	0.0002 (0.2)	-0.0006 (-1.06)	-0.0006 (-0.77)	-0.0002 (-0.22)	-0.0006 (-1.09)	-0.0005 (-0.64)	-0.0009 (-1.73)
SE Europe	0.0005 (0.28)	-0.0003 (-0.29)	0.0022 (1.99)	0.0010 (0.72)	-0.0004 (-0.5)	-0.0005 (-0.99)	-0.0001 (-0.03)	-0.0004 (-0.3)	-0.0007 (-0.84)	-0.0021 (-1.77)	-0.0002 (-0.21)	-0.0002 (-0.17)	0.0001 (0.08)	0.0012 (-0.3)
Other FB	-0.0020 (-1.06)	-0.0009 (-0.96)	-0.0030 (-2.69)	0.0012 (0.88)	0.0009 (1.21)	0.0006 (1.19)	-0.0015 (-0.66)	0.0005 (0.34)	-0.0022 (-2.36)	-0.0011 (-0.86)	-0.0015 (-1.28)	0.0003 (0.36)	0.0023 (1.7)	0.0056 (0.23)
<i>p-values</i>														
<i>phi(i)=0, theta(i)=0</i>	1.0000	0.1795	0.0002	0.2456	0.0013	0.0089	0.3856	0.9727	0.2612	0.0003	0.1763	0.1632	0.1820	0.1230
<i>phi(i)=phi(j), theta(i)=theta(j)</i>	1.0000	0.2212	0.0001	0.9380	0.0550	0.0046	0.2864	0.9559	0.6754	0.0212	0.1174	0.0958	0.0802	0.1323
<i>Time to convergence (phi/theta)</i>														
NW Europe	23.24	61.03	20.66	8.91	114.73	14.94	-98.17	-13.55	10.54	13.02	-2.58	9.11	28.77	15.40
SE Europe	-14.23	20.66	5.45	6.49	48.10	5.95	520.14	10.68	11.14	19.52	82.10	54.73	114.18	75.92
Other FB	13.35	11.19	13.94	13.53	-4.93	-5.76	5.10	5.96	10.38	34.63	12.66	42.32	10.07	16.72
R-squared	0.0646	0.0302	0.0527	0.0429	0.0361	0.0224	0.1349	0.0911	0.0519	0.1070	0.0452	0.0492	0.0256	0.2044

### Working paper series

<b>Number</b>	<b>Author(s)</b>	<b>Title</b>	<b>Date</b>
96-01	James W. Dean & Don J. DeVoretz	The Economic Performance of Jewish Immigrants to Canada: A Case of Double Jeopardy?	5/96
96-02	Kris Olds	Developing the Trans-Pacific Property Market: Tales from Vancouver via Hong Kong	8/96
96-03	Krishna Pendakur & Ravi Pendakur	The Colour of Money: Earnings Differentials Among Ethnic Groups in Canada	4/96
96-04	Alan Green David Green	The Economic Goals of Canada's Immigration Policy, Past and Present	
97-01	John E. Hayfron	Language Training, Language Proficiency and Earnings of Immigrants: Lessons from Norway	2/97
97-02	Daniel Hiebert	The Colour of Work: Labour Market Segmentation in Montreal, Toronto and Vancouver, 1991	3/97
97-03	Abul Shamsuddin & Don J. DeVoretz	Wealth Accumulation of Canadian and Foreign-Born Households in Canada	6/97
97-04	Abul Shamsuddin	The Double-Negative Effect on the Earnings of Foreign-Born Females in Canada	6/97
97-05	Abul F. M. Shamsuddin	Savings, Tax Contributions and Australian Immigration	6/97
97-06	Peter Sheldon	Estimation of Labour Market Participation Rates for Canadian-Born and Foreign-born Families Resident in the Vancouver Census Metropolitan Area Circa 1991	8/97
97-07	John E. Hayfron	Estimating Immigrants' Occupational Choice and Occupational Wages with Selectivity Bias	9/97
97-08	David Ley & Heather Smith	Is there an immigrant "underclass" in Canadian cities?	10/97
97-09	Dominique Gross	Immigration Flows and Regional Labour Market Dynamics	10/97
97-10	Krishna Pendakur & Ravi Pendakur	Speak and Ye Shall Receive: Language Knowledge as Human Capital	11/97
98-01	Karl Froschauer	East Asian Immigrant Entrepreneurs in Vancouver: Provincial Preference and Ethnic Strategy	01/98
98-02	June Beynon & Kelleen Toohey	Careers in Teaching: Participation Rates and Perceptions of Two Minority Groups in British Columbia	01/98
98-03	Iris Geva-May	Immigration to Israel: Any Lessons for Canada?	01/98
98-04	Rebeca Raijman & Moshe Semyonov	Best of Times, Worst of Times, and Occupational Mobility: The Case of Russian Immigrants in Israel	02/98
98-05	Fernando Mata & Ravi Pendakur	Immigration, Labour Force Integration and the Pursuit of Self- employment	02/98
98-06	Samuel A. Laryea	The Impact of Foreign-born Labour on Canadian Wages: A Panel Analysis	02/98

<b>Number</b>	<b>Author(s)</b>	<b>Title</b>	<b>Date</b>
98-07	Gordon Dicks & Arthur Sweetman	Education and Ethnicity in Canada: An Intergenerational Perspective	02/98
98-08	Steven Globerman	Immigration and Health Care Utilization Patterns in Canada	03/98
98-09	Samuel A. Laryea	The Substitutability and Complementarity of Canadian and Foreign-born Labour: Circa 1990	04/98
98-10	John E. Hayfron	Panel Estimates of the Gender Gap in Norway: Do Female Immigrants Experience A Double Earnings Penalty?	04/98
98-11	Thomas Bauer and Klaus F. Zimmermann	Occupational Mobility of Ethnic Migrants	07/98
98-12	Gillian Creese	Government Restructuring and Immigrant/Refugee Settlement Work: Bringing Advocacy Back In	07/98
98-13	Abul Shamsuddin	Labour Supply of Immigrant Women in Australia	07/98
98-14	Yitchak Haberfeld, Moshe Semyonov and Yinon Cohen	Ethnicity and Labor Market Performance among Recent Immigrants from the Former Soviet Union to Israel	08/98
98-15	Daniel Hiebert	Immigrant Experiences in Greater Vancouver: Focus Group Narratives	09/98
98-16	Daniel Hiebert	The Changing Social Geography of Immigrant Settlement in Vancouver	09/98
98-17	Arti Nanavati	Labour Market Experiences of South Asia-born Women in Vancouver	09/98
98-18	Don DeVoretz and Samuel Layrea	Canadian Human Capital Transfers: The USA and Beyond	10/98
98-19	Trinidad L. Vicente	Undocumented Migrants: A Social and Political Issue in Spain	10/98
98-20	James Dunn and Isabel Dyck	Social Determinants of Health in Canada's Immigrant Population: Results from the National Population Health Survey	10/98
98-21	Keith Head, John Ries, and Don Wagner	Immigrants and the Trade of Provinces	12/98
99-01	Eran Razin	Immigrant Entrepreneurs and the Urban Milieu: Evidence from the United States, Canada and Israel	1/99
99-02	Marvin Wideen and Kathleen A. Barnard	Impacts of immigration on Education in British Columbia: An Analysis of Efforts to Implement Policies of Multiculturalism in Schools	1/99
99-03	Joseph Schaafsma and Arthur Sweetman	Immigrant Earnings: Age at Immigration Matters	1/99
99-04	Harold Coward	Hindus in Canada	2/99
99-05	K. Toohey, B. Waterstone and A. Julé	Performing carnival: Language learning in a Punjabi Sikh school	2/99



<b>Number</b>	<b>Author(s)</b>	<b>Title</b>	<b>Date</b>
99-06	Don DeVoretz and Yunus Ozsomer	Immigrants and Public Finance Transfers: Vancouver, Toronto and Montreal	2/99
99-07	Jennifer Hyndman and Margaret Walton-Roberts	Transnational Migration and Nation: Burmese Refugees in Vancouver	2/99
99-08	Kangqing Zhang	Problems and Strategies of Chinese Immigrants: A Study of Restaurant Sector in the Dutch Labor Market	3/99
99-09	David Ley and Judith Tutchener	Immigration and Metropolitan House Prices in Canada	3/99
99-10	Gillian Creese, Isabel Dyck, and Arlene McLaren	Reconstituting the Family: Negotiating Immigration and Settlement	3/99
99-11	Linda LaRocque	The Changing Role of Administrators in Ethnically Diverse Schools	4/99
99-12	Kris Olds and Henry Wai-chung Yeung	(Re)shaping 'Chinese' Business Networks in a Globalizing Era	4/99
99-13	Ravi Pendakur and Fernando Mata	Where do immigrants work? Tracking industrial location propensities of 1960s immigrants	5/99
99-14	J. Anderson, S. Tang, and C. Blue	Health Systems Renewal: 'Writing in' Cultural Plurality	5/99
99-15	John Rose	Immigration, Neighbourhood Change, and Racism: Immigrant Reception in Richmond, B.C.	5/99
99-16	Randal G. Tonks and Anand C. Paranjpe	Am I a Canadian, an Ethnic, or an Ethnic-Canadian?: Dilemmas of Second Generation Immigrant Youth	6/99
99-17	Margaret Walton-Roberts	(Post)colonial Constellations of History, Identity and Space: Sikhs and the Royal Canadian Legion	6/99
99-18	Parin Dossa	The Narrative Representation of Mental Health: Iranian Women in Canada	7/99
99-19	Samuel A. Laryea	Housing Ownership Patterns of Immigrants in Canada	7/99
99-20	Diane Dagenais and Catherine Berron	A Case Study of Multilingualism and Educational Choices in Immigrant Families	7/99
99-21	Carl Mosk	Convergence and Divergence in The Asia-Pacific: Economic and Demographic Integration between Asia and Pacific Canada	8/99
99-22	John E. Hayfron	A Double Cohort Analysis of Residential Overcrowding among Immigrants in Norway	9/99
99-23	Noah Lewin-Epstein and Moshe Semyonov	Migration, Ethnicity and Inequality in Homeownership	9/99
99-24	Jörgen Hansen and Magnus Lofstrom	Immigrant Assimilation and Welfare Participation: Do Immigrants Assimilate Into or Out-of Welfare?	11/99

<b>Number</b>	<b>Author(s)</b>	<b>Title</b>	<b>Date</b>
99-25	Don DeVoretz and Christiane Werner	A Theory of Social Forces and Immigrant Second Language Acquisition	12/99
00-01	J. Atsu Amegashie	A Political Economy Model of the Permissible Number of Immigrants	01/00
00-02	David Ley	Seeking <i>Homo Economicus</i> : The Strange Story of Canada's Immigration Program	05/00
00-03	Chieko Tanimura	Immigration of Nikkeijin to Ease the Japanese Aging Crisis	05/00
00-04	Eden Nicole Thompson	Immigrant Occupational Skill Outcomes and the Role of Region-Specific Human Capital	05/00
00-05	Christiane Werner	A Taste of Canada: An Analysis of Food Expenditure Patterns for Canadian-born and Foreign-born Consumers	05/00

**Back issues of working papers are available for \$5 from**  
Vancouver Centre of Excellence: Immigration, WMX4653, Simon Fraser University, 8888 University  
Drive, Burnaby, B.C, Canada V5A 1S6. Tel: (604) 291-4575 Fax: (604) 291-5336

**E-mail: [riim@sfu.ca](mailto:riim@sfu.ca)**  
<http://www.riim.metropolis.net/>