

# Ethnic Variations in Immigrant Poverty Exit and Female Employment: The Missing Link

## **Introduction**

It is generally understood that immigrant families are economically vulnerable for a variety of reasons, including lower education, poor host country language skills, and lower returns to foreign education and work experience (Sullivan and Ziegert 2008). One factor that remains underexplored, however, is the effect of female spouses' employment on immigrant economic mobility. While qualitative studies highlight the significant roles of employed immigrant women in the early settlement stages, the quantitative assessment of whether their employment helps lift their families out of poverty is limited. The earning contributions of working female spouses to family incomes may seem obvious, but we know little about whether their earnings are high enough to lift their families out of poverty. Moreover, while previous research examines ethnic variations in female immigrant employment, research bridging this topic and immigrant poverty is limited (Baker 2004; Creese et al. 2008; Grahame 2003). Nor do we know whether there are differences linked to immigrant ethnicity. This study addresses these gaps by asking two questions. First, for recent immigrant families experiencing poverty, does the employment of female spouses help them exit poverty? Second, to what extent does the ethnic variation in female immigrant employment explain the ethnic gaps in escaping poverty? I answer these questions using data from the Longitudinal Survey of Immigrants to Canada (LSIC), a nationally-representative survey of new arrivals.

While this paper builds on past studies on immigration, it improves upon them in three ways. First, it links two research areas, immigrant poverty and gender and migration. Second, it looks at the post-migration factor of women's employment in the host country. While previous research has analyzed immigrant poverty dynamics, including exits from and re-entries into poverty, it considers only time-constant pre-migration characteristics, including region of origin,

age at immigration, and foreign education (Fleury 2007; Picot et al. 2008). Third, it uses two analytical innovations: the bivariate probit model and Fairlie decomposition technique. The former allows me to consider the possibility of low income immigrant women's selection into employment and its bias associated with their unobserved characteristics. The latter helps specify the extent to which ethnic poverty exit gaps can be explained by ethnic variations in female immigrant employment.

### **Immigrant Poverty and Ethnic Variations**

In many Western immigrant destinations (e.g., Denmark, Spain, Sweden, the U.S.), immigrants have higher poverty rates than the native born (Blume et al. 2007; Jensen 1989; Muñoz de Bustillo and Antón 2011; Sullivan and Ziegert 2008). This is certainly true in Canada; in 2000, the poverty rate of immigrants aged 25–54 was 18%, seven percentage points higher than the Canadian born.<sup>1</sup> There is also a wide ethnic variation in poverty levels; non-European groups have higher levels than their European counterparts (Lee 1994). While Arabs and West Asians have relatively high poverty rates (35%), East/Southeast and South Asians have lower levels (22% and 19% respectively).<sup>2</sup> Yet the poverty levels of these non-European groups are higher than Europeans (11%). Finally, recent immigrants are particularly vulnerable to poverty; in 2002–2003, 43% of immigrants in Canada for two years were in poverty.

These poverty patterns among immigrants in Canada are puzzling, as the majority of recent cohorts are highly educated, reflective of the country's merit-based immigration policy (Picot and Hou 2003). It is imperative to understand what helps lift recent arrivals, especially non-European ones, out of poverty quickly, as persistent poverty may limit the life chances of

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<sup>1</sup> The statistics are based on calculations using data from the 2001 Census Public Use Microdata File.

<sup>2</sup> The percentages are based on calculations using data from the LSIC.

their offspring (Corcoran 2002). While the discussion of solutions to immigrant poverty is limited, there is extensive research on factors contributing to the economic mobility of the poor in general, including employment, education/training, and government support (Cellini et al. 2008; Worts et al. 2010). Arguably, these findings should be applicable to immigrants.

### **Mechanisms Underlying the Relationship between Immigrant Poverty and the Employment of Female Spouses**

If recently arrived immigrant women are employed, does it help lift their family out of poverty? If women from specific ethnic groups are less likely to work than others, how does this influence poverty exit? Although little research has considered these specific questions, the broader issue of whether and to what extent the employment of female spouses contributes to family income is widely addressed. Of the many theoretical approaches, the equal earner/female breadwinner and male breadwinner models are useful for the present discussion. I use these to derive two competing hypotheses about the contribution of immigrant women to the exit from poverty.

#### The equal earner/female breadwinner model

The equal earner/female breadwinner model posits that female spouses earn amounts equal to or more than their male counterparts. Such earning patterns are no longer uncommon in post-industrial Western countries (Drago et al. 2005; Harkness et al. 1997). In the U.S., equal earner and female breadwinner couples, where female spouses earn 40–60% and over 60% of the total income respectively, comprised 31% of the total couples in 2001, a 20% increase from 1970 (Raley et al. 2006). A similar trend is observed in Canada; only 12% of women in dual earner couples out-earned their male spouses in 1976, but this rose to 29% by 2008 (Williams 2010).

While the above statistics do not distinguish by the ethno-racial origin and nativity of families, some evidence suggests the earning contributions of female spouses are greater among ethno-racial minority and immigrant families. In the U.S., black wives make a greater contribution to the total family income than their white counterparts (45% versus 36%) even though they are employed at similar rates (75%) (Choi 1999). Meanwhile, Hispanic wives are far less likely to work (60%) than blacks and non-Hispanic whites, but their earning contribution is similar to non-Hispanic whites (37%). Qualitative works also indicate immigrant women's noticeable earning contributions to their family income (Espiritu 1999). Despite their marginal positions in the U.S. labor market, refugee women from Vietnam are found to make greater earning contributions to their family income in the U.S. than in their origin country because their male spouses experience drastic downward mobility after immigration (Kibria 1990, 1994). Men who held middle-class status in Vietnam are unemployed or working in low-paid low-skilled jobs in the host country. These findings can be explained by the possibility that the male spouses of ethno-racial minority and immigrant families encounter racism, language barriers, and non-/under-recognition of overseas qualifications, making it more difficult for men to be the main or the sole breadwinners.

By contrast, the employability of immigrant and minority women has been rising in the female-intensive industries (e.g., garment, microelectronics industries) in the post-1970s economic restructuring in North America. Another mechanism of the equal earner/female breadwinner model unique to immigrant families may be related to their settlement strategies to survive as families by combining skill upgrading and employment (Boyd 1989). Even if women's paid work is less common in their origin countries, female immigrants may provide

sizeable financial support to their family, while their husbands return to school for better job opportunities (Creese et al. 2008).

Based on the equal earner/female breadwinner model, I derive the following hypothesis about the returns to female immigrant employment on poverty exit:

H1: The employment of recently arrived female immigrant spouses has a significantly positive impact on family poverty exit even after the male spouses' employment characteristics are adjusted.

Since the annual employment income of male immigrant spouses is unavailable in the data, I control for other employment characteristics, weekly earnings and weeks worked, as the closest proxies.

The male breadwinner model

Gender research has characterized the division of work in industrial societies as following a male breadwinner model, whereby men seek paid work in the public sphere, while women are expected to engage in social reproduction in the private sphere. This model proliferated in Western societies in the late nineteenth and early twentieth centuries as a result of the development of the family wage ideology that male workers should earn family wages “sufficient for a *man* to support a wife and children” (Vosko and Zukewich 2006: 73).

The male breadwinner model suggests the earnings of female spouses are secondary, adding only “pin money” to their family income if they work (DeRiviere 2008). It also suggests wives are less likely to work, leaving the majority of families heavily dependent on husbands' earnings.

Scholars have noted a departure from the male breadwinner model in developed countries since the 1970s for reasons such as the rising female educational attainment, the increasing entry

of highly educated women into the labor force, and the growing job insecurity of male workers (Blossfeld and Buchholtz 2009; Charles and James 2005; Wilkie 1991). However, there is reason to believe this model still holds strongly for immigrant families, given their gendered migration and host country labor market experiences (Creese and Wiebe 2012; Pedraza 1991). For example, many come from countries where patriarchal gender relations persist. As part of this gendered understanding of their role, female immigrant spouses may have greater responsibilities for household and care work. They also may be responsible for maintaining and rebuilding family and community networks in their origin and host countries (Foner 1999; Purkayastha 2005). Such family responsibilities may lead to female immigrant spouses' weaker labor market attachment and their smaller earning contributions when they work. In addition, the labor market of the host country is often gendered, with immigrant women channeled into lower-paid manual jobs (e.g., cleaning, light manufacturing) (Creese and Wiebe 2012).

If the male breadwinner model applies to recently arrived low income immigrants, their female spouses will make no significant contribution to lifting their families out of poverty even if they work:

H2: The employment of recently arrived female immigrant spouses has no significant impact on the exit from family poverty if their male spouses' employment characteristics are taken into account.

There may also be group differences in female employment rates; I test this possibility using the Fairlie decomposition technique.

### **Does the Male Breadwinner Model Apply to Some Ethnic Groups More than Others?**

Just as immigrant poverty levels vary by ethnicity, so too there are ethnic variations in female immigrant employment. In the second step of this study, I examine the impacts of such variations on the ethnic gaps in immigrant poverty exit and consider whether the male breadwinner model applies to some groups more than others.

In many immigrant destinations (e.g., Australia, Israel, the Netherlands, Sweden, the U.K., the U.S.), immigrant women, especially recent arrivals, are less likely to be employed than native-born women (Bevelander 2005; Bevelander and Groeneveld 2006; Foroutan 2008; Rendall et al. 2010) and immigrant men (Blau et al. 2011; Rebhun 2008).<sup>3</sup> There are also ethnic variations in their employment. In the U.S., immigrant women of Chinese, Filipino, and Cuban origins have comparatively high employment rates, while those of other ethnic origins, including Arabs, Asian Indians, Japanese, Mexicans, and Puerto Ricans, are less likely to work (Duleep and Sanders 1993; Read 2004; Read and Cohen 2007; Stier and Tienda 1992). Equivalent quantitative research is sparse in Canada, with the exception of an analysis of the 2001 Census by Preston and Giles (2004), which finds notably higher labor force participation rates among Filipino (over 85%) than Arab, West Asian, Korean, and Japanese immigrant women (53–65%). Similar ethnic variations can be found among recently arrived women experiencing family poverty. While 70% of low income European immigrant women are employed four years after arrival, the employment rates of Arab and West Asian women are noticeably lower, 21% and 48% respectively. The lower female employment rates of these groups corroborate Read and Cohen's study (2007) on immigrant women in the U.S.<sup>4</sup>

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<sup>3</sup> Admittedly, some of the cited works study the labor force participation of immigrant women and categorize employed and unemployed individuals (but actively seeking paid work) in the same group. For brevity, I consistently use the term *employment* even when it refers to such works.

<sup>4</sup> Focusing on specific ethnic groups (e.g., Chinese, Ghanaian, Korean, Vietnamese), Canadian qualitative research generally agrees that immigrant women choose paid work as a solution to their families' economic challenges (Giles 1997; Giles and Preston 1996; Ng 1999; Wong 2000).

[Table 1 about here]

Why are immigrant women of some ethnic groups less likely to be employed? U.S. research variously points to human capital, family condition, and cultural explanations (Duleep and Sanders 1993; Greenlees and Saenz 1999; Read and Cohen 2007; Stier 1991). The human capital explanation posits that women of higher education and host country language proficiency and greater work experience are more likely to be employed. The ethnic groups known for higher levels of human capital (e.g., Asians) are thus expected to have higher female employment rates than those known for lower human capital (e.g., Latinos). The family condition explanation states that family characteristics and economic circumstances can influence women's decision to work. For instance, women's family responsibilities (e.g., taking care of small children or elderly relatives) may reduce their likelihood of employment, whereas budgetary constraints of the household may drive women to work, especially when they have extended family members who can look after their children. The cultural explanation argues immigrant women are less likely to work if they come from cultures emphasizing domestic responsibilities, but exposure to more egalitarian cultures in the host countries leads them to engage in paid work (Read and Cohen 2007).

These explanations developed in the U.S. may apply to the employment of immigrant women in Canada, given institutional similarities between the two countries, such as relatively unregulated labor markets (Doellgast et al. 2009). However, their immigrant populations may differ as a result of divergent immigration policies; Canada's skill-based admission policy has led to an increased pool of highly skilled immigrants compared to the U.S. Nevertheless, qualitative research suggests relatively low employment rates among highly skilled immigrant women in Canada (Man 1995; Salaff and Greve 2003).

If some ethnic groups have notably lower female employment rates, contributing to their low poverty exit rates, the male breadwinner model is more likely to hold for these groups. I use the Fairlie decomposition technique to assess the extent to which the differences in female immigrant employment rates between two ethnic groups contribute to their differences in exiting poverty. Given their relatively advantageous position in poverty exit and female employment, I use Europeans (a combined category of British, French, Western, Northern, Eastern, and Southern Europeans) as the reference group and compare them with Arabs/West Asians, South Asians, East/Southeast Asians, and others. Admittedly, aggregation of ethnic subgroups in this fashion may mask important within-group variations (Dale and Ahmed 2011; Evans and Lukic 1998). However, disaggregating each group would lead to substantially small unweighted cases and not produce reliable estimates.<sup>5</sup> I therefore analyze the aggregated groups based on a question “To which ethnic or cultural groups do you belong?” in the data (Statistics Canada 2001: 9).

## **Data and Methods**

### Data

This study uses data from the Longitudinal Survey of Immigrants to Canada (LSIC). The LSIC targets immigrants aged 15 and older who landed in Canada as permanent residents between October 2000 and September 2001 (Grondin 2007). Face-to-face or telephone interviews were conducted approximately six months, two years, and four years after the respondents’ arrival. A

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<sup>5</sup> Admittedly, there is a wide variation in ethnocultural and religious characteristics between Arab and West Asian groups. However, I aggregate these two groups into one in the Fairlie decomposition analysis due to the small unweighted sample size of each group. Moreover, this aggregation can be justified, given that the majority of West Asian sub-groups are Afghan and Iranian, and these two groups can stand as a broad pan-Middle Eastern and West Asian group, sharing “ethnic heritage greatly influenced by Islamic values, especially those regarding gender roles and family relations” (Moghadam 2004; Read 2003: 210). Combining Arab and West Asian groups is also a common practice in Canadian quantitative research on the ethnic variations in behaviors and attitudes using Statistics Canada’s data (Dogra et al. 2010; Kobayashi et al. 2008; Silver et al. 2004).

total of 12,040 (Wave 1), 9,322 (Wave 2), and 7,700 (Wave 3) individuals participated in the interviews, producing response rates of 77% and 64% for Waves 2 and 3 respectively.

My sample includes female immigrants aged 25 to 54 in Wave 1 living with their male spouses (married or in common-law unions) throughout the three waves and whose total annual family income in Wave 2 was below Statistics Canada's low income cutoff (LICO). The analysis eliminates respondents whose spouse was born in Canada or immigrated more than six months before the respondents' arrival because their immigration experiences may differ (Min and Kim 2009).

The results require careful interpretation given the period of the survey. During the early 2000s, the IT sector faced a downturn, yet a growing number of entering immigrants had expertise in IT and engineering (Picot and Hou 2009). The immigrants interviewed in the LSIC are, therefore, considered to have experienced challenges entering the Canadian labor market.

This study uses the LICO as the poverty threshold to ensure the research findings can be compared to other well-known studies on immigrant poverty in Canada (Kazemipur and Halli 2001; Picot and Hou 2003). The LICO is set at 20% above the average percentage of family income spent on essentials (e.g., food, shelter, clothing); the latter is set at 44% based on results from the 1992 Family Expenditures Survey. Therefore, if a family spends more than 64% (= 44%+20%) of its income on essentials, all family members are considered to be "in strained circumstances" (Paquet 2002:11). This 64% threshold is converted into 35 different cut-offs according to the family and community sizes.

The possibility of attrition bias is a concern in this study, given that the attrition rates are relatively high (22% from Wave 1 to 2; 17% from Wave 2 to 3). Besides, low income immigrants may be more likely to drop out of subsequent surveys, as they may return to their

home countries or move to other countries for better economic opportunities, thus biasing the results. However, my logistic regression analysis (results not shown here) suggests the Wave 2 poor are not statistically different ( $p>0.05$ ) from their non-poor counterparts in their probabilities of dropping out of the Wave 3 interview when other demographic and socioeconomic characteristics are controlled. This ensures that bias associated with attrition is minimal.

I use the longitudinal survey weight created by Statistics Canada, widely used in previous research (Adamuti-Trache et al. 2013; De Maio and Kemp 2010; Frank 2013; Fuller-Thomson et al. 2011; Roth et al. 2012). This weight makes the sample representative of the immigrant population still remaining in Canada four years after arrival.<sup>6</sup>

As Figure 1 shows, 47% of female spouses aged 25–54 (the sample) are in poverty in Wave 2. Two years later in Wave 3, 48% of these women are no longer in poverty; they have exited poverty according to the study's definition.

[Figure 1 about here]

## Measures

### *Poverty Exit*

The dependent variable is an indicator of whether immigrants experiencing family poverty two years after arrival (Wave 2) exit the state of poverty two years later (Wave 3). This variable is coded 1 if the respondent's annual family income in Wave 3 is higher than the 2004–2005 LICO and 0 otherwise.<sup>7</sup>

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<sup>6</sup> Simard et al. (2003) and Statistics Canada (2007) detail how the weight is computed.

<sup>7</sup> While an examination of poverty exit between Waves 1 and 2 would allow the analysis of a larger sample, I did not consider the Wave 1 poverty status for two reasons. First, the Wave 1 interview was conducted six months after immigrants' arrival, which is too soon to assess their low income status. Second, one's poverty status is commonly based on one's annual family income in Canada, and therefore, the income for six months makes it difficult to determine an immigrant's poverty status.

### *Immigrant Women's Employment*

The independent variable indicates a female immigrant spouse's employment status in Wave 3.

The variable is coded 1 if she is employed in Wave 3 and 0 otherwise.

### *Other Factors*

The analysis controls for other factors expected to influence female immigrant spouses' exit from family poverty in Wave 3: their own characteristics (age, ethnic origin, initial education, host country language skills, and weekly earnings in Wave 2) and family characteristics (the number of children under age 18, city of residence, male spouses' weekly earnings in Wave 2, changes in their weekly earnings (in 2001 dollars) and weeks worked from Wave 2 to 3) (Picot et al. 1999). As detailed in the next section, many of these control variables are also used to estimate the probability of employment for female spouses in Wave 3 in the bivariate probit models.

I control for age because younger immigrants may have better life chances, acquiring host country language skills more quickly and finding more opportunities to interact with the native born (Martinovic et al. 2009). I therefore expect immigrants who are at a younger age in Wave 2 are more likely to exit family poverty.

The education variable is represented by the possession of postsecondary educational credentials before arrival in Canada.<sup>8</sup> The respondent's self-reported proficiency in French (in Quebec) or English (in the rest of Canada) constitute the measure of host country language skills. Taking human capital theory into account, I predict immigrants with higher educational

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<sup>8</sup>I do not consider education obtained in Canada before establishing permanent residency because of the small number of applicable cases.

attainment and English/French skills are more likely to exit poverty. Female immigrants' ethnic origins may influence their chances of exit from poverty, as the persisting ethnic stratification in the host country institutions yields varied access to resources (Lian and Matthews 1998). I expect Europeans to have higher probabilities of exiting poverty than other ethnic groups.

As poverty is a family-level economic disadvantage, the respondent's family characteristics may influence the probability of exiting poverty. I expect immigrant women are more likely to exit poverty if their spouses are employed in Wave 3. I also expect having more children in the household decreases the probability of poverty exit due to the greater financial costs and time associated with child care.<sup>9</sup>

Finally, I control for the respondent's place of residence in Wave 2, given that geographic variations in industries and economic circumstances may affect the availability of higher wage jobs (Hiebert 1999). In fact, studies indicate diversity in economic opportunities and barriers in the three major immigrant destinations, Toronto (the reference group), Montreal, and Vancouver (Badets and Howatson-Leo 1999; Preston and Cox 1999).

Table 1 displays descriptive characteristics of the sample of female immigrant spouses experiencing poverty in Wave 2 (column 1). The majority have postsecondary credentials (73%) before arrival. Despite their highly educated backgrounds, their host country language skills are limited. Only 29% speak English or French fluently or very well in Wave 2. Their employment rates in Waves 2 and 3 are about 55%, 15–20 percentage points lower than their male spouses. However, the males' employment rates in Wave 2 (71%) are far lower than the average

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<sup>9</sup> Ideally, the incomes of other family members (e.g., children, relatives) would be controlled, as they may constitute important income sources for poor families who pool each member's income to survive as a family unit. As the LSIC does not contain income data for coresiding children and relatives, I am unable to control for these factors.

employment rates of new immigrant male spouses (84%).<sup>10</sup> Possibly the former have returned to school to obtain Canadian qualifications.<sup>11</sup>

## Analytical Techniques

### *The Bivariate Probit Model*

To determine whether and to what extent immigrant women help their families exit poverty if they work, I use the bivariate probit model. This model is well suited to the present study as it handles selection bias associated with unobserved heterogeneity between employed and non-employed immigrant women. In non-experimental data like the LSIC, employment is not randomly assigned to the respondents. Unobserved characteristics, such as views on gender divisions of labor, household chores and career, may strongly influence the employment of immigrant women, as these are often influenced by the gender socialization and cultural norms of their origin countries (Blau et al. 2011; Duleep and Sanders 1998; Read and Cohen 2007; Stier 1991; Treas 1987).

The bivariate probit model consists of two equations. The first predicts the probability of receiving treatment (i.e., female immigrants' employment); the second predicts the probability of its binary outcome (i.e., whether they exit poverty) as a function of the treatment and other observable characteristics. These two equations are presented in mathematical notation as follows:

$$Y_1 = \delta + \gamma Y_2 + \beta_1 X_1 + \varepsilon_1$$

$$Y_2 = \alpha + \beta_2 X_2 + \varepsilon_2$$

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<sup>10</sup> This percentage is based on my calculation using the LSIC data.

<sup>11</sup> This is speculative, as the data on the spouse's education and training activities after arrival are unavailable in the LSIC. However, my analysis of the sample of low income men (whose education/training activity information is available) finds 45% of those not employed in Wave 2 were enrolled in education/training programs, 10 percentage points higher than their employed counterparts.

where  $Y_1$  is the exit from poverty in Wave 3 for a low income female immigrant spouse;  $Y_2$  is her employment status in Wave 3;  $X_1$  and  $X_2$  are the control variables of  $Y_1$  and  $Y_2$  respectively;  $\beta_1$ ,  $\beta_2$ , and  $\gamma$  are the coefficients of  $X_1$ ,  $X_2$ , and  $Y_2$ ;  $\delta$  and  $\alpha$  are intercepts; and  $\varepsilon_1$  and  $\varepsilon_2$  are error terms. As shown in Figure 2, there is a substantial overlap in the variables included in  $X_1$  (see “Other Factors”) and  $X_2$ . In other words, many of the immigrant women’s individual and family factors expected to influence the exit from poverty ( $Y_1$ ) also affect employment status ( $Y_2$ ). The overlapping variables (age, initial education, English/French skills, ethnic origin, number of children, and city of residence) are assumed to directly and indirectly (via female employment) influence poverty exit in Wave 3. The covariates ( $X_2$ ) for immigrant women’s employment also include post-migration education, their employment status and that of their male spouse in Wave 2, and non-earned family income in Wave 2; these are expected to affect female employment but not directly affect poverty exit. The bivariate probit model assumes that the error terms of these two equations are normally distributed: that is,  $E(\varepsilon_1) = E(\varepsilon_2)=0$ ; and  $Var(\varepsilon_1)=Var(\varepsilon_2)=1$ .

[Figure 2 about here]

The bivariate probit model has two advantages. First, the correlation coefficient ( $\rho$ ) between the error terms ( $\varepsilon_1$  and  $\varepsilon_2$ ) indicates the presence/absence of selection into treatment associated with unobserved heterogeneity. A  $\rho$  significantly different from 0 indicates the presence of such selection (Chiswick et al. 2004). Second, the model allows the elimination of unobserved heterogeneity by estimating two equations simultaneously using full maximum likelihood estimation (FIML) (Datar and Nicosia 2012; Greene 2008; Kimball 2006). Therefore,

even if selection bias associated with unobserved heterogeneity is detected, the coefficient for the treatment effect is not influenced.<sup>12</sup>

In the analysis, I assess whether immigrant women's employment in Wave 3 ( $Y_2$ ) has a positive effect on the exit from family poverty ( $Y_1$ ) to test the hypotheses about the returns to female employment on family poverty exit (H1 and H2). If the positive effect of female employment remains when the employment characteristics of the male spouses and other factors are adjusted, the equal earner/female breadwinner model (H1) can be supported. To put the results into perspective, I also calculate the marginal effect of women's employment in relation to their male spouse's employment characteristics.

### *Decomposition Technique*

To assess the extent to which the differences in female employment rates between the European group and one of the four non-European groups, Arabs/West Asians, South Asians, East/Southeast Asians, and others, contribute to the gap between the two groups in their exit from poverty, I use the Fairlie decomposition technique, a modified Blinder-Oaxaca decomposition technique (Fairlie 1999, 2006). It requires some modification because it is designed to explain group differences in the values of continuous dependent variables in OLS regressions. In nonlinear regressions like probit regressions, the average value of an outcome  $Y$  does not necessarily equal the predicted probability that  $Y=1$  when the probit function is evaluated at the means of the  $X$ s (covariates) (Van Hook et al. 2004: 655). Nevertheless, the

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<sup>12</sup> Propensity score analysis (PSA) is now used more frequently to handle selection bias (Brand and Davis 2011; Kuhn et al. 2011). This method allows adjusting for differences in observable characteristics between treatment and control groups by creating a counterfactual of the treatment group using the control group (Rosenbaum and Rubin 1983; Rubin 1974). Although PSA is favored over a standard regression "as a promising procedure for estimating causal effects," there are limitations (Morgan and Harding 2006:4). For example, selection associated with unobserved heterogeneity cannot be controlled (DiPrete and Gangl 2004). As this is a crucial methodological challenge in this study, I use the bivariate probit model.

average of the predicted probabilities across all cases equals the average value of  $Y$ ; therefore, the decomposition for a probit regression equation  $F(X\hat{\beta}) = \Phi(X\hat{\beta})$  (where  $\Phi(\cdot)$  stands for the standard normal distribution function) between two groups can be described as:

$$\bar{Y}_E - \bar{Y}_A = \left[ \sum_{i=1}^{N^E} \frac{F(X_i^E \hat{\beta}^*)}{N^*} - \sum_{i=1}^{N^A} \frac{F(X_i^A \hat{\beta}^*)}{N^*} \right] + \left[ \sum_{i=1}^{N^A} \frac{F(X_i^A \hat{\beta}^*)}{N^*} - \sum_{i=1}^{N^E} \frac{F(X_i^E \hat{\beta}^*)}{N^*} \right] \quad (1)$$

where  $\bar{Y}_E$  ( $\bar{Y}_A$ ) and  $X^E$  ( $X^A$ ) stand for the average outcome vectors and the average values of covariates for the European (Arab/West Asian) group respectively. The first term on the right side of Eq. 1 refers to the compositional differences weighted by the coefficient for the pooled sample of Europeans and Arabs/West Asians ( $\hat{\beta}^*$ ); the second term represents differences in returns weighted by the means for the Arab/West Asian group ( $X^A$ ).

The above equation indicates the differences in dichotomous outcomes like poverty exit are decomposed into compositional differences and differences in returns. The compositional differences are further divided into compositional differences in specific covariates, such as female immigrant spouses' employment and education. In a model where only two dummy variables  $X_1$  and  $X_2$  are included as covariates, the effects of compositional differences in  $X_1$  can be expressed as:

$$\frac{1}{N} \sum_{i=1}^N F(X_1^E \hat{\beta}_1^* + X_2^A \hat{\beta}_2^*) - F(X_1^A \hat{\beta}_1^* + X_2^A \hat{\beta}_2^*) \quad (2)$$

Eq.2 suggests the contribution of each covariate to the overall gap in the probability of exit from poverty between European and Arab/West Asian groups is equal to differences in the average predicted probability when switching the Arab/West Asian value with the European value of the covariate of interest while holding the values of the other covariates constant. As the two groups differ in sample sizes, I randomly draw a sub-sample from the larger group (i.e., Europeans) that is equal in size to the smaller group (i.e., Arabs/West Asians). A sub-sample of Europeans and the full sample of Arabs/West Asians are sorted by the predicted probability of exiting poverty

and matched by their ranking before comparison using Eq. 2.<sup>13</sup> Using STATA's *fairlie* command, I repeat this process 1000 times and report the averages of the 1000 iteration results.<sup>14</sup>

## Results

### Employment of Immigrant Women and Poverty Exit

I first examine the association between the focal independent variable (the employment of female immigrant spouses) in Wave 3 and the outcome (the exit from family poverty in Wave 3) without adjusting for compositional differences in other characteristics (Table 2). While under 30% of non-employed low income immigrant women exit poverty in Wave 3, 63% of employed women do so. This percentage is even slightly higher than their male spouses who are employed at that time (57%). These results suggest that among low income new immigrant families, employed female spouses may be making notable contributions to their family income.

[Table 2 about here]

Table 2 also shows wide ethnic variations in poverty exit. While over 60% of immigrant women of European origins who are in poverty in Wave 2 exit poverty in Wave 3, non-European women are less likely to do so. In fact, only 22% and 28% of Arab and West Asian women exit poverty, over 35 percentage points lower than their European counterparts.

These descriptive results suggest employed immigrant women are more likely to move out of family poverty than their non-employed counterparts. But what about the relationship between immigrant women's employment and family poverty exit, when selection into employment is taken into account? The bivariate probit model shows their employment has a

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<sup>13</sup> For more details of the Fairlie decomposition technique, see Do and Paley (2007); Van Hook et al. (2004).

<sup>14</sup> As Eq. 2 indicates, the effects of compositional differences in  $X_1$  and  $X_2$  depend on the overall compositional differences in other variables, indicating the order of variables in a probit regression equation influences the results. To consider this influence, I randomize the ordering of variables (Fairlie 2006).

positive impact on exiting poverty four years after arrival in Canada; the probit for immigrant women's employment is positive and significantly different from 0 ( $p < 0.001$ ) even after the employment characteristics of their male spouses are taken into account (Models 1 and 2, Table 3).

[Table 3 about here]

The rho coefficient ( $\rho$ ) of Model 1 is significantly different from 0 ( $p < 0.001$ ), suggesting the presence of selection associated with unobserved heterogeneity among low-income female immigrant spouses. Admittedly, the data do not specify which unobserved characteristics influence their employment and exit from poverty. Arguably, employed immigrant women experiencing poverty may be more likely to engage in lower paid employment (e.g., low wage service-sector jobs), thereby leading to decreased likelihood of exiting poverty (Zuberi and Ptashnick 2012).

Which theoretical perspective, the equal earner/female breadwinner or male breadwinner model, better explains the association between female immigrant spouses' employment and poverty exit? As Model 1 shows, the positive impact of the employment of immigrant women remains significant ( $p < 0.001$ ) after the employment characteristics of their male spouses are adjusted, suggesting female employment has a positive impact on poverty exit, independent of the male spouse's employment. Moreover, the positive impact of female spouses' employment is partly explained by the economic reward they receive, given that the probit is reduced from 1.413 to 0.991 ( $p < 0.001$ ) when women's employment characteristics are controlled (Model 2). Therefore, the employment of female immigrant spouses may contribute to the exit from family poverty regardless of their male counterparts' earnings. These results reject the male breadwinner model (H2) and support H1; the ability of employed female immigrant spouses to

help lift their families out of poverty is equal to or greater than that of their employed male spouses.

To evaluate the effect of female spouses' employment in relation to their male counterparts, I calculate their total marginal effects in four scenarios using the Model 1 results: 1) where neither the female nor male spouse is employed in Wave 2; 2) where only the female spouse is employed; 3) where only the male spouse is employed; and 4) where both spouses are employed (Figure 3).<sup>15</sup> The marginal effects of other covariates in these four scenarios are shown in Tables A1–A4.

[Figure 3 about here]

[Tables A1–A4 about here]

In the first scenario where neither the female nor male spouse works in Wave 2, the employment of female spouses in Wave 3 raises the predicted probability of poverty exit by 43% (21 percentage points from 48.6% to 69.5%).<sup>16</sup> When either the female or male spouse is employed in Wave 2 (scenarios 2 and 3), the effect of female spouse's employment in Wave 3 increases. The total marginal effect stands at around 50% (32 percentage points from 62.6% to 94.2%) in scenario 2; 28.8 percentage points from 58.3% to 87.1% in scenario 3). Further, if both spouses are employed in Wave 2, the marginal effect of Wave 3 female employment goes up to 54% (38.3 percentage points from 71.7% to 110.2%). In short, employed immigrant women help

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<sup>15</sup> As in the standard logit model, the coefficients of the bivariate probit model allow the assessment of the direction and statistical significance of the covariates. Unlike logits, probit coefficients are not suited to the assessment of the impact of a variable because they estimate "the difference one unit increase in [...] the variable will have on the cumulative normal probability of the dependent variable, expressed in Z-scores" (Miller and Rodgers 2008:139). Given such complexity, I use marginal effects to interpret results. For details on the calculation of marginal effects, see Kaida (2013).

<sup>16</sup> As shown in Table A1, I calculate the marginal effects of all covariates, assuming that neither the female nor male spouse worked in Wave 2. Therefore, their Wave 2 weekly earnings are set at \$0. The changes in male spouses' weekly earnings from Wave 2 to 3 are based on the means for those not employed in Wave 2. The other dummy variables (e.g., city of residence in Wave 2) are set at 0; the continuous variables (e.g., age at Wave 2) are set at the sample means.

in the exit from family poverty regardless of their male spouses' employment status, but the positive effect is enhanced when either they or their male spouses were previously employed. If either the female or male spouse is building up an employment history in Canada, the employment income of the former will lift their families out of poverty more easily.

#### Ethnic Variations in the Employment of Immigrant Women and Poverty Exit

This section considers ethnic variations in the exit from poverty. First, I perform probit regression models for the European group and a non-European group (Arabs/West Asians, South Asians, East/Southeast Asians, or others) separately.<sup>17</sup> Given the groups' small sample sizes and their relatively similar cultural characteristics and outcomes, I combine Arab and West Asian groups into one group (Read 2004). Using probits, means, and proportions of the variables in the models, I then perform the Fairlie decomposition technique.<sup>18</sup>

Table 4 shows the employment of immigrant women has a positive impact on the exit from family poverty for European, South Asian, and East/Southeast Asian groups when their male spouses' employment characteristics and family characteristics are taken into account ( $p < 0.01$ ). By contrast, the employment of Arab/West Asian and other origin women has no statistically significant impact.

[Table 4 about here]

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<sup>17</sup> For the city of residence variable, Toronto, Montreal, and Vancouver are categorized into one group, as unweighted numbers of cases for some cities are too small to produce reliable estimates.

<sup>18</sup> Admittedly, there could be unobserved heterogeneity among immigrants' origin countries within each ethnic group (e.g. gender socialization, cultural norms). This may influence female spouses' employment, and should ideally be taken into account in the Fairlie decomposition models, as in the bivariate probit models discussed previously. However, there is no established consensus to correct for such selection into employment associated with unobserved heterogeneity in the Fairlie decomposition technique to date. When this methodological limitation is addressed, the results of this section could be made more robust.

Table 4 also indicates ethnic variations in demographic and socioeconomic characteristics. While East/Southeast Asian women have the highest percentage of postsecondary credentials (83%), they are least fluent in English or French (16%) (column 8). The English/French levels of Arab/West Asian and South Asian women are comparable to their European counterparts (around 35%), yet their postsecondary credential rates are somewhat lower (57% and 68% versus 71%) (columns 4 and 6). These compositional differences may contribute to the differences in poverty exit among immigrant women from different ethnic origins.

To test this possibility, I use the Fairlie technique to decompose differences in the predicted probabilities of poverty exit between the European and four non-European groups. As Table 5 shows, the predicted poverty exit rate gap between the European and Arab/West Asian groups (net of control variables) is about 39% (column 1). Over 70% of this gap can be explained by the compositional differences in observable characteristics between the two groups (column 2). When the overall effect of compositional differences on the poverty exit gap is further decomposed into the effects of compositional differences among covariates, the results show the following. The lower female employment rates of the Arab/West Asian group explain 24% of the ethnic poverty exit gap. This is greater than the effect of compositional differences in the Wave 3 employment characteristics of their male spouses (19% and one percent for changes in weekly earnings and weeks worked from Wave 2 to 3 respectively). The analysis indicates a strong association between the lower employment rates among Arab and West Asian women and their lower poverty exit rates, consistent with expectations noted in the literature review. The male breadwinner model is thus more likely to apply to this group.

[Table 5 about here]

Although the female employment gaps between South Asians and East/Southeast Asians, and Europeans are narrower (14% and 13% respectively; Table 4), the lower employment rates among these non-European groups also explain a notable portion of the differences in the exit from poverty. Thirty-one percent of the difference in the probability of poverty exit is explained by the lower employment rates of South Asian and East/Southeast Asian women (columns 4 and 6). This is a fairly large contribution, but the male breadwinner model would apply less to these groups, as their male spouses' Wave 3 employment characteristics (changes in weekly wages and weeks worked from Wave 2 to 3) make comparable contributions. These findings lead me to conclude the male breadwinner model is supported for select non-European groups, namely Arab/West Asian groups, given their notably low female employment rates and the larger impact on the lower poverty exit rates when compared to their European counterparts.

## **Conclusion**

Does the employment of recently arrived immigrant women help their families exit poverty?

Although none of the existing theories addresses this specific question, two contrasting research hypotheses focus on the economic contributions of employed women in general. When extended to immigrant women, the equal earner/female breadwinner model suggests the employment of recently arrived immigrant women makes a significant contribution to family income, while the male breadwinner model underplays their role in their family's economic well-being. My analysis of data from the Longitudinal Survey of Immigrants to Canada supports the former theory, as the employment of female spouses has, on the whole, a positive impact on the exit from family poverty at the four-year point after arrival in Canada, regardless of their male spouses' employment. However, the results also suggest the male breadwinner model is not

necessarily a thing of the past. The employment rates among immigrant women of some non-European origins are notably low; thus, the male breadwinner model applies to some sub-populations of recent arrivals. As immigrants experiencing poverty in early settlement stages are more vulnerable to persistent poverty, the lower female employment rates among low income recent immigrants and the associated lower poverty exit rates may mean that their poverty will persist for years (Picot et al. 2008).

I also find a wide ethnic variation in the employment rates of immigrant women and ethnic variations in poverty exit. The findings corroborate Read and Cohen's study (2007) of immigrant women in the U.S. in that female employment rates vary by ethnic origins. However, my finding of wider ethnic variations may be explained by the fact that the sample comprises recent immigrants in Canada for less than four years. Moreover, as the cultural explanation indicates, ethnic groups from strong patriarchal cultures may have significantly lower employment rates. Admittedly, this may change with increased time in the host country. My results suggest the lower female employment rates do not necessarily deter specific ethnic minority groups from quickly recovering from their initial economic hardships. Instead, they broadly apply to new immigrants of non-European origins. Nevertheless, the wide ethnic variations in early settlement may contribute to the persistence of stratification along ethnoracial lines (Lian and Matthews 1998). Although an examination of why these women are less likely to work is beyond the scope of the paper, the issue has social policy implications. Policy options may include removing barriers to the employment of non-European immigrant women (e.g., job training including Canadian work culture, affordable daycare for new immigrants, diversity training for employers).

Finally, while this study contributes to bridging the immigrant poverty and female immigrant employment literatures, it has implications for research on immigrant inequality in general. Its analyses of the impact of immigrant women's employment on poverty exit and the decomposition of ethnic poverty exit gaps demonstrate that the study of immigrant inequality requires attention to both ethnic and gender inequalities. It notes the high poverty concentration among non-European groups and finds possible gender inequality (e.g., lower employment rates of women, lower earnings, lower hiring rates). Although a quantitative study like this one is unable to probe the mechanisms/sources of such persistent gender/ethnic inequalities due to data limitations, it highlights the inequalities.

Despite its contributions, the present work has some limitations. For one thing, it considers the economic effect of immigrant women's employment in general. As the literature on precarious employment argues, individuals' employment arrangements can significantly influence their earnings and, as a result, their family incomes (Kalleberg 2009). A question worth addressing is whether immigrant women's various employment arrangement patterns (e.g., part-time work, self-employment, temporary work) lead to differential contributions to their family income. A Canadian study finds wide variations in immigrant women's employment arrangement by source regions and ethnic origins (Cranford and Easton 2009). Immigrant women from Southeast Asia are more likely to engage in permanent full-time employment than Canadian-born European women, whereas immigrant women from East Asia have higher propensities for self-employment. To consider such varied patterns of employment arrangements and their impacts on poverty exits, future research will require multivariate probit models, which will allow an estimate of multiple outcomes (e.g., full time work vs. part-time work vs. no work)

and permit a more accurate prediction of the chances of exiting poverty as a function of these employment arrangements (Babalola et al. 2008).

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## Tables

<b>Table 1</b> Characteristics of immigrant women age 25-54 who are living with their male spouse in Waves 1-3 and are in low income in Wave 2, by ethnic origin, Canada, 2000-2005							
	Total					East/Southeast	
	(N=876)	European <sup>a</sup>	Arab	West Asian	South Asian	Asian	Others <sup>b</sup>
Weighted Total <sup>c</sup>	17,079	1,974	1,805	1,001	3,798	7,539	960
<b>Immigrant Women's Characteristics</b>							
Employed in Wave 2 (%)	56.2	57.7	25.2	42.3	61.6	60.3	71.8
Employed in Wave 3 (%)	55.1	70.6	21.3	48.2	56.7	57.8	67.9
Weekly earnings in Wave 2 (mean)	107.2	118.0	26.5	87.3	123.4	119.3	100.0
Weekly earnings in Wave 3 (mean)	198.9	270.4	75.5	146.2	229.1	238.0	252.5
Age in Wave 2 (mean)	37.6	38.0	36.2	38.9	38.6	37.1	37.5
Level of education obtained from abroad (%)	100	100	100	100	100	100	100
Postsecondary credential	72.8	71.4	65.1	42.8	68.1	82.8	62.3
Without postsecondary credential	27.2	28.6	34.9	57.2	31.9	17.3	37.7
Obtained education after arrival in Canada (%)	28.0	28.0	25.5	22.9	18.7	31.6	41.8
Speak English/French fluently or very well in Wave 2 <sup>d</sup> (%)	28.7	32.8		38.2 <sup>e</sup>	36.5	16.3	56.4
<b>Family Characteristics</b>							
Male spouse employed in Wave 2 (%)	71.0	72.0	58.2	54.6	85.1	68.2	79.7
Male spouse employed in Wave 3 (%)	74.2	83.3	62.5	61.3	78.9	74.9	73.7
Male spouse, weekly earnings in Wave 2 (mean)	262.9	287.5	149.8	172.2	362.5	254.8	197.6
Male spouse, weekly earnings in Wave 3 (mean)	401.6	528.9	275.4	336.1	545.7	397.4	389.4
Number of children, Wave 2 (mean)	1.8	1.5	2.3	2.6	2.1	1.4	2.1
Lives in Toronto, Montreal, and Vancouver in Wave 2 (%)	78.5	68.8	75.2	78.2	79.2	83.1	65.4
<sup>a</sup> Includes: British, French, Western European, Northern European, Eastern European, and Southern European.							
<sup>b</sup> Includes: African, Pacific Islands, Latin, Central and South American, Caribbean, and multiple origins.							
<sup>c</sup> Weighted sample sizes of the six ethnic groups do not add up to the total sample size (17,079) due to rounding errors.							
<sup>d</sup> Refers to French speaking skills for Quebec residents and English speaking skills for residents in the rest of Canada.							
<sup>e</sup> Refers to the % distribution for the combined Arab and West Asian group due to small cell sizes.							

**Table 2** Characteristics of immigrant women age 25–54 who are living with their male spouse in Waves 1–3 and are in low income in Wave 2, Canada, 2000–2005

	% Poverty Exit, Wave 3
<b>Immigrant Women's Characteristics</b>	
Employed in Wave 3	
Yes	62.7
No	29.4
Ethnic origin	
European <sup>a</sup>	63.2
Arab	21.6
West Asian	27.8
South Asian	49.5
East/Southeast Asian	52.5
Others <sup>b</sup>	41.4
<b>Male Spouses' Characteristics</b>	
Employed in Wave 3	
Yes	56.6
No	22.5
<sup>a</sup> Includes: British, French, Western European, Northern European, Eastern European, and Southern European.	
<sup>b</sup> Includes: African, Pacific Islands, Latin, Central and South American, Caribbean, Aboriginal, and multiple origins.	

**Table 3** Bivariate probit estimates of female employment and exit from poverty in Wave 3, low income female immigrants age 25-54 living with male spouses in Waves 1-3, Canada, 2000-2005

	Model 1		Model 2	
	Female Emp	Poverty Exit	Female Emp	Poverty Exit
Immigrant woman, employed in Wave 3 (ref.=not employed)		1.413 ***		0.991 ***
Immigrant woman, change in weekly wages, Wave 2 to 3				0.002 ***
Immigrant woman, change in weeks worked, Wave 2 to 3				0.004
Immigrant Women's Other Characteristics				
Age in Wave 2	0.014	0.003	0.014	0.005
Obtained postsecondary credential from abroad (ref.=did not)	0.295 *	-0.010	0.302 *	-0.055
Spoke English/French fluently, very well, Wave 2 <sup>a</sup> (ref.=spoke fairly well, well, poorly, or none at all)				
Obtained education after arrival in Canada (ref.=no)	0.399 **		0.384 ***	
Employed in Wave 2 (ref.=no)	1.292 ***		1.305 ***	
Weekly wages in Waves 2		0.000		0.001 *
Ethnic origin (ref.=European <sup>b</sup> )				
Arab	-1.096 ***	-0.162	-1.090 ***	-0.063
West Asian	-0.386	-0.439 *	-0.390	-0.356
South Asian	-0.512 **	-0.135	-0.523 **	-0.077
East/Southeast Asian	-0.440 *	0.016	-0.449 *	0.059
Others <sup>c</sup>	-0.306	-0.298	-0.296	-0.263
Family Characteristics				
Male spouse, weekly wages in Wave 2		0.002 ***		0.002 ***
Male spouse, change in weekly wages, Wave 2 to 3		0.001 ***		0.001 ***
Male spouse, change in weeks worked, Wave 2 to 3		0.005		0.005 *
Male spouse employed, Wave 2 (ref.=not employed)	-0.115		-0.107	
Number of children, Wave 2	0.014	-0.109 *	0.016	-0.085
Non-earned income, Wave 2 (in \$1,000)	-0.007		-0.007	
City of residence in Wave 2 (ref.=Toronto)				
Montreal	-0.167	-0.103	-0.161	-0.108
Vancouver	-0.122	0.000	-0.125	-0.001
Other Central Metropolitan Areas (CMAs)	0.163	0.111	0.160	0.075
Non-CMAs	0.050	-0.124	0.017	-0.023
Intercept	-0.895 *	-1.284 **	-0.883 *	-1.392 **
rho	-0.524 **		-0.691 ***	
Log likelihood	-912.5		-893.5	

<sup>a</sup>Refers to French and English speaking skills for Quebec residents and those in the rest of Canada respectively.

<sup>b</sup>Includes: British, French, Western European, Northern European, Eastern European, and Southern European.

<sup>c</sup>Includes: African, Pacific Islands, Latin, Central and South American, Caribbean, Aboriginal, and multiple origins.

\*<0.05; \*\*p<0.01; \*\*\*p<0.001.

<b>Table 4</b> Probit estimates of exit from poverty in Wave 3 for European, Arab & West Asian, South Asian, East/Southeast Asian, and other ethnic origin groups, age 25-54, Canada, 2000-2005												
Independent Variable	European <sup>a</sup>		Arab & West Asian		South Asian		East/Southeast Asian		Others <sup>b</sup>			
	Probit	Prop./	Probit	Prop./	Probit	Prop./	Probit	Prop./	Probit	Prop./		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		
Immigrant woman, employed in Wave 3 (ref.=not employed)	1.204 **	0.706	0.591	0.309	0.861 **	0.5673	0.709 ***	0.5783	1.485	0.6785		
Control Variables												
Immigrant woman's age, Wave 2	-0.017	38.022	0.067 *	37.144	0.023	38.585	-0.010	37.078	0.003	37.549		
Immigrant woman holds postsecondary credential from abroad (ref.=no)	0.442	0.714	-0.434	0.571	-0.338	0.681	0.313 **	0.828	-0.238	0.623		
Immigrant woman, spoke English/French fluently, very well in Wave 2 <sup>c</sup> (ref.=spoke fairly well, well, poorly, or none at all)	-0.154	0.328	0.721	0.382	0.327	0.365	0.178	0.163	-0.177	0.564		
Weekly wages, Wave 2	-0.002 *	118.0	0.002	48.2	0.000	123.4	0.001	119.3	0.001	100.0		
Male spouse, weekly wages, Wave 2	0.002	287.5	0.006	157.8	0.001	362.5	0.002 ***	254.8	0.002	197.6		
Male spouse, change in weekly wages from Wave 2 to 3	0.002 **	206.5	0.003	119.6	0.000	147.2	0.002 ***	116.4	0.002	166.1		
Male spouse, change in weeks worked from Wave 2 to 3	0.007	8.9	0.035	7.8	0.006	2.9	0.003	7.6	-0.002	4.3		
Number of children, Wave 2	-0.229	1.465	-0.134	2.389	-0.103	2.061	-0.246 *	1.420	-0.090	2.082		
Lived in Toronto, Montreal, or Vancouver, Wave 2 (ref.=lived outside MTV)	0.801	0.688	0.991	0.763	0.342	0.792	-0.131	0.831	0.216	0.654		
Intercept	-0.709		-5.629		-1.547		-0.740		-1.797			
Log pseudolikelihood	-65.2		-44.0		-93.7		-160.4		-32.7			
<sup>a</sup> Refers to French speaking skills for Quebec residents and English speaking skills for residents in the rest of Canada.												
<sup>b</sup> Includes: British, French, Western European, Northern European, Eastern European, and Southern European.												
<sup>c</sup> Includes: African, Pacific Islands, Latin, Central and South American, Caribbean, Aboriginal, and multiple origins.												
* < 0.05; ** p < 0.01; *** p < 0.001.												

**Table 5** Decompositions of ethnic origin gaps in poverty exit rates, for low income immigrant women age 25-54 living with their male spouse in Waves 1-3

European vs.	Arab & West Asian		South Asian		East/Southeast Asian		Others	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Predicted poverty exit rate for Europeans	0.632		0.632		0.632		0.632	
Predicted poverty exit rate for comparison group	0.238		0.495		0.525		0.414	
European-comparison group gap	0.394		0.137		0.107		0.218	
Contributions from Ethnic Differences in:		%		%		%		%
Immigrant woman's employment status, Wave 3	0.095	24.1	0.043	30.9	0.034	31.3	0.019	8.9
Immigrant woman, weekly wages in Wave 2	-0.014	-3.5	0.002	1.3	0.001	0.7	-0.010	-4.5
Immigrant woman's age, Wave 2	0.003	0.9	-0.005	-3.4	-0.002	-2.1	0.000	-0.1
Immigrant woman's education from abroad	0.001	5.1	-0.001	13.3	-0.008	-4.8	0.017	7.6
Immigrant woman's English/French skills	-0.003	0.2	-0.003	-1.0	0.004	-7.5	0.002	1.1
Number of children, Wave 2	0.020	-0.7	0.018	-2.0	-0.005	3.5	0.007	3.0
City of residence, Wave 2	0.006	1.5	0.009	6.3	0.004	3.4	0.000	0.0
Male spouse, weekly wages in Wave 2	0.091	23.0	-0.022	-16.0	0.022	20.9	0.048	22.2
Male spouse, change in weekly wages, Wave 2 to 3	0.075	19.1	0.033	24.2	0.038	35.7	0.054	24.8
Male spouse, change in weeks worked, Wave 2 to 3	0.003	0.8	0.009	6.6	0.001	0.9	0.002	0.7
All Included Variables	0.278	70.5	0.083	60.1	0.088	82.1	0.139	63.8

Note: Calculation is based on probit and proportional distribution/means in Table 4.

## Appendices (electronic supplementary materials)

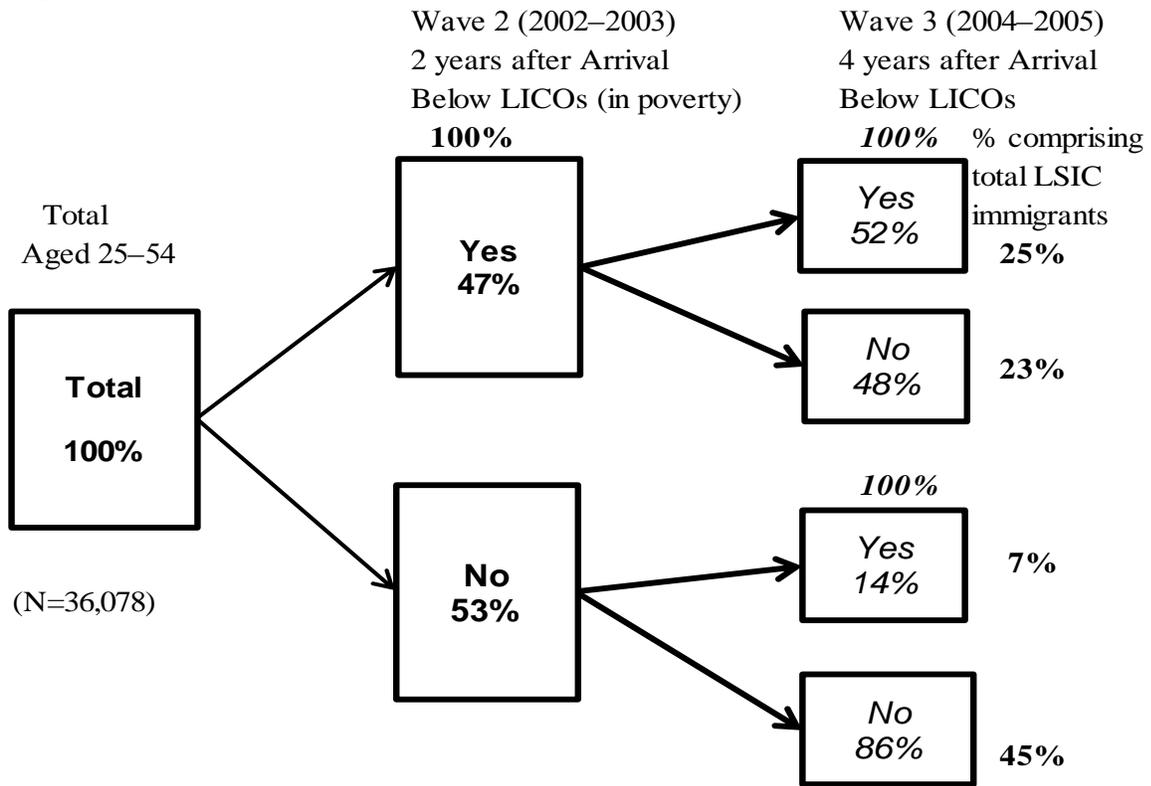
Table A1 Marginal effects of covariates on the probability of exit from poverty in Wave 3 using bivariate probit model <sup>a</sup> , Canada, 2000-2005					
	Reference	Direct Effect	Indirect Effect	Total Effect	% Change
Endogenous Variable					
		when $y_2=1$	$y_2=0$		
Immigrant women, employed in Wave 3 (ref.=did not work)	1	0.617	-0.187	0.430	43.0
Continuous Variables					
Immigrant woman's age, Wave 2	37.9	0.001	0.002	0.004	0.4
Number of children , Wave 2	1.9	-0.047	0.002	-0.045	-4.5
Non-earned income in Wave 2 (in \$1,000)	8.5	0	-0.001	-0.001	-0.1
Immigrant woman, weekly wages in Waves 2	0.0	0.000	0	0.000	0.0
Male spouse, weekly wages in Wave 2	0.0	0.001	0	0.001	0.1
Male spouse, change in weekly wages from Wave 2 to 3	286.4	0.001	0	0.001	0.1
Male spouse, change in weeks worked from Wave 2 to 3	16.4	0.002	0	0.002	0.2
Binary Variables					
		when $x=0$	when $x=1$		
Immigrant Women's Characteristics					
Obtained postsecondary credential from abroad (ref.=did not)	0	-0.004	0.045	0.039	3.9
Spoke English/French fluently, very well in Wave 2 <sup>b</sup> (ref.=spoke fairly well, well, poorly, or none at all)	0	0.013	0.032	0.043	4.3
Obtained education after arrival in Canada (ref.=no)	0	0	0.060	0.060	6.0
Employed in Wave 2 (ref.=no)	0	0	0.196	0.196	19.6
Ethnic origin (ref.=European <sup>c</sup> )					
Arab	0	-0.071	-0.166	-0.239	-23.9
West Asian	0	-0.192	-0.058	-0.236	-23.6
South Asian	0	-0.059	-0.078	-0.138	-13.8
East/Southeast Asian	0	0.007	-0.067	-0.063	-6.3
Others <sup>d</sup>	0	-0.130	-0.046	-0.172	-17.2
Family Characteristics					
Male spouse employed in Wave 2 (ref.=not employed)	0	0.000	-0.017	-0.017	-1.7
City of residence in Wave 2 (ref.=Toronto)					
Montreal	0	-0.045	-0.025	-0.071	-7.1
Vancouver	0	0.000	-0.018	-0.019	-1.9
Other Central Metropolitan Areas (CMAs)	0	0.049	0.025	0.072	7.2
Non-CMAs	0	-0.054	0.008	-0.046	-4.6
Predicted probability of exit from poverty in Wave 3 at the reference point (P(1,1))=					0.486
<sup>a</sup> Calculation based on probits in Model 1, Table 3.					
<sup>b</sup> Refers to French speaking skills for Quebec residents and English speaking skills for residents in the rest of Canada.					
<sup>c</sup> Includes: British, French, Western European, Northern European, Eastern European, and Southern European.					
<sup>d</sup> Includes: African, Pacific Islands, Latin, Central and South American, Caribbean, multiple origins.					

<b>Table A2</b> Marginal effects of covariates on the probability of exit from poverty in Wave 3 using bivariate probit model <sup>a</sup> , Canada, 2000-2005					
	Reference	Direct Effect	Indirect Effect	Total Effect	% Change
<b>Endogenous Variable</b>		when $y_2=1$	$y_2=0$		
Immigrant women, employed in Wave 3 (ref.=did not work)	1	0.560	-0.055	0.505	50.5
<b>Continuous Variables</b>					
Immigrant woman's age, Wave 2	37.9	0.001	0.001	0.002	0.2
Number of children , Wave 2	1.9	-0.043	0.001	-0.042	-4.2
Non-earned income in Wave 2 (in \$1,000)	8.5	0	0.000	0.000	0.0
Immigrant woman, weekly wages in Waves 2	190.8	0.000	0	0.000	0.0
Male spouse, weekly wages in Wave 2	0	0.001	0	0.001	0.1
Male spouse, change in weekly wages from Wave 2 to 3	286.4	0.000	0	0.000	0.0
Male spouse, change in weeks worked from Wave 2 to 3	16.4	0.002	0	0.002	0.2
<b>Binary Variables</b>					
		when $x=0$	when $x=1$		
<b>Immigrant Women's Characteristics</b>					
Obtained postsecondary credential from abroad (ref.=did not)	0	-0.004	0.021	0.015	1.5
Spoke English/French fluently, very well in Wave 2 <sup>b</sup> (ref.=spoke fairly well, well, poorly, or none at all)	0	0.011	0.015	0.025	2.5
Obtained education after arrival in Canada (ref.=no)	0	0	0.029	0.029	2.9
Employed in Wave 2 (ref.=no)	1	0	0.093	0.093	9.3
<b>Ethnic origin (ref.=European<sup>c</sup>)</b>					
Arab	0	-0.064	-0.078	-0.189	-18.9
West Asian	0	-0.174	-0.028	-0.218	-21.8
South Asian	0	-0.053	-0.037	-0.103	-10.3
East/Southeast Asian	0	0.006	-0.032	-0.032	-3.2
Others <sup>d</sup>	0	-0.118	-0.022	-0.150	-15.0
<b>Family Characteristics</b>					
Male spouse employed in Wave 2 (ref.=not employed)	0	0	-0.008	-0.008	-0.8
<b>City of residence in Wave 2 (ref.=Toronto)</b>					
Montreal	0	-0.041	-0.012	-0.055	-5.5
Vancouver	0	0.000	-0.009	-0.009	-0.9
Other Central Metropolitan Areas (CMAs)	0	0.044	0.012	0.053	5.3
Non-CMAs	0	-0.049	0.004	-0.046	-4.6
Predicted probability of exit from poverty in Wave 3 at the reference point (P(1,1))=					0.626
<sup>a</sup> Calculation based on probits in Model 1, Table 3.					
<sup>b</sup> Refers to French speaking skills for Quebec residents and English speaking skills for residents in the rest of Canada.					
<sup>c</sup> Includes: British, French, Western European, Northern European, Eastern European, and Southern European.					
<sup>d</sup> Includes: African, Pacific Islands, Latin, Central and South American, Caribbean, multiple origins.					

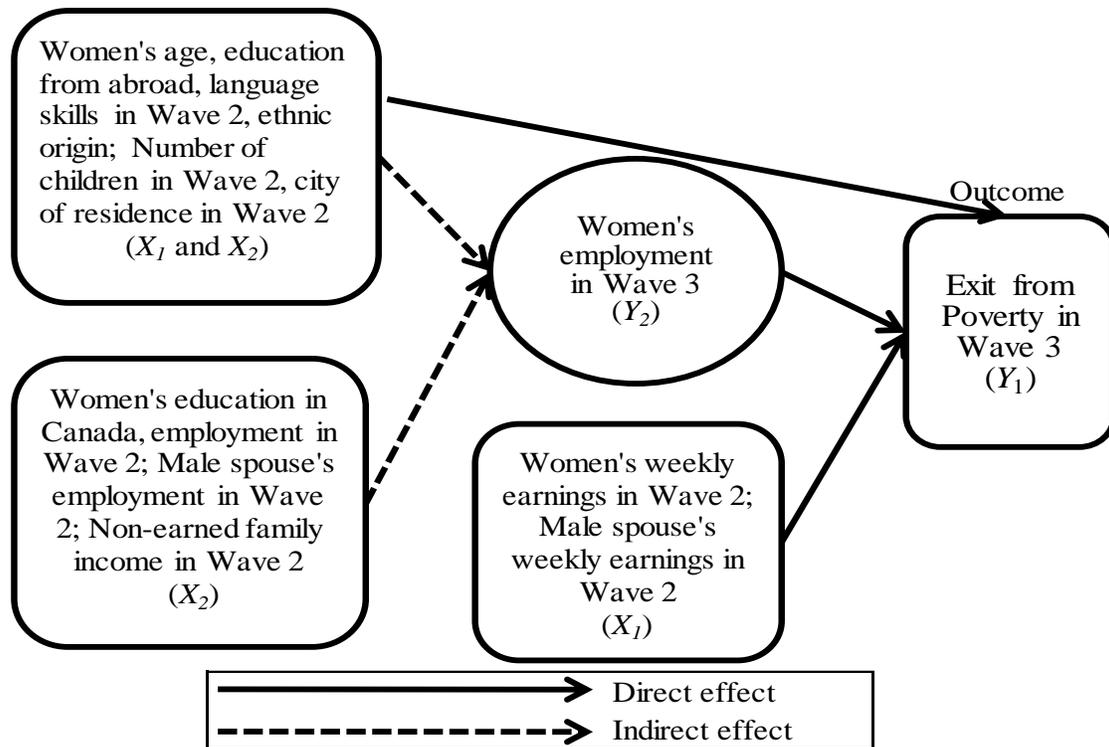
<b>Table A3</b> Marginal effects of covariates on the probability of exit from poverty in Wave 3 using bivariate probit model <sup>a</sup> , Canada, 2000-2005					
	Reference	Direct Effect	Indirect Effect	Total Effect	% Change
<b>Endogenous Variable</b>					
Immigrant women, employed in Wave 3 (ref.=did not work)	1	0.605	-0.111	0.494	49.4
<b>Continuous Variables</b>					
Immigrant woman's age, Wave 2	37.9	0.001	0.002	0.003	0.3
Number of children , Wave 2	1.9	-0.046	0.002	-0.044	-4.4
Non-earned income in Wave 2 (in \$1,000)	8.5	0	-0.001	-0.001	-0.1
Immigrant woman, weekly wages in Waves 2	0	0.000	0	0.000	0.0
Male spouse, weekly wages in Wave 2	370.4	0.001	0	0.001	0.1
Male spouse, change in weekly wages from Wave 2 to 3	74.2	0.001	0	0.001	0.1
Male spouse, change in weeks worked from Wave 2 to 3	2.5	0.002	0	0.002	0.2
<b>Binary Variables</b>					
<b>Immigrant Women's Characteristics</b>					
Obtained postsecondary credential from abroad (ref.=did not)	0	-0.004	0.044	0.038	3.8
Spoke English/French fluently, very well in Wave 2 <sup>b</sup> (ref.=spoke fairly well, well, poorly, or none at all)	0	0.012	0.032	0.042	4.2
Obtained education after arrival in Canada (ref.=no)	0	0	0.060	0.060	6.0
Employed in Wave 2 (ref.=no)	0	0	0.194	0.194	19.4
<b>Ethnic origin (ref.=European<sup>c</sup>)</b>					
Arab	0	-0.069	-0.164	-0.254	-25.4
West Asian	0	-0.188	-0.058	-0.250	-25.0
South Asian	0	-0.058	-0.077	-0.142	-14.2
East/Southeast Asian	0	0.007	-0.066	-0.063	-6.3
Others <sup>d</sup>	0	-0.128	-0.046	-0.179	-17.9
<b>Family Characteristics</b>					
Male spouse employed in Wave 2 (ref.=not employed)	1	0	-0.017	-0.017	-1.7
<b>City of residence in Wave 2 (ref.=Toronto)</b>					
Montreal	0	-0.044	-0.025	-0.071	-7.1
Vancouver	0	0.000	-0.018	-0.019	-1.9
Other Central Metropolitan Areas (CMAs)	0	0.048	0.024	0.069	6.9
Non-CMAs	0	-0.053	0.008	-0.046	-4.6
<b>Predicted probability of exit from poverty in Wave 3 at the reference point (P(1,1))=</b>					<b>0.583</b>
<sup>a</sup> Calculation based on probits in Model 1, Table 3.					
<sup>b</sup> Refers to French speaking skills for Quebec residents and English speaking skills for residents in the rest of Canada.					
<sup>c</sup> Includes: British, French, Western European, Northern European, Eastern European, and Southern European.					
<sup>d</sup> Includes: African, Pacific Islands, Latin, Central and South American, Caribbean, multiple origins.					

<b>Table A4</b> Marginal effects of covariates on the probability of exit from poverty in Wave 3 using bivariate probit model <sup>a</sup> , Canada, 2000-2005					
	Reference	Direct Effect	Indirect Effect	Total Effect	% Change
<b>Endogenous Variable</b>					
Immigrant women, employed in Wave 3 (ref.=did not work)	1	0.501	0.037	0.538	53.8
<b>Continuous Variables</b>					
Immigrant woman's age, Wave 2	37.9	0.001	0.001	0.002	0.2
Number of children , Wave 2	1.9	-0.038	0.001	-0.038	-3.8
Non-earned income in Wave 2 (in \$1,000)	8.5	0	0.000	0.000	0.0
Immigrant woman, weekly wages in Waves 2	190.8	0.000	0	0.000	0.0
Male spouse, weekly wages in Wave 2	370.4	0.001	0	0.001	0.1
Male spouse, change in weekly wages from Wave 2 to 3	74.2	0.000	0	0.000	0.0
Male spouse, change in weeks worked from Wave 2 to 3	2.5	0.002	0	0.002	0.2
<b>Binary Variables</b>					
<b>Immigrant Women's Characteristics</b>					
Obtained postsecondary credential from abroad (ref.=did not)	0	-0.003	0.020	0.014	1.4
Spoke English/French fluently, very well in Wave 2 <sup>b</sup> (ref.=spoke fairly well, well, poorly, or none at all)	0	0.010	0.014	0.023	2.3
Obtained education after arrival in Canada (ref.=no)	0	0	0.027	0.027	2.7
Employed in Wave 2 (ref.=no)	1	0	0.086	0.086	8.6
<b>Ethnic origin (ref.=European<sup>c</sup>)</b>					
Arab	0	-0.057	-0.073	-0.183	-18.3
West Asian	0	-0.156	-0.026	-0.210	-21.0
South Asian	0	-0.048	-0.034	-0.096	-9.6
East/Southeast Asian	0	0.006	-0.029	-0.030	-3.0
Others <sup>d</sup>	0	-0.106	-0.020	-0.142	-14.2
<b>Family Characteristics</b>					
Male spouse employed in Wave 2 (ref.=not employed)	1	0	-0.008	-0.008	-0.8
<b>City of residence in Wave 2 (ref.=Toronto)</b>					
Montreal	0	-0.037	-0.011	-0.051	-5.1
Vancouver	0	0.000	-0.008	-0.009	-0.9
Other Central Metropolitan Areas (CMAs)	0	0.039	0.011	0.047	4.7
Non-CMAs	0	-0.044	0.003	-0.042	-4.2
Predicted probability of exit from poverty in Wave 3 at the reference point (P(1,1))=					0.717
<sup>a</sup> Calculation based on probits in Model 1, Table 3.					
<sup>b</sup> Refers to French speaking skills for Quebec residents and English speaking skills for residents in the rest of Canada.					
<sup>c</sup> Includes: British, French, Western European, Northern European, Eastern European, and Southern European.					
<sup>d</sup> Includes: African, Pacific Islands, Latin, Central and South American, Caribbean, multiple origins.					

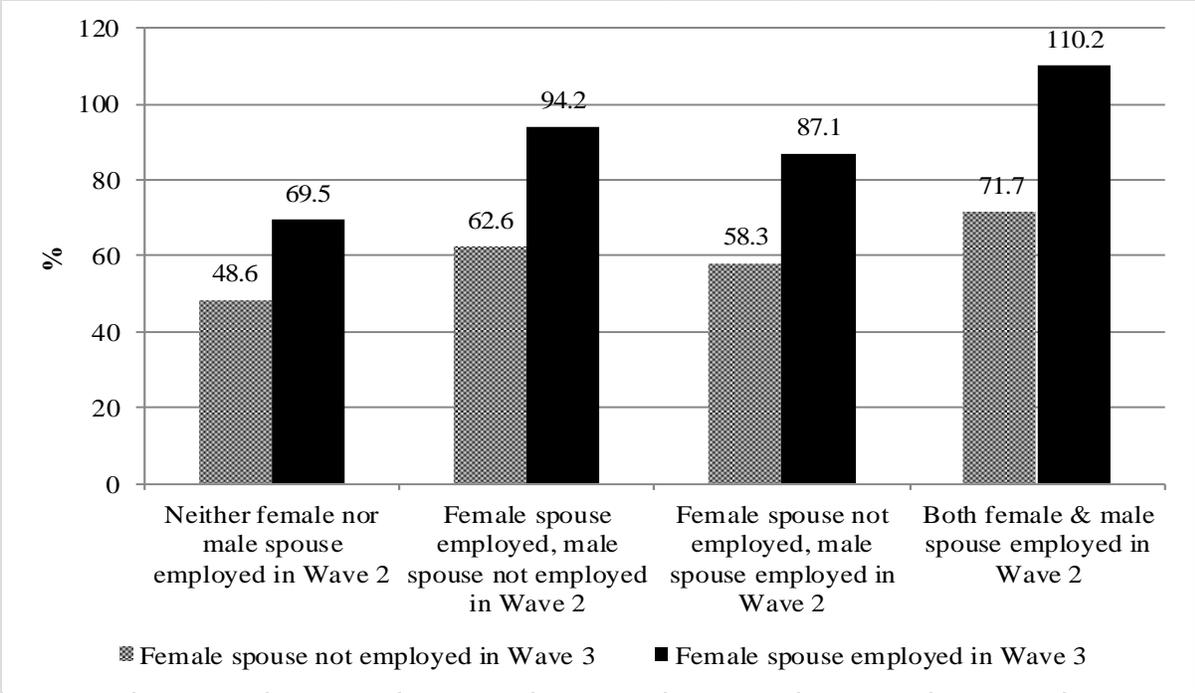
**Figures**



**Fig. 1** Transition into/out of low income between Waves 2 and 3, female immigrant spouses, age 25-54, Canada, 2002-2005



**Fig. 2** Relationships between direct and indirect marginal effects



**Fig. 3** Marginal effects of female employment on the probability of exit from poverty in Wave 3, by female and male spouses' employment in Wave 2, Canada, 2000-2005