

# **MOTIVATIONS TO PARTICIPATE IN CANADA'S SEASONAL AGRICULTURAL WORKERS PROGRAM: AN EMPIRICAL ANALYSIS**

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## **RESUMEN**

Based on a principal component analysis, this study argues that the main reasons to participate in Canada's Seasonal Agricultural Workers Program (CSAWP) are economic, such as wage improvements, having a job contract and a paid job in Canada. In addition social and human capital reasons heavily load on the components. The analysis concludes that Mexican workers participate in CSAWP not because they would like to stay in Canada, they prefer to live in Mexico, but the economic conditions in Mexico do not offer paid jobs and certainty in the labour market. For Mexican workers the wage differential is an important reason to migrate to Canada. Legal immigration makes them feel confident and free working in Canada in comparison with other immigration alternatives.

Keywords: motivations to migrate, principal component analysis, seemingly unrelated regression.

## **INTRODUCTION**

In many parts of the world, the number of poor people in rural areas exceeds the capacity of agriculture and the rural economy to provide or offer sustainable livelihood opportunities. Off-

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farm<sup>3</sup> activities were seen as an escape from lack of agricultural employment demand and for many this means out migration. Thus some research focuses on out migration<sup>4</sup> as a potential vehicle for poverty reduction in rural areas (Reardon *et al* 1992, Davis and Pearce, 2001, Guang and Zheng, 2005). One alternative Mexican workers have used for many years to supplement their farm income is participating in guest worker programs. Thus, it is crucial to understand the reasons that they continue making this decision even today.

The main objective of this paper is to identify the reasons why Mexican agricultural workers decide to participate in the Canadian Seasonal Agricultural Workers Program (CSAWP), as a special case of off-farm activities, and immigrate temporarily to Canada to work in the fruit, vegetable and horticulture (FVH) sector. In addition, once the motivations to participate in the program are identified, multiple regressions are used to determine how socioeconomic characteristics of the program participants affect their motivations to participate. A survey of 257 Mexican agricultural workers in Southern Ontario was conducted in 2006 in order to determine who and why they are attracted to the program. The survey includes individual and household characteristics, including the region of Mexico, education, age, number of economic dependents, if they own agricultural land, type of job performed in Mexico and their motivations for participating.

The number of Mexican agricultural workers migrating to Canada through the CSAWP has increased every year. In 1974, when Mexico first entered the Program, 203 men participated; by 2010, the number reached 16, 536 workers (Ministry of Labour and Social Welfare (MLSW) in Mexico, 2012). Hence, the survey, conducted in 2006, had multiple objectives; one of which was

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<sup>3</sup> The term off-farm income refers to all the money earned undertaking all those activities not on their own farm. In other words:  $OFFI = NFI + FW + ME$ , where,  $OFFI$ =off-farm income;  $NFI$ = non-farm income;  $FW$ = Farm wages (outside the own farm);  $ME$ = migration earnings.

<sup>4</sup> The concept of immigration in this case should not be understood as a permanent move but a temporary one according to the immigration laws and conditions allowed by the CSAWP. Workers participating in the program are authorized to remain in Canada for a period not exceeding eight months.

to know how and why the participants decided to participate in the program and therefore, immigrate for one or more<sup>5</sup> agricultural seasons to Canada. A second objective was to estimate the value of the remittances they send back to their families in Mexico and the economic multiplier effects they have in their communities. In this article we will focus only in the first objective.

This paper has five additional sections. The second section summarizes the previous studies on migration and with emphasis on motivations to migrate for the case of Mexico. The third section summarizes the characteristics of the program and reports on the socioeconomic characteristics of the Mexican migrants, based on the survey information. The fourth section compiles the motivations of Mexican migrant agricultural workers in the sample to participate in the CSAWP. The fifth section reports the results of the factor and cluster analyses to determine the importance of those reasons as well as the relationship between each set of motivations and the individual and household characteristics. The final section presents our conclusions.

## **2. PREVIOUS STUDIES ON MEXICAN MOTIVATIONS TO MIGRATE**

Most studies have found that the major factors influencing Mexican emigration are focussed on three issues that contribute to the migrants' utility. The first is related to income, i.e., to increase absolute and/or relative income. The second is associated with changes in utility connected with an individual's safety needs. The third is networks that earlier migrants have built in the destination place. The latter issue could be seen more as a means to an end rather than a factor changing the migrant's utility. Without a network, however, not only would the decision to emigrate be more difficult to make, but also the monetary and psychic costs of emigration would be higher; thus having a network affects the migrant's utility.

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<sup>5</sup> Workers participating in the CSAWP may return over a number of seasons, however no residency rights accrue.

On the other hand, it may be the case that some of the factors do not determine the migrate/do-not-migrate choice but rather the duration of migration. For workers who already have a contract for a certain period of time, the migration will be on a temporary basis. For example, Mexican workers participating in CSAWP are not allowed to settle permanently in Canada because of the rules of the program.

## **2.1 Motivations to increase absolute or relative income**

Stark and Taylor (1989, p.1165) hypothesize that “household members undertake migration not necessarily to increase the household’s absolute income but rather to improve the household’s position (in terms of relative deprivation) with respect to a specific reference group.” Escobar-Latapí (1999) argues that Mexican migration to the US is motivated mainly by the higher probability<sup>6</sup> of finding a job compared to Mexico and a higher expected income in the US than in urban areas in Mexico.

## **2.2 Migration based on economic security needs**

One means by which people displaced from traditional jobs seek to ensure their economic well-being is by selling their services overseas. However, higher foreign wages are not the only factor motivating people to emigrate. Households struggling to cope with the structural transformations of economic development also use international immigration as a means of overcoming frequent failures in markets for labour, insurance, capital and credit. The absence of unemployment insurance in developing nations creates an incentive for families to self-insure by sending one or more members overseas for work (Massey *et al.*, 2002). Health insurance and other social benefits will depend on the type of migration (temporary or permanent; legal or illegal). If migration is temporary and illegal, neither the individual nor the family are entitled to have health

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<sup>6</sup> Massey (1999) argues that “such movement occurs even when the probability of obtaining an urban job is low, because when multiplied by high urban wages the low employment probabilities yield expected incomes well above those in rural areas, where wages and employment are both low” (p. 304).

services in the destination country, while permanent and legal migration brings these benefits (Roberts *et al.*, 1999). Therefore, economic security issues affect the migrate/do-not-migrate choice but the duration of migration will depend on other factors such as the legal status.

### **2.3 Network migration**

Network migration between Mexico and the US represents a strong tie among migrants settled in US. These ties have become stronger since 1986 because of immigration policy changes by the Immigration Reform and Control Act (IRCA), which allowed legalized immigrants to sponsor family members to join them. Once the volume of network migration from a particular area of origin starts playing an important role, the cost of emigration may be lowered so that migration becomes self-perpetuating, creating the social structure needed to sustain it. People left behind are induced to emigrate because their networks make the migration path easier than before and they, in turn, are able to reduce the costs and risks for a new set, encouraging some of their family members and/or friends to migrate, and so on (Massey, 1987; Massey and Garcia España, 1987). Building a network for migration abroad is more common among people coming from small towns than from big cities. Robert *et al.* (1999) found that Mexican immigrants in Austin, Texas, from small rural areas (for example San Gregorio, State of Mexico) have more connections than highly skilled workers coming from Mexico City. In big cities, there is more heterogeneity, while in small rural areas; people's characteristics are more homogeneous in terms of income and knowledge/skills and they tend to know each other.

### **3. CANADIAN SEASONAL AGRICULTURAL WORKERS PROGRAM (CSAWP)**

CSAWP is a demand-based program, as it responds only to employer labour demand. This implies that the Program would not exist if there were no demand for foreign labour made by Canadian farmers. Through this program both Canada and Mexico, seek to improve the

economic welfare of the migrant workers by providing them with temporary full-time employment in the fruit, vegetables and horticulture industry at relatively higher wages than they could obtain from similar jobs in Mexico. With the earnings in Canada, migrants can enhance their standard of living and that of the family they left behind (MLSW, 2007). For Canada, the main objective of CSAWP is to satisfy the increasing demand for agricultural labour during times when the domestic supply is not sufficient and/or unreliable, especially during peak times. It is suggested that the Program can also help to maintain Canada's economic prosperity and global agricultural trade competitiveness and therefore can expand job prospects for Canadian citizens in sectors that depend on agriculture and other related activities (Preibisch, 2007).

### **3.1 Background of migrants in the sample**

Although the Program is now open to all Mexican farm workers, the central Mexican states are still the major source of immigrant workers. Together the states of Mexico (23.4%), Tlaxcala (12.8%), Puebla (12.8%), Guanajuato (8.6%), Hidalgo (6.6%) and Morelos (5.8%) contributed almost 66 percent of the total participants (MLSW, 2005). In the sample, the same six states contributed 70 percent (*Table 3*). The bulk of the respondents are between 30 and 39 years old; the youngest is 24 years old (*Table 1*). The low number of respondents in their twenties might be explained by the requirements that participants must be married or in a common-law relationship and have dependent children<sup>7</sup> (97 percent of the respondents were either married or lived in a common-law relationship). On average, the respondents have three to four children, who range in age from one month to 35 years old. From the total sample, 98.4 percent were male and only 1.6 percent were female<sup>8</sup>. Male respondents in the sample stated their spouses are economically dependent on them. The four women in the sample had children and parents (who are in charge of the children when they are in Canada) who depend on them. Sixty-six percent

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<sup>7</sup> In the case of single people, they have to prove they have economically dependent relatives. There were no single men in the sample.

<sup>8</sup> As noted above, women are about three percent of total participants.

of the respondents had completed six years of school (elementary and secondary). The average schooling of the respondents is eight years, with 47 percent of the respondents holding this level of achievement. In addition, 30.4 percent of respondents had completed high school, and 2.7 percent had completed at least the first year of a technical school or university.

Roughly 36 percent of the respondents had some knowledge of English, either written or spoken. This variable was measured by asking whether they could understand when their employer or someone in a store or on the street speaks to them. In addition, they were asked if they could read English newspapers, for example, or other printed information. Some of the respondents interviewed in Simcoe, Ontario, answered that they have taken some English classes in the Support Centre.

**Table 1 Selected individual characteristics, 2006**

<b>Characteristic</b>	<b>Number of respondents</b>	<b>Percentage</b>	<b>Mean</b>
<b>Sex</b>			
Males	253	98.4	
Females	4	1.6	
<b>Place of origin</b>			
REG1: North-East and West	25	9.7	
REG2: Centre/Metropolitan area & East-Centre & Gulf	211	82.1	
REG3: South & Southeast	21	8.2	
<b>Age</b>			
20-29	27	10.5	38.5
30-39	119	46.3	
40-49	91	35.4	
50 and over	20	7.8	
<b>Years of schooling*</b>			
Elementary school	120	46.7	7.9
Secondary school	50	19.5	
High school & Professional (Univ. or Technical Inst.)	87	33.1	
<b>English skills</b>			
Read basic Yes=1	92	35.8	
Speak basic Yes=1	94	36.6	

\*In Mexico, education is divided into three levels: elementary school (6 years), secondary school (3 years) and high school (3 years).

Most of the respondents (78%) were engaged in agriculture in Mexico, followed by construction (29%) and commerce (13%), mainly selling products in local markets (*Table 2*). Note that the

total share adds to over 100 percent because some respondents engage in more than one activity.

Eighteen percent of the respondents had worked in the US; but only 3.5 percent had gone to the US with a work permit:

“Once I went to the US, but only to see how is there; because a lot of people from my city went to the US and when they come back they tell us a lot of good stories and that you can make a lot of money and live better than in Mexico (pause)..., but I realized that, yeah you can earn good money, but you spend a lot too, and at the end of the day you have little money and I could not send money to my mother. That time I was single.” (male, 32 years old)

**Table 2 Additional selected individual characteristics, 2006**

Characteristic	Number of respondents	Percentage	Mean
<b>Occupation in Mexico*</b>			
Agriculture	202	78.6	
Construction	29	11.3	
Commerce	13	5.1	
Industry/Manufacturing	6	3.2	
Others	7	2.7	
<b>Years of migrating to Canada</b>		257	
Average			7.8
Less than 5 seasons	59	23.0	
From 5 to 10 seasons	123	47.9	
More than 10 seasons	75	29.1	
<b>US experience</b>		18.0	
Yes	46		
With work permit	9		

- Note that the total share does not add up to 100 percent because workers may perform more than one activity.

The average age of the respondents' spouses was 35 years old (*Table 3*). Most spouses had only an elementary level of schooling. The respondents listed the principal occupation of spouses as taking care of the house and the children (96%). But 65 percent of the respondents had a farm and their spouse generally also did the agricultural work while the respondent was

working in Canada. Some spouses worked outside the house as domestics, nurses, teachers or in commerce activities.

**Table 3 Selected household characteristics of migrants to Canada:  
 Spousal age and education, 2006**

Characteristic	Number of Respondents	Percentage	Mean
Spouse	253		
Age			35.2
16 – 29	68	26.9	
30 – 39	120	47.4	
40 and over	65	25.7	
Female	4	1.58	
Education	254		
Average			6.8
Elementary school	161	63.6	
Secondary school	59	23.3	
High school	20	7.9	
Professional (Univ. or Technical Inst.)	7	2.8	

Most respondents have children who were economically dependent on them, driving them to look for alternative income sources to pay for their necessities (*Table 4*). The mean number of children was 3.6 and the majority ranged in age from one to eight. Generally, the children of respondents had more education than their parents: 49.35 percent had completed elementary school or less, 42.86 percent had finished at least one grade of secondary school or some higher schooling level and 7.79 percent were studying at university, were teachers or had a technical career.

**Table 4 Selected household characteristics of migrants to Canada:  
 Children, 2006**

Characteristic	Number of Respondents	Percentage	Mean
<b>Children</b>			
Average number			3.6
Average age (years)			12.1
Average level of education (years of schooling)			6.3
Primary or less			49.3
Some secondary or secondary high school degree			42.9
Studying at university/teacher or technical career			7.8
<b>Economically dependent children</b>			
Average (number)			3.2
Less than 2 children	33	12.8	
Between 2 and 4 children	174	67.7	
More than 4 children	50	19.5	

Most of respondents had their own house and all of the respondents who have participated in the Program for more than six years own their homes (*Table 5*). Five percent of the respondents interviewed were living with their parents or a relative. All of these had been coming to Canada for less than five years. After the first year of participation, the majority of the respondents realized how much they could earn. They calculated how much they would earn the next season and therefore planned what it would take to buy land and build a house in the near future:

*“We know how many years we need to come in order to build our houses in Mexico. For example in my case, the first two years of coming were to ensure my family’s daily consumption. Meanwhile my wife and I were living with my in-laws. The earnings of the third year were to buy a plot of land; with my earnings in the fourth year I could build my own house that is very similar, by the way, to the one we live in here. I have a complete tiled bathroom and the kitchen is tiled too. It has a gable roof; it is nice and big.” (male 35 years old)*

**Table 5 Selected household characteristics of migrants to Canada:  
 Property, 2006**

Characteristic	Number of Respondents	Percentage
<b>Home Property</b>		
Own	239	93
Living with Relatives	13	5
Renting	4	1.6
Paying mortgage	1	0.4

Sixty-five percent of the respondents in the sample operate a farm in Mexico (*Table 6*). The size of land they work averages 6.4 hectares, ranging from one to 51 hectares. Of the respondents who ran a farm in Mexico (167), 82 percent sold their products mainly in local markets, obtaining an average cash income of C\$1,907 per year (*Table 7*). A portion of the crops they grew was consumed and a portion was sold, except in the case of one producer of flowers, who sold his entire harvest (*Table 6*). Fruits and vegetables accounted for 80 percent of products sold;

animals, 66 percent; other grains like oats and fodder-oats, 60 percent; beans, 30 percent; and maize, 21 percent. The rest of farmers, 18 percent, produce only for self-consumption.

**Table 6 Selected household characteristics of migrants to Canada: Farming, 2006**

Characteristic	Number of Respondents	%	Mean
<b>Operate a Farm in Mexico</b>	167	65	
Yes=1	166		6.4
Own Land (hectares)	100	60.2	
Less than 5 ha*	29	17.5	
Between 5 and 10 ha	37	22.3	
More than 10 ha			
<b>% of Product sold</b>			
Flowers		100	
Fruits		83	
Vegetables		80	
Animals		66	
Other grains (oats, fodder-oats)		60	
Bean		30	
Maize		21	

\*Hectares

**Table 7 Selected household characteristics of migrants to Canada: income, 2006.**

Characteristic	Number of Respondents	Percentage	Mean C\$	Min C\$	Max C\$
<b>Income (per year/season)</b>					
<b>Canadian income:</b>					
Net income (1)	257		9,338.7	2,900	14,500
From remittances	257		6,657.1	2,160	11,600
<b>Mexican income:</b>					
Net Mexican Income (average)	257		2,083.7	0.0	10,000
(2)	137	82		0.0	10,000
Farm cash income	145	56	1,907	0.0	9,000
From other sources			1,067		
<b>Average Net Household Income for the total sample (1)+(2)</b>	<b>257</b>		<b>11,422.4</b>	4,400	23,000

Fifty six percent of respondents declared an average income of C\$1,067 per year from other economic activities.<sup>9</sup> This includes some farm families that also had non-farm income. Therefore, the total average net household income earned in Mexico averaged C\$2,083 per

<sup>9</sup> Eighteen respondents reported that they did not earn any income in Mexico, saying they did not find any paid jobs in their community or in other parts of Mexico.

year, representing 18 percent of the total household income.<sup>10</sup> Remittances plus the expenses incurred in Canada to support the respondents on average represented around 28 percent of the total Canadian income (C\$2,680).

#### **4. MOTIVATIONS TO PARTICIPATE IN CSAWP**

Most of the previous research on Mexican emigration conducted survey in the migrants' place of origin, and hence the researchers had two populations: those who migrated and those who decided<sup>11</sup> to stay home. The objective of these studies was to find the determinants of emigration and explore why some people emigrate and others do not. Since researchers had the opportunity to examine household units with and without migrants, they were able to distinguish the characteristics of each group. Most empirical analyses of Mexican migration used either logit or probit models to identify the motivations of respondents to emigrate (Massey, 1987, Sana and Massey (2005), Taylor (1999), Taylor and Yunez-Naude (1999), Binford (2002) and Durand, Parrado and Massey (1996)).

Unlike these studies, my survey was conducted at the destination of the agricultural Mexican migrant workers (Southern Ontario). Therefore, all the participants had already made the decision to participate and migrate. Thus, the questions posed were reasons they considered at the time they decided to participate in CSAWP and come to Canada. Twelve reasons to do this were gathered in the survey. In order to know why Mexican respondents decided to migrate to Canada, multi-item statements with a 5-point Likert scale ranging from "very unimportant" (1) to "very important" (5) were used to measure the importance of each of those 12 statements/reasons.

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<sup>10</sup> Household income varies according to the economic activity in Mexico; those who rely only on agriculture earn C\$11,245, while those who do not sell their farm products but engage the non-farm sector earn C\$10,405 per year.

<sup>11</sup> Or had no migration options.

Following previous studies, the responses from in-depth interviews on motivations for immigration were divided into four main categories. The first is economic factors (Taylor, 1987; Stark and Taylor, 1989; Escobar-Latapí, 1999; Massey and Espinosa, 1997; Binford, 2002; Zarate-Hoyos, 2003). The survey asked respondents to rate the importance of two possible reasons in this category: "To earn more income" and "Because of low wages in Mexico" (*Table 8*). The second category is the desire to improve the standard of living of the respondent's family and invest in human capital, especially of the children (Stark, 1991; Taylor and Yunez-Naude, 2002; Binford, 2002; Zarate, 2003). Respondents were asked to rate the importance of three possible reasons in this category: "To enhance my family's standard of living," "To improve my house" and "To put my children through school" (*Table 8*). The third group is job uncertainty and lack of jobs in Mexico (Garcia, 2003). Respondents were asked to rate the importance of one reason in this category: "To earn a stable income" (*Table 8*). The fourth category focuses on network migration (Roberts *et al.*, 1999; Yunez-Naude, 2001; Massey and Garcia España, 1987). Respondents were asked to rate the importance of one reason in this category: "Are you in the Program because a friend or a relative suggested you to do it? If so, how important was that suggestion for you to participate in the Program?"<sup>12</sup> (*Table 8*). We added a fifth category on desires to invest in farming activities in Mexico, in other activities outside of agriculture or in their own skills. Respondents were asked to rate the importance of three reasons: "To invest in my farm," "To invest in new business opportunities" and "To learn new skills" (*Table 8*).

Items from the first three categories and the fifth category are expected to be the most important reasons for respondents to participate in the Program. Items in the fourth category are expected not to be significant because there are not strong migration networks in Canada compared with the US (Colby 1997 and Basok 2000). *Table 8* and *Figure 1* show the reasons ranked by

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<sup>12</sup> This item encompasses both existing networks in Canada and word of mouth or direct experiences of migrating to the US.

respondents as most important in their decision to migrate. Of nearly equal importance were “to earn more income,” “to enhance their family’s standard of living,” and “because of low wages in Mexico,” These reasons were followed closely by “to earn a stable income,” and then “to send their children to the school” and “to improve their houses” (or, in some cases, to start building their own house). This suggests that the decision to immigrate is significantly determined by a combination of both the economic situation in Mexico and the need to pay for their children’s education and enhance household welfare. Garcia (2003) states that lack of jobs in Mexico, due to the Mexican economic crisis brought on by NAFTA caused Mexicans to immigrate to US. Other researchers found similar results: Binford *et al.* (2004) for the case of migration to Canada and Mohan (1980) and Fields (1982) for the case of Colombian emigration. In all three studies, the main factors driving migration decisions were wage differentials and a high unemployment rate at home.

**Table 8 Mean importance scores in ascending<sup>13</sup> order for reasons influencing decisions to participate in CSAWP**

<b>Factor</b>	<b>Mean Score*</b>	<b>Standard deviation</b>
1 To earn more income	4.789 <sup>a</sup>	0.426
2 To enhance my family’s standard of living	4.719 <sup>a</sup>	0.466
3 Because of low wages in Mexico	4.618 <sup>a</sup>	0.595
4 To earn a stable income	4.595	0.537
5 To put my children through school	4.576 <sup>b</sup>	0.915
6 To improve my house	4.451 <sup>b</sup>	1.018
7 To invest in my farm	3.778 <sup>c</sup>	1.323
8 To learn new skills	3.436 <sup>c</sup>	1.157
9 Because of experiences of others that work in Canada	3.358	1.226
10 To invest in new business opportunities	2.942 <sup>c</sup>	1.492
11 To see/know another country	2.626	1.104
12 As a way to emigrate to Canada	1.459	0.943

\*Values close to five indicate the reason is very important, while values close to one indicate the reason is very unimportant. Items denoted by the same letter are not significantly different from each other at the 5% level based on Wilcoxon sign-rank test.

<sup>13</sup> From 1=very unimportant to 5=very important reason to participate in CSAWP.

Desires to invest in farm activities, whether to start a farm business or to buy a plot of land as a real estate investment, also played an important role in determining the decisions to immigrate.<sup>14</sup> Three of the four lowest ranked reasons had to do with immigration and emigration. This suggests that migration networks<sup>15</sup> in Canada did not play an important role for respondents in their decision to migrate. This result is very different from what other authors have concluded on Mexican immigration to the US. Most studies have found that previous and present immigration from the family or the village generates information as well as a social network, which facilitates the migrant's job search (Roberts *et al.*, 1999; Massey and García España, 1987; Muse-Orlinoff, 2010). In the case of CSAWP, as noted above the number of permanent Mexican immigrants in Canada is small. Finally, participation in CSAWP as a way to stay in Canada was ranked on average as very unimportant (seventy-five percent rated it as very unimportant), which means that most of respondents had no desire to stay in Canada permanently, they just wanted to participate in CSAWP for temporary work. It might also be argued that this is a result of the way the program is structured. But migrants may choose Canada rather than the US because it is easier to go back and forth from Canada, which would reinforce that they do not wish to stay.

## 5. QUANTITATIVE ANALYSIS

### 5.1 Factor analysis

The twelve reasons listed in Table 8 for participating in CSAWP (and thus migrating to Canada), were used in factor analysis<sup>16</sup> to determine which reasons were most important for immigration.

Results indicated that only eight reasons should be included in the factor score. Although four

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<sup>14</sup> Reichert (1981) did extensive research in Guadalupe, Michoacán where he divided the population into three categories: legal migrants, illegal migrants and no migrants. Legal migrants represent only 18 percent of the population in the community, but they own roughly 60 percent of the agricultural land. This shows that migrants' remittances were allocated to buying land as a future investment.

<sup>15</sup> The literal question was: "Did you participate in the Program and come to Canada because a friend of you suggested you to do so?"

<sup>16</sup> Factor analysis is a way of identifying patterns in data and expressing the data in such a way as to highlight their similarities and differences. The main advantage of factor analysis is that once these patterns are found in the data, and the data is therefore compressed, i.e. by reducing the number of dimensions, the model can be explained using this pattern without much loss of information (Hair *et al.*, 1998).

factors had eigenvalues exceeding one when extracting principal components derived from varimax<sup>17</sup> rotation, only three will be considered as the Cronbach Alpha of .63 among the items loaded in the fourth factor is less than the normal cut-off of 0.70. The Kaiser-Meyer-Olkin Index (KMO) was 0.66, suggesting that the factor analysis technique is appropriate. Similarly, Bartlett's test of sphericity (621.1, with 45 degree of freedom) indicates that the correlation matrix between the 10 items listed above does not conform to an identity matrix; hence, factor analysis is suitable. *Table 9* shows the three components loading eight out of the twelve reasons listed above.<sup>18</sup> Together the three factors together explain 70 percent of the total variance across the sample.

**Table 9 Factor loadings for reasons to migrate to Canada through CSAWP, derived from varimax rotation**

<b>Reason for participating in CSAWP</b>	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>
3. Because of low wages in Mexico (or no jobs)	<b>.82</b>	-.115	.071
1. To earn more income	<b>.76</b>	.042	.075
4. To earn a stable income	<b>.76</b>	.196	-.117
2. To enhance my family's standard of living	<b>.69</b>	.032	.075
7. To invest in my farm	.060	<b>.91</b>	-.059
8. To learn new skills	.045	<b>.90</b>	.179
5. To put my children through school	.040	.000	<b>.86</b>
6. To improve my house	.056	.101	<b>.85</b>
Proportion of variation explained (%)	30.0	22.5	18.1

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization – a Rotation converged in 5 iterations.

Based on the loadings, the three factors were interpreted as follows:

- **Factor 1:** The motivations that loaded most heavily on this factor are those related with earning more income, having a more stable income and increasing living standards. This factor is labelled *household livelihood/welfare (HHW)* and it is—as expected—one of the most

<sup>17</sup> This is a type of rotation called variance maximizing or “varimax.” The goal is to maximize the variance of the new variable (factor), while minimizing the variance around the new factor.

<sup>18</sup> Reasons such as “as a way to stay in Canada” and “for experience of others that have worked in Canada” were not rated as important enough to be loaded in any factor.

important factors for respondents considering emigration. This factor share is 30 percent of the total variance.

- **Factor 2:** The motivations loaded on this factor are related to desires to capitalize (with money and/or knowledge) the respondent's farm or business and skills<sup>19</sup> ; therefore, the factor is labelled "*Farm Skills and Asset Investment*" (*FS&AI*). The desire to invest in the farm in Mexico as a reason to participate in the Program is one of the study's a priori hypotheses.
- **Factor 3:** The two motivations loaded on this factor are related to "*Family Assets*" (*FA*). Respondents participate in the Program in order to send their children to school--some of the children attend private schools. Improving the house for the family or perhaps as an investment is a motivation for respondents to participate in the Program.

In general, there is no single motivation to participate in CSAWP, and thus immigrate to Canada, but a range of reasons that respondents take into consideration. Nor does the emigration decision seem to be taken in isolation from other household members; on the contrary, the motivations ranked highly by the respondents in the sample suggest that the deciding unit is not the respondent alone, but the household unit.

From these three factors, multi-item scales were built based on the heavy loading items for each factor in order to identify the relative importance of each factor in migration decision through a regression model.

## 5.2 Regression model and hypothesized relationships

Three regression models were estimated using the factors as dependent variables and the socio-demographic characteristics of the migrants as independent variables with the goal of

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<sup>19</sup> Seventy-eight percent (202) of the respondents said they have learned new agricultural skills while working in Canada; out of this number, only 30% agreed the skills they learned are useful in Mexico. The rest of respondents stated they could not transfer the new skills mainly because in Mexico there is no adequate technology (tractors) for putting these skills to work. Other reasons included the lack of greenhouses in Mexico and the high cost to construct one, or the fact that the weather is unsuitable for growing fruits or vegetables.

identifying the which characteristics are associated with the motivations to emigrate. Because all of the factors contribute to the migration decision, estimating separate equations is not appropriate.

The standard least squares approach to regression is based on the model where  $y$  denotes the dependent variable,  $x$  denotes the independent variables,  $\beta$  denotes the parameters to be estimated, and  $e$  denotes an error term. This standard approach assumes nothing about  $\beta$ . However, it makes moderately strong assumptions regarding the error term  $e$ . The error term is assumed independent and normally distributed with mean zero. The error variance,  $\sigma^2$ , is unknown. Given that all of the motivations may contribute to the emigration decision, a system of equations is appropriate. An important feature of system estimation is that the errors in [1] are often correlated, not across observations, but across the equations in the system<sup>20</sup>. The Iterative Seemingly Unrelated (ISUR) method,<sup>21</sup> is recommended for estimation of systems where errors are correlated across equations and it is useful in cross-sectional data and panel models (Zellner, 1962). The specification of the model and the construction of the variables is as follows:

$$Y_{ji} = \alpha_j + \sum \beta_{jn} * X_{ni} + e_{ji}; \quad [1]$$

$\forall j=1, \dots, 3$  average of items heavily loaded in each factor;

$i=1, \dots, 257$  individuals in the sample and

$n=1, \dots, 23$  exogenous variables.

Where:

$Y_{j=1}$  = Household livelihood/welfare factor (average of items in factor one)

$Y_{j=2}$  = Farm skills and asset investment factor (average of items in factor two)

$Y_{j=3}$  = Family assets factor (average of items in factor three)

<sup>20</sup> The correlation coefficient in [1] was 0.92.

<sup>21</sup> ISUR will account for correlation of errors across the equations. This approach is appropriate for cross-sectional models.

$X_n$  is a matrix of  $n=23$  exogenous socio-demographic characteristics variables listed below.<sup>22</sup>

$A_j$  and  $\beta_{jn}$  = coefficients for the intercept and the exogenous variables.

Hence, the regression model to be estimated is as follow:

$$Y_{ji} = \alpha_j + \beta_{jn}REG1_i + \beta_{jn}REG3_i + \beta_{jn}AGE_i + \beta_{jn}Age_i + \beta_{jn}CS_i + \beta_{jn}EDUC2_i + \beta_{jn}EDUC3_i + \beta_{jn}EDUC4_i + \beta_{jn}EDUCS1_i + \beta_{jn}SpDep_i + \beta_{jn}Child1_i + \beta_{jn}Child3_i + \beta_{jn}SBE_i + \beta_{jn}RBE_i + \beta_{jn}USM_i + \beta_{jn}YCAN_i + \beta_{jn}CNSTR_i + \beta_{jn}COMM_i + \beta_{jn}OpF_i + e_{ji} \quad [2]$$

Table 11 lists the independent variables and the hypothesized sign of each relationship.

**Table 11 Definition of the 18 exogenous variables and expected nature of coefficients**

Variable definition	Type	Respondent s	Hypothesized nature of coefficient		
			HHW <sup>1</sup>	FS&AI <sup>2</sup>	FA <sup>3</sup>
<b>Region</b> REG1: Coahuila, Nuevo Leon, Tamaulipas, Jalisco, Nayarit, Colima and Michoacan. REG2: Aguascalientes, Guanajuato, San Luis Potosi, Queretaro, State of Mexico, D.F., Morelos, Hidalgo, Puebla, Tlaxcala, Veracruz and Tabasco. REG3: Guerrero, Oaxaca, Chiapas, Campeche, Quintana Roo and Yucatan	Dummy	25 211 21	(-)  (+)	(-)  (+)	(-)  (+)
<b>Age</b> Respondent's age AG1 between 20 and 29 AG2 between 30 and 39 AG3 between 40 and 49 AG4 50 years and over Spouse's age Age1 between 16 and 29 Age2 between 30 and 39 Age3 40 and over	Continuou s	27 119 91 20 68 120 65	(-)    (-)	(-)    (+)	(-)    (+)
Marital Status MS=1 married	Dummy	253	(+)	(+)	(+)
<b>Education</b> Worker's education  EDUC1 with elementary school EDUC2 with secondary school * EDUC3 with high school or higher C*  Spouse's education EDUCS=1 if educated	Dummy	120 50 85 247	(+) (+)  (+)	(+/-) (+/-)  (+/-)	(+) (+)  (+)
<b>Economic Dependents</b> Spouse (SpDp)=1 Yes  Children Child1 only one child Child2 <sup>C</sup> between 2 and 4 children Child3 more than 4 children	Dummy	247 33 174 50	(+)  (-) (+)	(+)  (-) (+)	(-)  (-) (+)

<sup>22</sup> Exogenous variables were tested for multicollinearity. The correlations were not highly significant among them.

<b>English skills</b>					
Speak Basic English (SBE) = 1 yes	Dummy	94	(+)	(+/-)	(+)
Read Basic English (RBS) = 1 yes		92	(+)	(+/-)	(+)
Worker's US migration experience USM =1 yes; USM=0 otherwise	Dummy	46	(+)	(-)	(+)
<b>Years working in Canada through CSAWP (Ycan)</b>			(+)	(-)	(+)
Ycan1: Less than 5 seasons	Continuou s	59			
Ycan2: From 5 to10 seasons		123			
Ycan3: More than 10 seasons		75			
<b>Occupation in Mexico</b>					
AGR <sup>c</sup> = 1 yes	Dummy	202			
CNSTR = 1 yes		35	(+/-)	(+/-)	(-)
COMM <sup>c</sup> = 1 yes		13	(-)	(-)	(-)
Operate Farm in Mex. OpF =1 yes	Dummy	167	(+)	(+)	(+/-)

<sup>c</sup> Denotes the control variable.

\*In Mexico, the education levels are divided in three: 6 years for primary, 3 for secondary and 3 for high school.

<sup>1</sup> Household livelihood/welfare dependent variable. <sup>2</sup> Farm Skills and Asset Investment dependent variable. <sup>3</sup> Family assets dependent variable.

Source: Own survey, 2006.

### 5.3 Empirical results

The results using the Iterative Seemingly Unrelated (ISUR) are summarized in *Table 12*, which also includes *t statistics* for the significance of coefficients and the  $R^2$  for each equation. Interpretation of results is based on statistical significance at levels of 1, 5 and 10 percent.

As hypothesized respondents coming from Southern Mexico (REG3) are positively associated with motivations of HHW (household welfare) and FS&AI (farm assets) in comparison with those coming from the center of the country (REG2). This could be because economic conditions on Region 3 are worse than in Region 2 and people from those areas are more eager to have employment and a stable income than those who are geographically closer to Mexico City where there are comparatively more employment opportunities. There are no differences between respondents from REG3 and REG1 on any of the motivations.

**Table 12 Demographic characteristics and motivations to participate in CSAWP**

Variable	HHW ▲	FS&AI ▲	FA ▲
Constant	1.012692 0.39	1.713206 0.099*	-0.072878 0.9526
<b>Region of origin</b> REG1	-0.152006 -0.4537	-0.263032 0.1395	0.132124 0.5287
REG3	0.441280 0.05 **	0.003853 0.0988*	0.054284 0.8194
<b>Interviewee's age</b>	-0.041853 0.0085 ***	0.000906 0.9481	-0.008627 0.5987
<b>Spouse's age</b>	-0.040907 0.0025***	-0.020959 0.0769*	0.016769 0.2298
<b>Marital status</b> D=1 has partner	0.520183 0.635	0.424731 0.6395	-0.382854 0.7203
<b>Interviewee's education</b>	0.338768	0.179751	0.225229
EDUC1 D=1 elementary school*	0.0659*	0.0542**	0.2366
EDUC2 D=1 secondary school	-0.052044 0.7978	0.194360 0.2754	0.124415 0.5536
<b>Spouse's education</b>	-0.109269	-0.033866	-0.038364
EDUCS D =1 educated	0.000***	0.1349	0.1509
<b>Economic dependents</b>	-0.475013	-0.278762	0.106925
Spouse (SpDp)	0.2977	0.4857	0.8206
Child1 D=1 less than 2 children	-0.135318 0.4685	-0.133985 0.4131	-0.405504 0.0359
Child3 D=1 more than 4 children	0.217933 0.0015***	0.331829 0.0138***	0.098507 0.0843*
<b>English skills</b> RBE	0.453223 0.0039***	-0.141451 0.3035	0.412344 0.011***
SBE	-0.180239 0.2138	0.045450 0.7206	-0.031377 0.83
<b>US migration experience (USM)</b>	0.103633	0.043597	-0.137789
YearsinCan	0.5171 0.055**	0.7559 0.5397	0.4048 0.0268**
<b>Occupation in Mexico</b>	-0.147586	-0.383171	0.142057
CNSTR	0.4903	0.0414**	0.5207
COMM	0.437128 0.1529	-0.189298 0.480	0.400451 0.0203**
<b>Operate farm in Mexico (OpF)</b>	-0.030302 0.8840	-0.843734 0.0000***	0.183552 0.3929
<b>R<sup>2</sup></b>	<b>0.16</b>	<b>0.38</b>	<b>0.10</b>

▲ Endogenous variables are calculated as the mean of items loaded in each component. Coefficients are significant at levels of 1 percent (\*\*\*), 5 percent (\*\*) and 10 percent (\*). Source: EVIEWS (V.6) statistical outcome.

Increasing age is negatively associated with motivations for family welfare, as expected. This suggests that younger workers are more associated with family welfare motivation than older workers. Many respondents over 40 years old have been coming to Canada for 6 to 10 years (36%) and even more have been coming for than 10 years (56%), and consequently they may have already covered their basic family needs. They may have other motivations (such as a

relationship with the employer) which were not included in the survey. The association of age with the other motivations is not statistically significant.

Age of the migrants' spouses is also negatively associated with HHW and also FS&AI (farm assets and investment). This may mean that the younger spouses are interested in increasing the household livelihood and the farm assets through their husbands' income, but as they become older that need is not as pressing.

Low levels of education on the part of the respondent (EDUC1) are positively correlated with HHW and FS&AI motivations, relative to those who hold high school and higher level of education (EDUC3). Hence, migrants holding high levels of education are less motivated to work in Canada because they are less interested in investing in farms back in Mexico than migrants with an elementary level of education. This result agrees with the findings of other authors such as Taylor and Yunez-Naude (2002), OSSREA (2007), Taylor (1987), Stark and Taylor (1989), and Massey and Espinosa (1997), who state that more educated farmers are less likely to be involved directly in on-farm activities.

In addition, educated spouses (EDUCS) are negatively correlated with HHW and FS&AI motivations. It can be assumed that respondents with less educated spouses are more motivated by farming activities than respondents whose spouses are more highly educated. Those respondents who have more than four dependent children (Child3) are more motivated by all the three factors than those with two to four dependent children (Child2). This could suggest that those migrants interested in farming activities can count on their numerous children to work the farm.

The years in the program are negatively associated with HHW and FA motivations. This shows, as expected, that new participants in the Program are motivated to come to Canada with the idea of improving their household income and also because migrants would like to put their children through school.

Results suggest that working in the construction sector (CNSTR) in Mexico is less associated with FS&AI motivation than is working in agriculture. However, working in the commerce sector (COMM) is more associated with FA motivation than is working in agriculture. Of the 13 respondents participating in COMM, nine have a high school education, and seven can read basic English, hence they may value education for their children more than the other respondents. Contrary to what was expected, operating a farm in Mexico (OpF) is negatively associated with FS&AI motivations. This may be because those people who work in Canada for more than a certain number of years may start thinking about non-farm businesses either to diversify or to replace their farming activities or working in Canada may lessen the importance of the farm activity. Based on the survey information, one fifth of those operating a farm would like to invest in other activities if they could earn more than double of their current Canadian income.<sup>23</sup> In addition, those who already have land may not want to buy more land and perhaps may even want to leave farming. In addition, maintaining a viable farm in Mexico may be difficult while they are in Canada.

## **6 CONCLUSIONS**

The objective of this study was to identify how respondents' motivations for participating in CSAWP and therefore immigrating to Canada on a temporary basis were influenced by socio-

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<sup>23</sup> In order to know what respondents would do if they could earn more money, we asked them what they would invest in if this were the case. From a total of 167 who run a farm, 30 people stated they would invest in a business outside the agricultural sector, 113 would invest in their farm and 24 would split the money between their farm and another business.

demographic characteristics. To identify these motivations, the questionnaire presented 12 reasons for participating in the Program, scored from 1 (“very unimportant”) to 5 (“very important”). Using a factor analysis technique, three main factors were revealed as the respondents’ motivations to migrate. Among these factors, “*household livelihood/welfare*” was the most important, explaining 30 percent of the total variance, followed by “*Farm Skills and Asset Investment*”, which explains 22.5 percent and 18.1 percent by “*Family Assets*” factor. The “*household livelihood/welfare*” factor may to be of greatest importance for respondents because it includes the low wages paid in Mexico and the lack of employment opportunities that push rural people out of their communities to look for better paid jobs to improve their family standards of life.

HHW tends to be more associated with respondents who come from South and Southeast Mexico (REG3) relative to those from REG2; who are younger (migrants and their spouses); have lower levels of education compared to those holding high school and read some basic English. “*Household livelihood/welfare*” factor is positively associated with respondents who have more than four children and are relatively new in the program, coming to Canada for few seasons compared with those who have more years in the program.

“*Farm Skills and Asset Investment*” factor is positively associated with respondents coming from Region 3, with those who hold an elementary level of education compared with the highest level of education and with respondents who have more than four children (Child3) relative to those who have from two to four children (Child2). It is surprising, however, that running a farm in Mexico is not associated with “*Farm Skills and Asset Investment*” motivations.

“*Family Assets*” motivations are positively associated with respondents who have more than four children, read some basic English and for those who have been coming to Canada for few

seasons. Respondents who work in commerce are associated with FA motivation relative to those who work in agriculture.

In general the lack of job opportunities in the rural labour market in Mexico means that a large number of Mexican villagers are seeking to improve the livelihood of their households, increase their on-farm investment and improve their housing and the education of their children by participating in CSAWP. Therefore, CSAWP represents “an escape valve” for labour market disequilibria in Mexico. The MLSW participates in the Program because it not only helps give participants a secure income but also supports an important number of families in rural areas thanks to the remittances it creates.

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