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Labour Reconversion from the Agricultural Sector to Rural Tourism: Analysis of Rural Areas in Chile

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Abstract: The aim of this study is to analyse the likelihood of agricultural workers in rural areas converting to the tourism sector. Chile is used as a case study, drawing on the CASEN survey of 2017 to analyse differences between the northern, central, and southern regions of the country and construct a satellite account of tourism. A matching process was carried out within the data, and the estimation of a logit model was done to assess the probability of labour reconversion. The results indicate that an agricultural worker has a 12.8% probability of retraining. However, differences emerged when demographic characteristics were analysed; specifically, people with post-secondary education and women have a higher probability of retraining. These and other sociodemographic characteristics are important to explain potential labour reconversion towards tourism in rural areas, although differences arose between areas of the country. Therefore, homogeneous public policies that do not consider the specific characteristics of the territories within a country will be ineffective.

Keywords: work reconversion; agrarian employment; tourism employment; rural tourism

1. Introduction

Tourism can act as either a complementary economic activity or an alternative economic substitution/diversification in rural areas characterised by an agrarian or agricultural economy and low wages or incomes in developed and developing countries. The above is especially relevant in Latin America where, in terms of labour, agricultural activities are important but the sector faces many emerging productivity challenges.

In Chile, the agricultural sector is a competitive industry. The country leads Latin America in several products, but it is an increasingly less labour-intensive industry and today requires increasingly specialised labour skills. However, there is wide heterogeneity amongst the country's rural areas. A high tech driven agricultural sector coexists with a low tech sector where workers have a low level of schooling. In the latter case, the reconversion towards rural tourism could be considered a positive avenue for continuing to develop their work and lifestyle in rural areas.

In this context, this paper seeks to answer the following question: What are the characteristics that influence the labour conversion of agrarian workers who live in rural areas of Chile to the tourism sector?

Uncovering these individual characteristics will allow us to understand whether there are relevant variables that can condition labour reconversion in a Latin American context where, like Chile, there is decreasing rural population [1], with indigenous people living in rural areas [2] and decreasing agricultural GDP [3]. It will also enable us to generate public policies appropriate to the territories according to the socio-demographic characteristics of their rural population. For example, in comparison with urban areas rural areas have more indigenous people.

Therefore, the general objective of this study is to analyse the likelihood of agricultural workers in rural areas converting to the tourism sector. To achieve this objective, we adopted two quantitative strategies: applying a logit model to the data and carrying out a

data matching process. More specifically, the probabilities that workers in the agricultural sector could move to occupations in the tourism sector were calculated based on the socio-demographic characteristics of people working in both sectors. Additionally, differences in results between the northern, central and southern regions of the country were evaluated.

This paper is structured in five sections, including this Introduction. Section 2 contains a Literature Review concerning rural tourism and antecedents to detail the Chilean context and that of its agricultural activity. Section 3, Materials and Methods, includes a description of the database, variables, and the quantitative methods used in this research. Section 4 presents the Results and, finally, Section 5 presents the Conclusions.

2. Antecedents and Theorical Framework

2.1. Rural Tourism

Decreasing rural populations and the loss of significance of the agricultural sector in terms of proportion of GDP are extended phenomena in developed countries [4]. Thus, many governments encourage diversification and rural non-farm employment to combat poverty and loss of income [5]. In this context, the development of rural tourism can help diversify the productive matrix, reduce rural depopulation, diversify the agricultural sector, and help to revitalize rural areas [6–10].

The above is highly relevant to Latin America because, in general, tourism is one of its most important sectors [11]. In the case of Chile, other antecedent studies indicated that the jobs generated in the tourism industry in Chile in 2019 were 3.3 times those generated in 2006 [12], and offered an opportunity for sustainable development, particularly in terms of gender equality [13]. A recent study also indicated significant correlation between tourism and socio-cultural, environmental and economic development [14].

In 1994, Lane [15] revised the concept of rural tourism, and it is apparent from his work that it is a concept with some degree of complexity. In the present paper, we adopt a general conception of rural tourism. This means that we are not talking about any specific activity, but rather about any economic activity related to tourism that is taking place in rural areas. As we will indicate in Section 3, the information/database has not enabled us to assume a narrower definition; however, based on the definitions of the World Tourism Organisation, all activities related to tourism are detailed. Despite taking this perspective, it is necessary to mention that in the literature authors identify different approaches to address 'rural tourism', such as agritourism, farm tourism, rural development, and rural tourism itself, among others [15–20].

2.2. Challenges in the Agricultural Sector

Agricultural activity in Latin America and the Caribbean is heterogeneous and highly segmented. On the one hand, some activities achieve low farm and labour productivity but are labour-intensive. This sub-segment includes peasant family farming, which operates with high restrictions on access to assets and marketing chains [21]. Parallel to the above exists a competitive industry possessing advanced development in product innovation, process technification and management process automation, leading to a decreasing and more specialised demand for labour. In this context, Arntz et al. [22] indicate that adjusting to new technologies takes time; this leads to the conclusion that a significant proportion of agricultural workers will find it challenging to adapt to these changes.

In a global context, agricultural production per capita is rising in the long term, but it is also becoming less dynamic than other sectors. Thus, the agricultural sector's share of GDP in Latin America has experienced consecutive annual declines over a 50-year horizon [23].

The differences between these two agrarian worlds are also associated with disparities in employment quality. Moreover, labour productivity gaps strongly influence the working and living conditions of a large segment of the rural population [20]. Although in each sub-segment the economic dynamics are very different between the different countries in the region, there is evidence that indicate that in Chile, working in the agricultural sector does not improve the quality of employment [24].

2.3. Labour Market in the Agricultural Sector in Chile

In the specific case of Chile, the agricultural sector shows GDP growth in the long term, but a percentage drop in total employment. Figure 1 reveals how the share of agricultural employment has fallen from 15.2% in 1996 to 7% in 2020; it also shows the share of the agricultural sector in the country's total GDP. It highlights that while agriculture's share of total GDP has been relatively stable during the past years, agricultural employment is steadily losing share. It follows then that in general terms, labour productivity has grown.
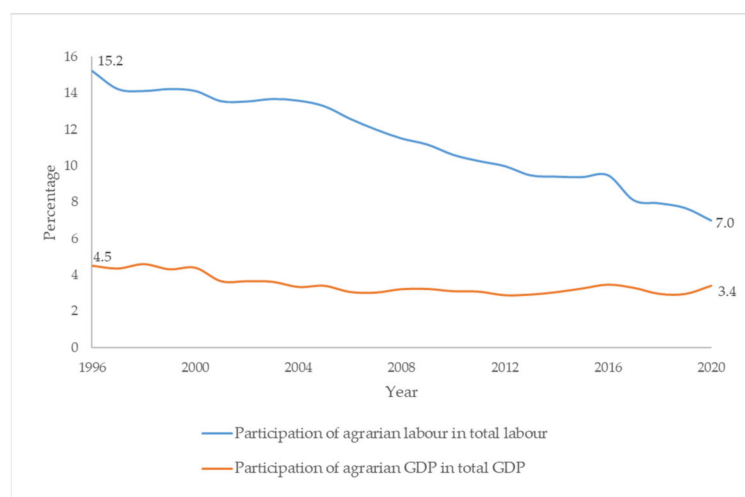

Figure 1. Participation of agrarian labour and GDP. Source: own elaboration with data from National Statistics Institute–Chile and Central Bank of Chile.

For the specific case of Chile, 52% of occupations in the agricultural sector could be automated [25]; thus, job substitution will be an important and continuous process. Alongside this, wages remain below the average wage in other sectors of the economy, with a high proportion of self-employed and seasonal wage earners. Specifically, George [26] has estimated that 60.1% of the labour force is temporary.

This lower quality of employment impacts workers who have a greater interest in other economic sectors. They are encouraged to migrate to urban areas where economic activities offer better paid salaries. Thus, when compared to all economic sectors agricultural labour's sectoral share has fallen, as previously indicated, from 15.2% to 7.0% between 1996 and 2020.

The growth of the agricultural forestry sector is strongly associated with the development of Chile's export economy and its success, particularly in the agricultural subsector, lies with increasing specialisation in non-traditional crops [27]. This has required addressing major structural challenges, such as changes in land use, the development of new production techniques, and the technification of production processes, among others; in short, the sector has undergone profound transformations [28].

In terms of the labour market, the technification and automation of production processes present challenges in the form of specialised personnel requirements. However, the people who occupy the majority of jobs do not have a high level of education. Indeed, while 27.1% of workers in Chile have a post-secondary education, in the agricultural sector the percentage is only 6.2% (source: own elaboration based on database CASEN [29]).

Other characteristics of the sector are low wages, significant gender gaps and regional heterogeneity. With regard to the high gender gap, of the total number of people working in the sector, only 27.3% are women [29]. However, it must be noted that there is increasing participation of women in paid work, even while this participation remains mainly in temporary work [30] with a high degree of job insecurity [31].

Furthermore, at the spatial level the sector is markedly heterogeneous; indeed, in a comparison between some regions in Chile, important differences were observed in the overall competitiveness of the sector and its dimensions [32].

3. Materials and Methods

3.1. Data on and Identification of Agricultural and Tourism Activities

In the Chilean case, there are no national accounts that allow for identification of employment in the tourism sector using a specific code. Given this, a satellite account was created based on the definitions of the World Tourism Organisation [33].

Following other works [3], in this research we use the Socio-economic Characterisation Survey database (CASEN, Encuesta de Caracterización Socioeconómica), which was developed by the Chilean Ministry of Social Development and Family [29].

In the database, economic activities are classified under International Standard Industrial Classification (ISIC) revision 3. For better identification of workers in the tourism sector, the four-digit classification was used. The 23 sub-sectors that make up the creation of the tourism satellite account are listed in Table 1. It must be noted that there are different activities that correspond to some part of other economic sectors, such as, Hotels, Restaurants, Transport, Service and Leisure Activities.

Table 1. Subsectors that make up the tourism satellite account.

ISIC-88	Description
5510	Hotels; camping sites and other provision of short-stay accommodation
5520	Restaurants, bars and canteens
6010	Transport via railways
6021	Other scheduled passenger land transport
6022	Other non-scheduled passenger land transport
6110	Sea and coastal water transport
6120	Inland water transport
6210	Scheduled air transport
6220	Non-scheduled air transport
6303	Other supporting transport activities
6304	Activities of travel agencies and tour operators; tourist assistance activities n.e.c.
6309	Activities of other transport agencies
7111	Renting of land transport equipment
7112	Renting of water transport equipment
7113	Renting of air transport equipment
9214	Dramatic arts, music and other arts activities
9219	Other entertainment activities n.e.c.
9231	Library and archives activities
9232	Museum activities and preservation of historic sites and buildings
9233	Botanical and zoological gardens and nature reserves activities
9241	Sporting activities
9249	Other recreational activities
9309	Other service activities n.e.c.

Source: own elaboration based on World Tourism Organisation and United Nations [32].

According to these frameworks and the nature of the database, it is not possible to associate tourism activities with some specific definition of rural tourism, such as agricultural or sustainable tourism in rural areas. Also, it is not possible to determine if an economic activity is part of a diversification process undertaken by a farmer.

Every observation in the database has information related to the sociodemographic characteristics, place (urban/rural), the economic sector where they work, and other information. Thus, from the database, we selected people living in rural areas working in tourism (according to the subsectors in Table 1) and agricultural subsectors. The CASEN survey was applied at the household level, which allows for the selection of rural residences. Given the available data and to enable us to have enough observations per zone, it

was necessary to group the information into three macro zones: north, centre and south (Figure 2).
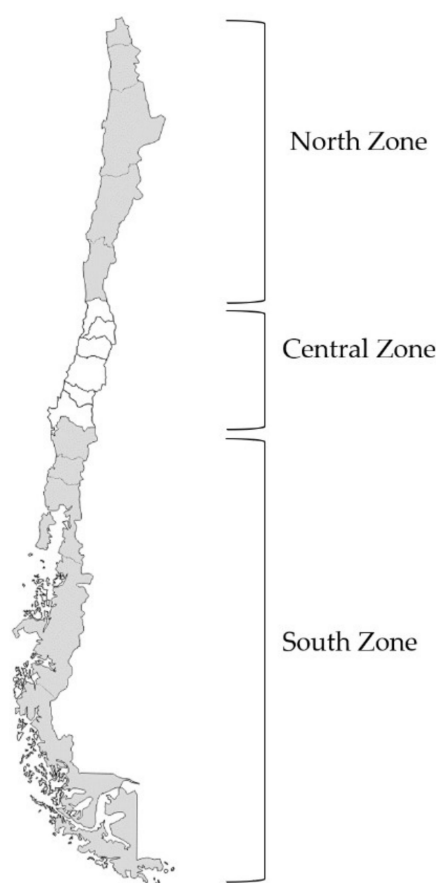

Figure 2. Map of Chile.

From the database, observations were selected from rural workers in the agricultural sector or tourism. Also, we took into account challenges for tourism in rural areas proposed by the International Labour Organisation (ILO) [34], such as increasing income in rural areas, and participation of women, young, minorities and indigenous people in the work force. Thus, we selected information related to sex, level of schooling, wage/salary per hour (in CLP, Chilean pesos), and whether the person identified as part of an indigenous ethnic group (this variable is an important demographic characteristic in Latin American countries). Observations that did not meet the established criteria were eliminated, as were cases that did not have information on all variables of interest.

Table 2 provides background information to describe the sample, which consists of 6922 people residing in rural areas and working in tourism (14.36%) or the agricultural sector (85.63%). Geographically, they mainly reside in the central area with 57.32%, 31.13% in the southern area and 11.54% in the northern area. The proportion of male workers (77.77%) in the agricultural sector was higher than that of women, being higher in the south; in tourism, the proportion of female workers is increasing; however, it remains lower than that of men in the south.

Table 2. Description of the sample. Rural population employed in agriculture and tourism sectors in Chile, and by macro-area.

	Total Country: Chile			North Zone			Central Zone			South Zone		
	Agrarian Worker	Tourism Worker	Total Sample	Agrarian Worker	Tourism Worker	Total Sample	Agrarian Worker	Tourism Worker	Total Sample	Agrarian Worker	Tourism Worker	Total Sample
Male (proportion)	0.777	0.508	0.738 ***	0.716	0.497	0.677 ***	0.764	0.499	0.731 ***	0.825	0.525	0.774 ***
Female (proportion)	0.223	0.492	0.262 ***	0.284	0.503	0.323 ***	0.236	0.501	0.269 ***	0.175	0.475	0.226 ***
Age (mean)	46.903	43.498	46.414 ***	47.704	46.014	47.402	45.528	43.371	45.261	49.274	42.672	48.171 ***
Indigenous (proportion)	0.194	0.153	0.188 ***	0.428	0.231	0.393 ***	0.032	0.043	0.033	0.424	0.272	0.399 ***
Primary studies (proportion)	0.731	0.435	0.688 ***	0.710	0.510	0.675 ***	0.710	0.446	0.677 ***	0.780	0.389	0.715 ***
Secondary studies (proportion)	0.219	0.377	0.242 ***	0.248	0.357	0.268 ***	0.237	0.342	0.250 ***	0.174	0.433	0.217 ***
Post-secondary Studies (proportion)	0.050	0.188	0.070 ***	0.041	0.133	0.058 ***	0.054	0.212	0.073 ***	0.046	0.178	0.068 ***
Wage per hour (mean)	6892	9844	7316 ***	7473	12774	8422 ***	6818	9579	7159 ***	6824	9041	7194 ***
Observations	5928	994	6922	656	143	799	3477	491	3968	1795	360	2155

Source: Own elaboration using CASEN 2017. *** indicates significance at 1%.

Overall, workers in the tourism sector are younger, with a difference of 3.40 years of age, although this difference is not significant in the northern areas. On the other hand, the proportion of people with an indigenous origin is higher in the agriculture sector. However, in the central zone, there was no difference (here, the percentage of indigenous workers in both sectors is very low).

In terms of formal education, workers in the agricultural sector have lower education: 73.1% have not completed secondary education. By comparison, in tourism, most complete secondary education or post-secondary studies (56.1%), and proportionally, this difference is more accentuated in the south. Wages are higher in the tourism sector, and the average wage per hour difference between the two sectors is higher in the north.

In summary, there are significant differences in the characteristics of workers in both sectors. Except for the variables of age for the northern zone and indigenous people for the central zone, there are significant differences in the characteristics of workers in the tourism and agriculture sectors on the average of the variables.

3.2. Methods

Using a database for one year of analysis entails a limitation (which is the case in many works), as it is not possible to observe a person who works in one economic sector and then goes to (or reconverts to) another activity. In this research we focus on transitions from the agricultural sector to tourism, and we aim to calculate the probability that this transition might happen. Given the above, two strategies are adopted and explained below.

Firstly, a logit model is applied. Secondly, a data matching process is carried out to evaluate the influence of a conditioning variable for an agricultural worker to work in the tourism sector. In this sense, we consider the novelty of this work is that undertaking the two methodologies of data analysis together helps to fulfil the objective of this study.

Logistic Regression and Marginal Effects

In a logit model with a binary dependent variable, a worker's probability tilts towards belonging to the tourism sector, given a series of covariates. This result can be interpreted as the probability of labour reconversion of agricultural workers, holding all other factors constant. The logit regression model is estimated by the maximum likelihood method and can be expressed as follows [35]:

$$\hat{p}_i(Y = 1, tourism_i) = \frac{e^{\hat{\beta}_0 + \sum \hat{\beta}_n x_{ni}}}{1 + e^{\hat{\beta}_0 + \sum \hat{\beta}_n x_{ni}}} = \Lambda(\beta\prime x) \tag{1}$$

This model (1) can be re-expressed, after a logarithmic transformation, as a linear function of the probability of participating in the tourism sector. Thus, the result of the expression is as follows:

$$ln\hat{\Omega}_i = \hat{\beta}_0 + \sum_{n=1}^{N} \hat{\beta}_n x_{ni} + \varepsilon_i \,, \tag{2}$$

where: $\hat{\beta}_0$= constant; $\hat{\beta}_n$ = vector of parameters to be estimated by the *n* variables; x_{ni} = vector of observed values for the *n* independent variables and the *i* observations; and ε_i = logistically distributed error term for the *i* observations.

Thus, with the above variables, the model to be estimated is as follows:

$$P(tourism_i = 1) = \hat{\beta}_0 + \hat{\beta}_1*\text{Sex}_i + \hat{\beta}_2*\text{Age}_i + \hat{\beta}_3*\text{ indigenous origin}_i + \hat{\beta}_4*\text{ Secondary Studies}_i + \hat{\beta}_5*\text{Post Secondary Studies}_i + \hat{\beta}_6*(\ln)\text{Salary per hour}_i + E_i \,, \tag{3}$$

A table, which is located in the next section, will provide the logit estimation results and the marginal effect for all observations. The relevant procedure is calculating the probability of working in the tourism sector for each of the observations. Then, we calculate the average probability of the total number of workers in the agricultural sector according to the variables mentioned above.

3.3. Method: Matching

The second strategy to analyse the probability of belonging to the tourism sector is through data matching. Here, we assess the influence of a conditioning variable on whether an agricultural worker is likely to work in the tourism sector. One of the advantages of using the matching process is that it is not necessary to assume any function to estimate the impact of a variable [36].

The objective for applying this method is to determine the average effect on the proportion of workers in the tourism sector, given a covariate. Consider, as an example, the level of education. Suppose that Yi is the response variable, which in this case is to participate or not in the tourism sector of individual i; suppose for those subjects who, for example, have higher education Ti = 1 and the response value under this treatment value is Yi (1). On the other hand, Ti = 0 and Yi (0) for those with no higher education. The average effect (the difference in the proportion of those who participate in tourism) can be represented as:

$$E\left(Y^1 \middle| D = 1\right) - E\left(Y^0 \middle| D = 0\right) \tag{4}$$

However, the above is not possible to evaluate in practice, because it is not possible to know how a person with higher education would behave if we were to take it away, unless we had evaluated their behaviour before having reached that level of education. Therefore, it is necessary to use variables that we can observe, so the difference in the proportion of those participating in tourism between two groups would be given by [5]:

$$E\left(Y^1 \middle| D = 1, X\right) - E\left(Y^0 \middle| D = 0, X\right) \tag{5}$$

As such, it is necessary to construct twin or similar groups built based on the other covariates. Specifically, one of the groups will be called the treatment or counterfactual group, and the other will be called the control group, with both groups being relatively twinned.

For example, to create each group, the treatment group is assumed to be men and the control group is assumed to be women. For the analysis, observations are considered in the analysis only if there is a similar observation in the other group, i.e., they are the same or similar in all other covariates–except for working in the tourism sector, which is the outcome or variable of interest. The above corresponds to an exact matching and many observations are required, so the necessary strategy is to calculate the probability of belonging to one of the groups [37]; in addition, to apply the above procedure, it is necessary to include the condition of common support [38].

Considering the above, we follow the strategies and definitions of Rosenbaum and Rubin [39] to match observations. We used the nearest neighbour based on Propensity Score, and Mahalanobis distance procedures to match observations. In these cases, we applied a bootstrapping procedure (resampling) to determine standard errors and confidence intervals more precisely [40]. We also used the so-called coarsened exact matching (cem) procedure [41], which matches observations using covariate values rather than a synthetic measure such as vector distance or a probability calculation.

In this paper, the treatment groups are: men, to analyse the proportion working in tourism compared to women; workers above the median age (50 years) compared to those below; people with post-secondary education versus those without; the treatment group of those above the median net hourly wage versus those below the median value; and people with an indigenous background compared to people without an indigenous background.

4. Results and Discussion

4.1. Likelihood of Workers in the Agricultural Sector Participating in the Tourism Sector. Country-Level. Logistic Regression Method

A binary logit model was estimated in which the probability that a worker belongs to the tourism sector was measured, given a series of covariates. The results are presented in Table 3.

Table 3. Logistic estimation result and marginal effects: Chile.

Depend Variable (Tourism = 1)	Coefficient	Marginal Effect	*P > z*
Sex (1 = Male)	−1.1787	−0.1494	***
	(0.0749)	(0.0110)	
Age	0.0039	0.0004	
	(0.0027)	(0.0003)	
Indigenous origin (1 = yes)	−0.1540	−0.0151	
	(0.0995)	(0.0094)	
Secondary studies (1 = yes)	0.9140	0.1117	***
	(0.0864)	(0.0122)	
Post-secondary studies (1 = yes)	1.4915	0.2371	***
	(0.1196)	(0.0254)	
Salary per hour (LN in CLP)	0.4665	0.0474	***
	(0.0533)	(0.0053)	
Constant	−5.6618		***
	(0.4739)		
Pseudo R2	0.1192		
LR CHi2 (6)	678.84		
Prob > Chi2	0.0000		
Observations	6922		

Source: own elaboration. *** indicates significance at 1%. Standard errors are in parentheses.

At the country level, the variables of salary, gender, and secondary and post-secondary education are significant variables (concerning people who have not completed secondary education). In this first procedure, the variables of age and indigenous peoples are not significant.

To better understand the model, it was necessary to review the marginal effects. In reviewing the results, it was possible to observe that post-secondary studies generate a greater impact. More specifically, with this model, a person with post-secondary studies is 23.71% more likely to work in the tourism sector than a person with other types of studies; gender also stands out, as being a man decreases the probability by 14.94%.

Focusing on agricultural workers, Table 5 displays the average probability of belonging to the tourism sector (this table will be explained below, using the Logit model results). The probability of belonging to the tourism sector was calculated for each observation, given the covariates. In this way, probabilities are obtained that can be interpreted as the probability of labour reconversion of people employed in the forestry and livestock sector, keeping the other factors constant. In summary, we observed that:

- The average probability that an agricultural worker participates in the tourism sector is 12.8%.
- If a person is a man, the probability decreases to 9.3% and in the case of a woman it increases to 24%.
- If the agricultural worker has a primary education, the probability of participating in tourism is 8.7% and increases to 21% if he/she has secondary education and 36% if he/she has post-secondary education.
- Finally, if he/she does not belong to an indigenous people, the probability is 13%, while if he/she belongs to an indigenous people, the probability is 10%.

4.2. Differences by Area and Effects of Socio-Demographic Characteristics on the Probability of Reconversion to the Tourism Sector. Logistic Regression Method

Table 4 presents the results for the three zones: north, centre and south. As can be inferred, being male has a negative effect in all zones, especially in the south, where the marginal effect is higher (−21.01%).

Table 4. Logistic estimation result and marginal effects by area.

Depend Variable (Tourism = 1)	North			Center			South		
	Coef.	Marginal Efect		Coef.	Marginal Efect		Coef.	Marginal Efect	
Sex (1 = Male)	−1.1689	−0.1658	***	−1.1081	−0.1246	***	−1.4975	−0.2101	***
	0.2071	0.0324		0.1041	0.0136		0.1371	0.0234	
Age	0.0074	0.0009		0.0117	0.0011	***	−0.0168	−0.0017	***
	0.0074	0.0009		0.0039	0.0004		0.0048	0.0005	
Indigenous origin (1 = yes)	−1.0404	−0.1187	***	0.3098	0.0315		−0.5790	−0.0573	***
	0.2274	0.0237		0.2552	0.0289		0.1438	0.0136	
Secondary studies (1 = yes)	0.6132	0.0829	**	0.7994	0.0856	***	1.1828	0.1572	***
	0.2364	0.0350		0.1230	0.0150		0.1490	0.0240	
Post-secondary studies (1 = yes)	1.4741	0.2673	***	1.6439	0.2494	***	1.3227	0.2039	***
	0.3769	0.0868		0.1617	0.03368		0.2148	0.0441	
Salary per hour (LN in CLP)	0.6484	0.0791	***	0.3587	0.03255	***	0.5376	0.0553	***
	0.1324	0.01586		0.0802	0.00724		0.0883	0.0089	
Constant	−6.79		***	−5.34		***	−4.74		***
	1.2112			0.7085			0.7828		
Pseudo R2	0.1391			0.1017			0.1938		
LR CHi2 (6)	104.42			302.21			254.38		
Prob > Chi2	0.0000			0.0000			0.0000		
Observations	799			3968			1964		

Source: own elaboration. *** indicates significance at 1%, ** 5%. Standard errors are in parentheses.

The impact of age seems to be low, but it should be interpreted as the change in the probability of being in the tourism sector if people's age increases by one year. However, the result highlights that the effect is heterogeneous between areas, significant in the centre and south but with different signals.

If a worker belongs to an indigenous group, the effects in the north and south are negative, but there is no impact in the central area.

In all the zones, workers with higher educational attainment have a greater probability of participating in the tourism sector, with the variable post-secondary education having the greatest impact, and the northern zone showing a greater gap between the impact of secondary and post-secondary education.

Although salaries have a significant and positive effect, a higher salary increases the probability of switching from the agricultural sector to tourism; its impact is low and varies between 7% in the northern and 3% in the central zones.

As mentioned, Table 5 presents the probabilities of reconversion of agricultural workers, differentiated by zone. The probability that a person working in the agricultural sector will switch to the tourism sector is 12.8%. However, this probability is higher in the north and south of the country (15.3% and 13.4%). Suppose all other variables were fixed, and each of all other variables was analysed separately. In that case, it was found that there is a higher probability of conversion when people have higher education, which is similar between the zones. Secondary education also has an important effect, but the estimated probability is more heterogeneous.

Table 5. Average probabilities of agricultural workers to participate in the tourism sector.

| | **Chile** | **Zone** | | |
		North	**Center**	**South**
Agrarian worker	12.80%	15.30%	11.20%	13.40%
Agrarian worker: Male	9.30%	12.00%	8.10%	10.10%
Agrarian worker: Female	24.70%	23.50%	21.30%	28.80%
Agrarian worker: Primary Studies	8.70%	12.50%	7.90%	8.40%
Agrarian worker: Secondary Studies	21.00%	20.50%	16.30%	29.10%
Agrarian worker: Post-secondary Studies	36.10%	33.20%	33.30%	38.90%
Agrarian worker: Non indigenous	13.30%	19.20%	11.10%	16.00%
Agrarian worker: Indigenous origin	10.70%	10.10%	14.20%	9.80%

Source: Own elaboration.

In terms of gender, there are greater differences between zones. While at the national level women have a higher probability of reconversion to the tourism sector (24.7%), this result increases to 28.8% in the southern zone.

Another characteristic of interest is whether a person has an indigenous origin: for these workers, the probabilities of reconversion are lower; the opposite is only true in the central zone, but let us remember that here this variable is not significant.

4.3. Differences by Area and Effects of Socio-Demographic Characteristics on the Probability of Reconversion to the Tourism Sector. Matching Method

This section analyses the effect of a characteristic on the probability of conversion to the tourism sector in each zone, using three matching techniques: Propensity Score, Mahalanobis distance and Cem, in which case the coefficient will be interpreted as a probability.

The results in Table 6 are consistent with the analysis in the previous section; however, when analysing the results by technique, some differences were found by zone. Thus, the variable of post-secondary studies has a greater probability of reconversion; the probability was greater in the north according to the PS and DM technique, although according to Cem it was greater in the south—consistent with previously obtained results.

Table 6. Result data matching: Propensity Score, Mahalanobis distance, and coarsened exact matching (cem).

		Propensity Score			Mahalanobis			Cem		
		Coefficient	Standard Error		Coefficient	Standard Error		Coefficient	Standard Error	
North	Sex (Male = 1)	−0.1716	0.0449	***	−0.2421	0.0383	***	−0.2039	0.0331	***
	Age (Over 50 = 1)	0.0282	0.0370		−0.0026	0.0255		0.0460	0.0264	*
	Indigenous Origin (1 = yes)	−0.2077	0.0491	**	−0.1720	0.0461		−0.1346	0.0262	***
	Primary studies (1 = yes)	−0.1184	0.0579	**	−0.0575	0.0421		−0.0320	0.0326	
	Secondary Studies (1 = yes)	0.0939	0.0558	*	0.0607	0.0456		0.0613	0.0352	*
	Post-Secondary (1 = yes)	0.3111	0.1173	***	0.3261	0.0861	***	0.1685	0.0821	**
	Salary per hour (over median = 1)	0.0605	0.0391		0.1017	0.0371		0.0822	0.0278	***
Center	Sex (Male = 1)	−0.1325	0.0193	***	−0.0979	0.0369	***	−0.1342	0.0137	***
	Age (Over 50 = 1)	0.0495	0.0297	*	0.0395	0.0232	*	0.0231	0.0095	**
	Indigenous Origin (1 = yes)	−0.0229	0.0487		0.0229	0.0603		0.0229	0.0326	
	Primary studies (1 = yes)	−0.0461	0.0189	**	−0.0573	0.0190	***	−0.0873	0.0131	***
	Secondary Studies (1 = yes)	0.0797	0.0174	***	0.0938	0.0188	***	0.0931	0.0133	***
	Post-Secondary (1 = yes)	0.2680	0.0423	***	0.2474	0.0349		0.2281	0.0303	***
	Salary per hour (over median = 1)	−0.0050	0.0239		0.0080	0.0232		0.0098	0.0107	
South	Sex (Male = 1)	−0.2458	0.0304	***	−0.1995	0.0311	***	−0.2133	0.0228	***
	Age (Over 50 = 1)	−0.0974	0.0279	***	−0.0684	0.0242	***	−0.0383	0.0146	***
	Indigenous Origin (1 = yes)	−0.0582	0.0277	**	−0.0349	0.0310		−0.0615	0.0152	***
	Primary studies (1 = yes)	−0.1195	0.0299	***	−0.1442	0.0285	***	−0.1857	0.0232	***
	Secondary Studies (1 = yes)	0.1649	0.0324	***	0.1432	0.0354	***	0.1674	0.0250	***
	Post-Secondary (1 = yes)	0.2877	0.0744	***	0.2449	0.0439	***	0.2846	0.0474	***
	Salary per hour (over median = 1)	0.0954	0.0209	***	0.0674	0.0235	***	0.0871	0.0165	***

Source: own elaboration. *** indicates significance at 1%, ** 5%; * 10%.

On the other hand, being 50 years of age or older has a positive impact in the central zone and negative impacts in the south, consistent with the techniques. In the north, no effects were observed. In turn, having an indigenous origin has a negative effect, except for the central zone, where there was no significant effect. Finally, salary only showed a positive effect in the south.

Therefore, the characteristics that most affect the probability of reconversion to the tourism sector are post-secondary education and being a woman. Particularly in the north, not having an indigenous origin is important. In the south, having a secondary education was also important.

Our results are not entirely in line with other works. In Chile, the proportion of women working in the tourism sector is similar to that of men (Table 2), but men's probability of working in this sector decreases by comparison (Tables 3, 4 and 6). Other studies show a higher proportion of men in rural tourism [42], as in the case of Serbia, or the sex of the person does not influence decisions to set up a business in rural tourism [43], as occurs in Portugal. In other words, while in some countries it is possible to infer that women are less likely to participate in the rural sector, in others it is not relevant, while in Chile their likelihood of participation would increase.

Using both quantitative methods defined in this paper, it was found that for those with higher education, their probability of participating in tourism increases, as is also the case in Portugal [43]. However, it was also observed in the Chilean data that most tourism workers do not have a post-secondary education, which is in congruence with other cases [42]. This is a challenge for Chile because, according to Biagi et al. [44], European regions specialising in tourism but with low levels of human capital have problems driving innovation related to the sector. This in turn may condition the development of tourism, and of generating sufficient income in Chilean rural areas.

Furthermore, the results align with the challenges proposed by the International Labour Organisation (ILO) [34] for sustainable tourism in rural areas. This institution indicates that rural tourism can be a significant source of income for local communities, which would be the case for the southern part of Chile as, in the rest of the country, it does not prove to be a determining factor for incorporation into tourism. The ILO also indicates that the sector can incorporate women into the labour market; our results support this idea.

In addition, the ILO indicates that rural tourism allows the incorporation of minorities and people with indigenous origins; however, our results show that these groups are less likely to be part of the tourism sector in the northern and southern areas of the country. Thus, another challenge facing Chile is to create public policies to support different groups.

5. Conclusions

The demographic characteristics observed in recent decades in rural areas of Latin America, Chile in particular, require very important consideration. This is a population with a low rate of female labour participation, a constantly ageing population, low levels of schooling, and where agricultural employment is in continuous decline. Thus, the reconversion of labour towards rural tourism could be a way to develop these areas, as well as to improve people's working conditions and income.

This study indicates that women and people with post-secondary education are the most likely to reconvert to rural tourism. In this sense, rural tourism could then also contribute to increasing female labour participation in rural areas. On the other hand, improving educational levels in the adult population does not seem to be easy in the short term. It could prove appropriate to create adult training programmes for the development of tourism activities or the acquisition of labour skills to develop the sector.

However, by carrying out an analysis only at the country level and without considering differences between zones or macro-zones, it was not possible to adequately analyse the impacts of the studied variables. In addition, some variables became relevant only when regions were analysed separately, and were not relevant at a country-wide level. The above is important for policymakers to take into consideration.

Thus, while age is not relevant at the country level, when differentiating by zones it was observed that in the south, as workers age, their probability of reconversion decreases; on the other hand, the probability increases in the central zone. By implication, in the south, people who for years or decades have developed a particular lifestyle may find it more difficult to reconvert to another activity.

As previously indicated, higher educational attainment is very important to developing rural tourism, at least through labour reconversion, and this remains a critical challenge for public policies in rural areas in Latin American countries. In the case of Chile, it seems to be even more important in the south, where the impact of formal education is greater.

In this paper, a variable characterising whether or not a person has an indigenous origin was incorporated. This variable was not relevant in the whole country in explaining potential reconversion. However, when differentiating by zone, it was observed that in the north of the country, and also in the south, the probability of labour reconversion of these workers decreased.

Given these results, there are two main conclusions to be drawn. The first is that socio-demographic characteristics (gender, age, formal education, indigenous origin) explain potential labour reconversion towards tourism in rural areas. The second is related to whether a country's objective is to achieve labour reconversion processes or to promote rural tourism. Public policies must be tailored to the specific characteristics of each region, zone or area. The results highlight that there are areas where a socio-demographic characteristic is more or less important than in other zones. Therefore, without considering the specific characteristics of the territories within a country, standardised public policies will prove ineffective.

Finally, labour reconversion requires developing a local commitment and an institutional framework which generates and promotes the basis for its implementation, including the strengthening and certification of labour competencies.

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