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How to make money by feeding the tourists: the case of Fiji

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Summary

This paper reports a study of the horticultural chain in Fiji. The objectives of the research was to understand how the domestic horticultural supply could meet the demand currently generated by the tourism sector, i.e. how new income opportunities for the rural people could be generated by feeding the tourists.

If policy interventions are to be directed at strengthening backward economic linkages between tourism and local food supplier, a better understanding of factors driving farmers marketing choice is required. This paper aims to contribute in this regard by analyzing the decisions of farmers to engage in direct selling to hotels. Hotels pay premium prices for quality fresh produce and direct marketing can allow farmers to retain the highest possible portion of this premium without sharing it with intermediaries. The results of the application of a discrete choice model to data collected in the chain study, suggest that quality is the most important factor among those affecting the choice of direct marketing to hotels. Other variables influencing the decision were found to be ethnicity, distance from the market and the availability of transportation means of property.

KEYWORDS: horticultural markets, direct marketing, discrete choice models, Fiji.

1 Introduction

Fiji, as many other Small Island Developing (SID) countries, faces several disadvantages related both to its reduced size and to being made up by many small islands. These disadvantages include, among other, limited resources, which lead to undue specialization; excessive dependence on international trade and hence vulnerability to global developments; costly public administration; insufficient infrastructures -including transportation and communication; limited institutional capacities; domestic markets too small to provide significant scale economies and reduced volumes available for exports, sometimes from remote locations, which lead to high freight costs and reduced competitiveness.

The performance of Fiji 's economy since 1999 has been irregular (Tab 1), also due the political and constitutional instability experienced between 1999 and 2001. The military coup in December 2006 is likely to cause long-term harm to the economy. According to recent estimates (NZIER, 2007) the 2000 coup caused a 39.4% fall in visitor arrivals; a 33.1% fall in investment; and a 3.5% increase in the real interest rate. A moderate countervailing factor was a 9.9% increase in government expenditure. In percentage terms, the biggest estimated long-run effects were a 36% decrease in informal sector wages, a 24% decrease in exports, an 8% decrease in real GDP and a 7% decrease in real national welfare. Although it is too early to be certain, the effects of the 2006 coup are likely to be qualitatively similar, because the external and internal shocks are likely to be the same. However, it is very unclear at the moment to predict what the quantitative impacts will be.

In addition, the Fijian economy continues to face uncertainties due to unsolved political issues[1] and the impact of restructuring its agriculture and manufacturing sectors in response to changes in international trade arrangements[2].

The crisis of the sugar sector, started even before the EU price reductions[3], has already caused a sharp drop in the contribution of this sector to GDP -from 11.3% in 1995 to 6% in 2005. This, in turn, has made the overall contribution of the agricultural sector to total GDP decline[4] and the tourism and textile become the largest GDP contributors.

Among sectors performing well, tourism is the lead sector: it presently is the country's largest source of economic growth, investment and foreign exchange earnings. The multiplier effects of tourism growth, though, are limited by the high dependence of tourism industry on imported supplies.

By *increasing backward economic linkages between tourism and local food suppliers* Fiji can

- *maximize* benefits from tourism development;
- *improve* benefits *distribution*; and
- *reduce the pressure on the national balance of payments*.

First of all, the increase in the demand for local fresh food supplies by hotels and resorts can generate *positive direct, indirect and induced impacts* on domestic agricultural production, hence on farm incomes. At present, food, as well as most other supplies and services, used in the tourism sector are brought in from overseas. This means that part of the tourism sector food demand growth does not create new income domestically. The substitution of domestic food supplies to the imported ones, can makes the *tourism multiplier increase,* in this way *maximizing benefits from tourism development*.

In addition, stronger backward economic linkages between tourism and the domestic agricultural sector can *increase* not only the level but even *the distribution of benefits* from tourism growth. At present, only the population living in the coastal areas where the tourism industry is located is gaining from tourism, If the hotels and restaurants demand for domestic fresh food increases, then even the livelihoods of rural, often poor, agricultural population can improve.

Finally, the substitution of the current import flow of fresh food with a domestic supply can help reducing the widening deficit in the balance of payments[5], thus contributing to increasing the country's macroeconomic stability. The Strategic Development Plan 2007-2011 has addressed this import substitution stance and has indicated in a) the enhancement of tourism industry and agriculture sector linkages to match demand and supply, and b) the promotion of food safety and quality the two leading strategies to meet the objective of reducing the value of food imports from $370m in 2006 to $260m in 2011.

Previous research (Bennett et al.) has however pointed out that these linkages cannot be assumed to emerge alone – they must be actively facilitated. This points to the need of establishing how these linkages could be best put in place.

If policy interventions are to be directed at strengthening backward economic linkages between tourism and local food supplier, a better understanding of farmers production and marketing choices is required. This paper aims to contribute in this regard first by reporting the major findings of a horticultural chain study recently implemented in Fiji. In addition the paper focuses the attention on the case of direct marketing to hotels.

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[1] Such as constitutional reform and leasehold land issues.

[2] Mainly related to the loss, in 2005, of its garment quota with the USA and the progressive erosion of its preferential access to the EU market, where up to 60% of Fiji's sugar production (173,000 tons/year) has been sold in the past years.

[3] EU has planned a price reductions from 5% in 2006/2007 to up to 39% by 2009/2010.

[4] From 19% in 1989 to 13% in 2005.

[5] The annual food import bill continues to rise. It exceeded $350m in 2005.

The rest of the paper is structured as follows. In the next section, the methodology used to carry out the horticultural chain study is presented. We then present the major findings of the study in regard to the demand for horticultural products of the tourism sector and the supply of the Fijian horticultural. In the last paragraph we report the estimation results from applying a discrete choice model to identify the factors affecting the farmers decision to engage in direct sales to hotels.

2 The horticultural chain study

The study implemented by FAO-UN[6]/INEA[7]/SPC[8] was meant to understand the nature and relevance of the existing constraints of the local production and distribution of high quality horticultural productions so as to meet the tourism demand in Fiji. The research was implemented in the context of three chain studies carried out throughout the South Pacific region by the FAO regional project: "Support to the Regional Programme for Food Security in the Pacific Islands Countries" (GTFS/RAS/198/ITA).

The intent of the study was to solicit information from agricultural, trading and tourism firms in Fiji on the existing constraints to link the tourism industry demand to the domestic horticultural production.

More specifically, the objectives of the study were:

- to investigate the present domestic demand for the targeted products and the existing constraints to the development of their national supply so as to replace (at least partly) their current import flows;
- to prepare a strategy to overcome identified bottlenecks and to assure the full exploitation of the detected potentials.

The study followed a "participatory" approach by which INEA proposed first drafts of both the overall methodology and the specific tools (questionnaires) to be used to collect information, which were then validated by regional (SPC and FAO-SAPA) and national counterparts (country coordinator for Fiji).

The four horticultural products (mango, papaya, tomato and carrot) targeted with the study were selected by the local Ministry of Agriculture in the light of their relevance within the fresh-agricultural products basket currently demanded by the Fiji tourism industry.

Four surveys were then implemented to study the state of facts of the four targeted crops. To this end, four types of questionnaires were elaborated, one for each of the relevant operator within the chain (horticultural producers, domestic traders, importers and tourism operators). The questionnaires were worked out based on secondary information collected through an "ex-ante" assessment and were validated, prior to their use, through field testing.

Although changing according to the operator investigated, the questionnaires targeted primary information related to: the enterprise; production or procurement of the investigated product; harvest and post-harvest issues; domestic marketing or trading (import) issues and, only in the case of the producer's questionnaires, matters dealing with certification schemes, financing and extension services.

The surveys were carried out in May-July 2006 by a private consultant (working as national coordinator) assisted by 24 interviewers/data collectors. The total sample consisted of: 238 farmers; 100 tourism operators and 55 traders –out of which, 5 were importers.

<Table 1. Sample sizes >

[6] Food and Agriculture Organization of the United Nations.
[7] Italian Institute of Agricultural Economics.
[8] South Pacific Commission.

3 Demand for horticultural products of tourism sector

The tourism sector is the country's largest source of economic growth, investment and foreign exchange earnings. Visitor arrivals (Graph 1) have been growing over the last decades, although with some fluctuation due to political turmoil. Medium term prospects were very encouraging, although they might need to be reconsidered in the light of the 2006 coup.

< Graph 1>

Tourism earnings are by far the largest foreign exchange earner and reflect the number of visitor arrivals as well as their length of stay. Food and beverage consumption are a significant part of tourist expenditure According to recent investigations (Berno, 2006), around 15% of tourist expenditure in Fiji is currently spent on food.

In addition, it has been estimated that, although nearly half of hotel purchases are from local providers, two thirds of overall food import expenditures destined to the tourism sector is for food products that could be grown in Fiji (Berno 2006).

The growth of tourism sector is constantly increasing the food import bill, thus placing significant pressures on Fiji's balance of payments.

The survey carried out among tourism sector operators has shown that almost all the hotels and restaurant requirements of papaya and mango are met by domestic supplies. However, in the case of tomato, hotels and restaurants have a clear preference for imported products while nearly all hotels surveyed sourced practically all their requirements of carrots from importers (Graph 2).

The survey also confirmed that the two major reasons for preferring imported fresh produces are unavailability and inconsistency of local high quality fresh horticultural supplies.

< Graph 2>

4 The horticultural sector in Fiji

The agriculture sector, excluding sugar, contributes around 6% to GDP; accounts for around 14% of agriculture exports and for 15% of total food imports and sustains 54% of the total country's population.

The total value of horticulture production (around $50 million) is growing quite rapidly either in terms of contribution to the total agricultural value added and to exports.

Most of the commercial horticultural supply is originated in the Ba region and the Sigatoka Valley. Even though this latter area is smaller than the Ba region, it is however a larger supplier of vegetables to the nearby tourism sector.

A random sample of 252 farmers were interviewed and data on 238 of them were used for the analysis (table 2) .

<Table 2. Farmers interviewed by province and crop>

Farms in which papaya and tomato are grown have on average bigger farm size (respectively 17.3 and 13.2 ha) than those in which mango and carrots are grown (9.6 and 2.8 ha).

Most of farmers investigated make use of traditional production technologies (Table 3) with the exception of all tomato producers in the Nadroga / Navosa province who make use of Integrated Pest Management. In addition, a tomato grower is presently converting its production into organic.

<Table 3. Technology used by crop and region>

With regards to certification schemes, none of the farmers interviewed indicated that they make use of organic, fair trade, EUREP-GAP or other certification schemes.

The most commonly cited production constraints (Table 4) for the four crops were issues related to availability of improved varieties, seed and credit and to pests and diseases. At the same time, it is worth noting that the land issue was cited amongst the least relevant production constraints. For Indian farmers, in fact, land tenure may not have been a problem because the lease agreements have been worked out to their satisfaction. For Fijian farmers, however, the question related to this issue in the questionnaire did not delve into the issue of communal land and thus did not allow to explore this matter satisfactorily despite the fact that land tenure, especially in terms of security, may be an issue among these growers.

<Table 4. Producers' ranking of production problems, by crop>

Pawpaw and tomato growers prefer to market directly (table 5), whilst carrot and mango producers make greater use of intermediaries.

<Table 5. Marketing channels by crop>

Market price fluctuations (Table 6) is ranked by producers as the most important constraint for three (pawpaw, mango, tomato) of the four targeted commodities. In the same way, the lack of market information is ranked within the top four identified constraints for all commodities. With the exception of carrot, unreliable demand from the tourist sector is ranked as one of the top three problems identified by producers, and the problem of long distances to final buyers was identified as a significant constraint for mango and tomato.

<Table 6: Producers' ranking of marketing problems by commodity>

5 Determinants of direct sales to hotels

The data collected in the survey were used to better understand what are the determinants in the establishment of direct linkages between horticultural growers and hotels and restaurants, that is what are the variables that are affecting the probability of farmers to directly sell their products to the tourism sector agents. Hotels and resorts pay premium prices for quality fresh produce and direct selling can allow farmers to retain the highest possible portion of this premium without sharing it with intermediaries. .

Modeling the choice of direct selling to hotel

Discrete choice models can be used to analyze farmers' decision of direct selling to hotels within a utility maximization framework. In these models the observed choice is considered an expression of a continuous latent variable reflecting the propensity to choose a specific option amongst diverse alternatives.

The basic assumption here is that farmer's choices are driven by a random utility model (RUM). Random utility models are founded on the assumption that agents undertake an action based on a marginal cost/marginal benefits calculation derived from the utilities achieved with their choice. The utilities are not observable, but the observed choice reveals which one provides the greater utility. In this context, binary choice logit/probit models are usually employed.

Thus, when for a particular farm the values of the independent variables are known, it is possible to estimate the probability for a farmer to sell directly to hotels and restaurants.

In the specification of the logit/probit model "y_i" denotes the category –not selling to hotels and restaurants ($y_i = 0$), directly selling to hotels and restaurants ($y_i = 1$).

The binary model estimates the probability for each farmer to be engaged in a direct selling to hotels and restaurants, given the farm and demographic characteristics of the family and of the operator. The estimated coefficients measure the influence of variables on the probability of farmers to get directly engaged in direct sales to hotels and restaurants.

Definition and description of data

Table 7 provides definitions and descriptive statistics of the variables used in the model.

The sample used for estimating the model contains information on 197 farms. The exogenous variables used to explain the farm behavior refer first of all to the characteristics of: the family (ethnicity and dimension);the farmer (age, instruction and level of involvement in farming activity); the farm (dimension, level of production of target crop, distance from the market, use of own/buyer's transport means, distance from market, participation in marketing activities).

<Table 1: Description of variables used in the model>

Farmers of the Fijian ethnic group tend to engage more in direct deliveries to hotels as compared to those with an Indian origin. Family size has a normal distribution, with an average of 4 components. Operators engaged in direct selling to hotels do farm more on a full-time basis than those not engaged, while there are no relevant differences in age and education

Farms who sell their products to hotels are on average smaller than the rest of the sample in terms of land, both total and used land, and, in the case of mango, of level of productions. In addition, they tend to use more their own and less buyer's transportation means. Another difference is that in the choice of the purchaser for their products, they rely more on extension staff recommendations and less on their own choice. Additionally, they tend to present a higher participation of their sons into the marketing activities. Finally, they more frequently make use of IPM techniques.

Results

The results of the discrete choice logit model are presented in Table 8 which shows the estimated coefficients, the odds ratio (i.e. the effect of a unit change in each independent variable on the probability of direct marketing).

The model correctly predicted the choice to directly selling to hotels in 90.82 percent of the cases.

<Table 8. Results of logit model>

Ethnicity is the only significant variable among those relating to the family. This confirms the hypothesis made in the past (Macedru, 2003) about the importance of ethnicity in determining farmers' attitude for commercial agriculture. The negative sign means that Indians farmers have a lower probability than Fijian farmers to participate in direct marketing to hotels. This can be explained with the fact that Indians, usually more trade oriented than Fijians, have already good consolidated relationships with intermediaries and wholesalers.

Variables referred to quality, that is the use of IPM and of post harvest technologies -such as cooling facilities during or immediately after the harvesting operations, selecting and grading, present the highest impact on probability of selling to hotels.

Other variable that significantly affect the decision are the distance from the market, negative, and the availability of transportation means of property. The influence of these latter variables on the probability of direct selling., though, is fairly limited.

It is interesting to note that the variable referring to extension staff recommendations in the purchaser choice, although not statistically significant, presents a positive sign; the use of personal criteria, on the contrary, shows a significant and negative impact on the choice.

Finally, it is of interest to point out that the participation of sons in the marketing activity, though not significant, appears to have a positive sign.

6 Final remarks

The information collected in the horticultural chain study confirmed that the Fijian tourism sector demand for fresh food is constantly increasing and that, due to the inconsistency of a local high quality horticultural supply, this demand is largely met by imports .

The high propensity to import limits the multiplier effect of tourism growth and, in addition, prevents the spreading of economic benefits stemming from tourism activities to the rural population.

In order to amplify the multiplier effect of tourism growth, emphasis must be placed on increasing the size and quality of the domestic agricultural supplies meant to meet the demand of Fiji's hotels and resorts.

The analysis produced has so far confirmed that the main issues to be tackled for the targeted products are still relating to an increase in the consistency of their supplies and to traditional aspects of quality -mostly referring to grading, etc.- while no interest was detected as far as more sophisticated aspects of quality are concerned –such as: geographic indications, organic or fair trade kind of certifications. While for pawpaw and mango there is still a need to develop production and to improve distribution networks so as to gather supplies from different local producers into the volumes required by the tourism sector, in the case of tomatoes efforts should also be made in improving the overall quality of this product. As for carrots, given the very low current production and the quality of current imports, it is quite unlike that domestic growers could compete with the latter in any close future.

In addition, the application of a logit model has helped us to identify the factors that affect the farmers decision to be engaged in direct selling to hotels and restaurants. Direct selling is a particularly interesting strategy for farmers either because hotels and resorts pay premium prices for quality fresh produce, and because it allows farmers to retain the highest possible portion of this premium without sharing it with intermediaries.

Variables referred to quality, namely the use of IPM and of quality increasing post harvest technologies, have been found to have the highest impact on probability of selling to hotels. Results also suggest that ethnicity is important, with Fijian less oriented to this choice as compared to Indians. In addition, distance and the availability of transportation means of property appears to significantly increase the chances of direct selling.

Future research could be directed to better understand which are the drivers of different commercial strategies by making use of a multinomial logit model .

7 References

Berno T. (2006). Sustainability on a plate: linking agriculture, food and the tourism industry. Christchurch Polytechnic Institute of Technology. Mimeo. Fiji.

Bennett, O., Roe, D., Ashley, C. (editors) (1999) Sustainable Tourism and Poverty Elimination Study. UK Department for International Development (DFID)/ Overseas Development Institute (ODI) . UK: London

Macedru A. (2003). Use of participatory approaches in the South Pacific. In Farmer participatory methods for coconut genetic resources in Asia-Pacific region. http://www.ipgri.cgiar.org/publications/HTMLPublications/545/ch3.htm

McGregor A and Gonemaituba W. (2002). Fiji Agricultural Marketing: a policy framework.

Ministry of Finance and National Planning (2007). Strategic Development Plan 2007 – 2011. Fiji: Suva.

NZIER (the New Zealand Institute of Economic Research Inc) (2007) What does a coup cost? NZIER Update: February , 2007.

Young J. and Vinning G. (2006) Fiji: Commodity Chain Study. "Outcomes from the investigations implemented to assess import substitution potentials of selected horticultural products". FAO project GTFS/RAS/198/ITA. Mimeo. Fiji: Suva.

Tables

Table 1. Sample dimension by survey

Survey	Interviews
Producers	238
Tourism operators	100
o Hotels	(46)
o Restaurants	(33)
o Supermarkets	(21)
Traders	50
Importers	5
Total	393

Table 2. Farmers interviewed by province and crop

Province	Fruit and vegetable					Total
	Pawpaw	Mango	Tomato	Carrot	Papaya + tomato	
Ba	22	40	21	10	0	93
Nadroga / Navosa	38	0	55	0	23	116
Ra	1	10	18	0	0	29
Total Producers	61	50	94	10	23	238

Table 3. Technology used by crop

Production technology	Pawpaw	Mango	Tomato	Carrot	Total
Traditional	83	50	91	10	234
IPM	1	0	26	0	27
Organic	0	0	0	0	0
Under transition	0	0	1	0	1
Total	84	50	118	10	262

Note: Since a producer may be growing 2 or more of the targeted commodities, the numbers in the table exceeds the number of producers (238) interviewed.

Table 4. Ranking of production problems by crop

Production problem	Papaya	Mango	Tomato	Carrot
Lack of improved varieties	1	4	6	4
Fertilizers / chemicals not available or of bad quality	2	11	3	4
Certified seed too expensive	3	5	7	2
Certified seed not available from local dealers	4	7	4	3
Too many pests and diseases	5	1	2	6
Lack of specific credit lines	6	3	8	1
Lack of technical advice	7	9	5	8
Lack of suitable land	8	2	9	9
Land tenure	9	10	10	10
Lack of water for irrigation	10	6	1	7
Inadequate harvesting technology	.	12	.	.
Trees too scattered and grow wild	.	8	.	.

Notes: Relevance of the matter decreases from 1 to 12.

Table 5. Marketing channels by crop

Selling practice	Pawpaw %	Mango %	Tomato %	Carrot %
Through intermediaries				
Through intermediaries when the production is still in the field/on the tree	17	28	7	0
Through wholesalers in village/town markets	9	36	20	90
Through retailers in village/town markets	9	1	11	10
Direct sales				
Sell directly in my farm/in front of my house/on the road side	18	8	13	0
Sell directly in village/town markets (personally or family members)	24	21	25	0
Sell directly to supermarkets	1	0	12	0
Sell directly to hotels and/or restaurants	10	1	11	0
Other	12	5	1	0
Total	100	100	100	100

Table 6. Ranking of marketing problems by crop

Marketing problems	Papaya	Mango	Tomato	Carrot	Total
Inadequate or too expensive post-harvest technology	6	7	6	7	26
Inconsistency of supply flows	5	6	8	6	25
Lack of transport	8	8	7	2	25
Final buyers too far away from the production areas	7	5	5	3	20
Unreliable demand from the tourism sector	2	3	3	7	15
Low quality of supplies	4	1	2	5	12
Lack of market information	3	3	4	1	11
Market price fluctuations	1	1	1	4	7
Other	9	9	9	9	36

Table 7: Description of variables used in the model

Variable	Description	Farms selling to hotels		Farms not selling to hotels	
		Mean	Std.Dev.	Mean	Std.Dev.
Ethnicity	Ethnicity of the operator (0 Fijian; 1 Indian)	0.35	0.49	0.61	0.49
Family_size	Number of components	2.92	1.55	3.28	1.61
Age1	Operator age (years)	47.31	11.44	47.07	10.52
Educ1	Operator education (primary=1; secondary=2; university=3)	1.92	1.32	1.68	0.94
Employ1	Operator employed exclusively or part time in the farm (exclusively=0; partially=1)	0.08	0.27	0.18	0.38
Lfarm	Total land (ha) logarithms	2.58	1.81	3.77	4.19
Lprod	Used land (ha) logarithms	8.04	18.88	12.38	35.08
P_pln	Quantity of papaya produced (ln)	3.01	4.26	2.16	3.66
M_pln	Quantity of mango produced (ln)	0.30	1.54	1.91	3.20
T_pln	Quantity of tomatoes produced (ln)	4.74	3.88	2.87	3.61
P_harv_tecn	Pre-cool, selecting and grading (0=no; 1=yes)	0.73	0.45	0.66	0.47
IPM	Use of IPM (0=no; 1=yes)	0.27	0.45	0.08	0.27
Transp_own	Own transport used (0=no; 1=yes)	38.08	40.50	30.50	44.97
Transp_buyer	Buyer's transport used (0=no; 1=yes)	25.00	31.78	29.62	43.68
Distance	Distance from selling place (Km)	7.85	9.11	24.30	37.28
Sell_extens	Purchasers choice recommended by extension staff (0=no; 1=yes)	0.31	0.47	0.13	0.34
Sell_personal	Purchasers choice: personal (0=no; 1=yes)	2.08	1.41	2.58	1.05
Sell_son	Son participates in the production, marketing activities (0=no; 1=yes)	0.15	0.37	0.13	0.34
Sell_husband	Husband participates in marketing activities (0=no; 1=yes)	0.58	0.50	0.67	0.47
Sell_wife	Wife participates in marketing activities (0=no; 1=yes)	0.15	0.37	0.23	0.42
Sell_nonfam	Non family person participates in marketing activities (0=no; 1=yes)	0.12	0.33	0.21	0.41
N		26		171	

Table 8. Results of logit model (dependent: probability of direct selling to hotels)

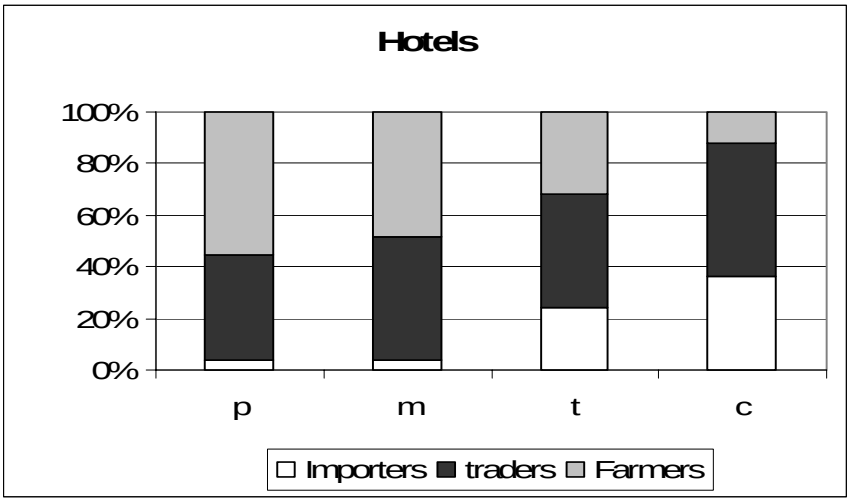
	Coefficients	Std. Err.		Marginal
Ethnicity	-3.173	1.078	***	-0.072
Family_size	-0.192	0.231		-0.002
Age1	0.048	0.030		0.001
Educ1	0.075	0.308		0.001
Employ1	-1.519	1.119		-0.013
Lfarm	0.056	0.119		0.001
Lprod	-0.011	0.013		0.000
P_pln	0.399	0.267		0.005
M_pln	-0.080	0.344		-0.001
T_pln	0.320	0.288		0.004
P_harv_tecn	2.074	1.068	*	0.022
IPM	3.337	1.282	***	0.195
Transport_own	0.031	0.013	**	0.001
Transport_buyer	-0.018	0.011		-0.001
Distance	-0.055	0.029	*	-0.001
Sell_extension	1.314	0.930		0.028
Sell_personal	-0.636	0.336	*	-0.008
Sell_son	0.874	0.959		0.015
Sell_husband	-1.884	0.792	**	0.024
Sell_wife	-0.918	0.892		-0.009
Sell_nonfam	-1.082	0.999		-0.010

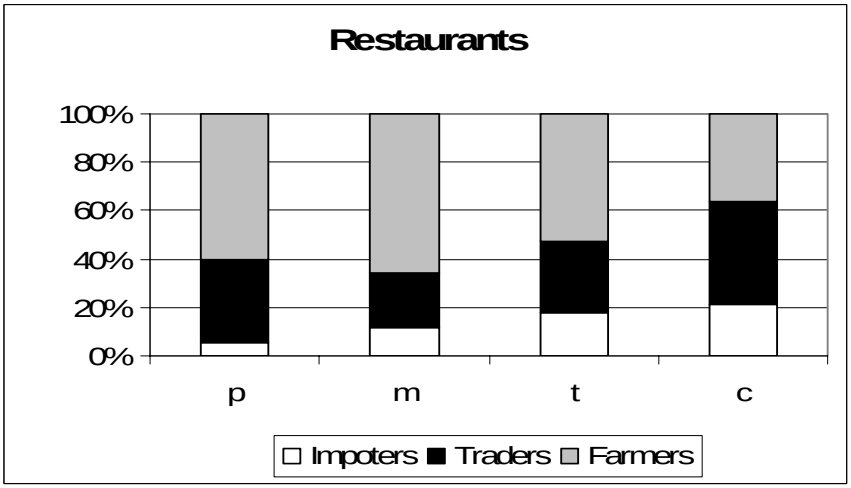
Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels,

Graphs and Diagrams

Graph 1. Tourists annual arrivals

Graph 2. Hotels and restaurant - origin of purchases (percentage)





Aknowledgment

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