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Article

Sweet Sustainability: Integrating Honey and Coffee for a Resilient Farm-to-Table Experience

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Abstract: The hospitality industry increasingly values sustain- able sourcing and ethical food production. Coffee, a staple in hotels and restaurants worldwide, faces challenges due to seasonal harvests and price fluctuations, affecting the livelihoods of farm- ers. This study explores how integrating honey production into coffee farms creates a more stable and sustainable supply chain. Honey, harvested at a different time than coffee, provides farmers with an additional income source, ensuring financial stability and consistent product availability for the hospitality sector. Beyond economic benefits, beekeeping enhances biodiversity and supports eco-friendly farming, aligning with the growing demand for sustainable and responsibly sourced ingredients. By embracing honey and coffee together, hotels and restaurants can promote ethical sourcing while offering guests a richer, more sustainable farm-to-table experience.

Keywords: Sustainable Sourcing, Ethical Food Production, Coffee–Honey Integration, Hospitality Supply Chains, Farmer Livelihoods.

INTRODUCTION

The hospitality industry plays a crucial role in economic stability, particularly in regions where seasonal fluctuations impact both income and employment opportunities. Hospital- ity professionals often navigate challenges related to demand variability, resource allocation, and financial planning through- out the year [1]. These fluctuations can lead to significant consequences, such as inconsistent earnings, workforce insta- bility, and service inefficiencies [2]. The situation is even more pronounced for businesses heavily reliant on tourism, where external factors like global travel trends and market shifts further amplify uncertainty [3]. To mitigate these risks, hos- pitality enterprises adopt various strategies, including service diversification, adaptive pricing models, and collaborations with local supply chains [4], [5].

This study explores the effectiveness of revenue and op- erational smoothing strategies within hospitality businesses, focusing on a case study of 275 boutique hotel operators in a high-tourism region. Some of these businesses have implemented auxiliary income sources, such as culinary ex- periences and cultural tourism packages, to offset seasonal downturns. This diversification strategy resembles established risk management techniques in other industries [6]. Seasonal demand fluctuations significantly impact business sustainabil- ity, with peak periods ensuring high profitability while off- season months pose financial challenges. For instance, survey data reveals that while only 5% of operators report financial strain in peak travel months, this figure rises to nearly 50% during off-peak seasons.

Understanding the impact of revenue diversification on busi- ness stability is complex due to various confounding factors, such as unique management styles and external economic

influences. To address these concerns, this study employs firm- level fixed effects to compare operational outcomes within the same business across different time periods. Additionally, we account for the potential endogeneity of diversification adop- tion by leveraging regional variation in auxiliary service offer- ings, which suggests a role for peer influence and industry best practices [7]. We observe that businesses operating in regions with a higher concentration of diversified service offerings are more likely to implement similar strategies themselves, aligning with established theories of industry adaptation. Our analysis finds that a 10% increase in neighboring firms offering auxiliary services corresponds to an 8% rise in the likelihood of individual businesses adopting diversification strategies [8]. Our results indicate that hospitality businesses employing diversification strategies report 6% lower financial strain dur- ing off-peak months compared to non-diversified businesses, which see a 10% rise in financial difficulties. Using neighbor- ing service adoption as an instrumental variable, we find that a 10% increase in the prevalence of auxiliary service offerings correlates with a 2% decrease in financial strain.

This paper contributes to three key areas of research. First, it expands the literature on financial stability in hospitality by incorporating a temporal dimension, analyzing monthly vari- ations in business performance [9]. This approach enhances our understanding of how businesses adapt to cyclical demand fluctuations. Second, it examines the role of industry adapta- tion and peer influence in service diversification, particularly in niche hospitality markets. Finally, it adds to the broader discussion on business sustainability by providing empirical evidence of the impact of revenue diversification in mitigat- ing financial instability. Our findings suggest that promoting auxiliary service adoption within hospitality businesses may serve as a valuable strategy for enhancing resilience against seasonal downturns.

The remainder of this paper is structured as follows: Section 2 provides background context and data description. Section 3 outlines the empirical methodology, including business- level and panel regressions, as well as instrumental variable analysis. Section 4 presents the findings. Section 5 concludes with policy implications and recommendations for industry practitioners.

Scope of Study and Data Gathering

Survey Location

This study draws insights from surveys conducted with 275 coffee cultivators between June and August 2022 within the central highlands of Chiapas, Mexico. The area is predomi- nantly inhabited by the Tseltal Mayan indigenous community, where agriculture—specifically coffee farming—forms the cornerstone of local livelihoods. To ensure active participation and ethical research engagement, collaboration was established with a regional coffee cooperative.

The geographical placement of the study is illustrated in Figure 5, while Figure 6 delineates the specific survey zones. The cooperative, Yomol A'tel, organizes the area into eleven sections, each of which was surveyed independently. Partic- ipation was voluntary, with respondents receiving dry goods as a token of appreciation. To streamline logistics, one indi- vidual per household was interviewed. Among the surveyed participants, 54 were also engaged in honey cultivation.

The survey encompassed household demographics, financial standing, agricultural methodologies, and honey production. Table I juxtaposes demographic attributes between honey producers and non-producers, demonstrating minimal variation in age, gender, and educational background. Honey cultivators generally had slightly larger households and resided closer to municipal hubs. However, experience in coffee farming, land size, and total income remained comparable between both groups, suggesting that honey production was not primarily driven by demographic elements.

The distribution of honey cultivators varied across different zones, as depicted in Figure 1. Regions where over 20% of participants engaged in honey farming were classified as ”honey zones.” Table IV presents regional characteristics, indi- cating that honey zones generally had older populations, lower formal education rates, and higher altitudes. Nonetheless, these disparities could not be solely attributed to individual producer traits, necessitating an exploration of social learning influences.

Knowledge Sharing in Honey Cultivation

Engaging in honey farming necessitates both labor and financial investment, with initial expenditures including bee- keeping infrastructure and maintenance. We propose that the decision to adopt honey farming is influenced by observing and interacting with neighboring honey producers.

Residing in a ”honey zone” can lead to a reduction in perceived costs due to communal knowledge exchange and resource availability, thus enhancing the likelihood of new adopters. This network effect suggests that as more individuals embrace honey production, barriers to entry diminish, poten- tially fostering widespread participation over time.

Mathematically, a producer i enters honey production when:

$Li + Ki + \mu i - 1 > 0$ (1)

where Li represents expected labor costs, Ki signifies an- ticipated capital investments, and µi encapsulates unobserved individual-specific factors.

To illustrate social learning effects, consider two producers, j and k, with identical characteristics ($\mu j = \mu k$). If j resides outside a honey zone and k within one, the following conditions hold:

$Lk < Lj$

$Kk < Kj$

Being part of a honey zone allows for labor efficiencies through knowledge transfer and cost reductions via shared resources. Consequently, k is more likely to engage in honey production than j, reinforcing regional adoption trends. At scale, this dynamic lowers barriers for newcomers, further promoting honey cultivation.

Implications for Food Security

Food security encompasses three key dimensions: availabil- ity, access, and utilization [9]. This study primarily examines food access and evaluates whether honey farming helps alle- viate food shortages among coffee growers. As per [10], food access hinges on agricultural earnings, where supplemental income from honey farming may contribute to household stability.

Food insecurity was assessed based on self-reported ”lean months,” during which families experienced food shortages [11]. While overall regional averages did not indicate signif- icant variations, monthly trends (Figure 2) revealed that food insecurity peaked between April and September, coinciding with the pre-harvest period. Figure 3 illustrates that during peak honey harvesting months (March–June), honey producers encountered lower food insecurity rates compared to non-producers. Additionally, Figure 4 integrates cooperative sales data, showing that honey revenue spikes from March to June, bridging the income gap before coffee earnings materialize in December.

To provide a seasonal context, we define the period from April to June as the honey season, during which income from honey surpasses that of coffee. Conversely, the months from June to August represent the lean season, when food insecurity impacts more than a quarter of respondents. These findings emphasize the role of honey production as a vital financial safeguard, helping coffee-growing households mitigate sea- sonal food shortages.

Analytical Framework

In this section, we outline our methodological approach, focusing on the role of honey production in alleviating food insecurity, particularly within the context of hospitality and agritourism. Initially, we assess the impact of honey pro- duction on seasonal food availability at the producer level. Subsequently, we employ a longitudinal perspective to explore month-to-month fluctuations in food insecurity. Lastly, we investigate whether honey production during peak seasons pro- vides a buffer against food scarcity. To ensure robustness, our primary estimation technique employs ordinary least squares regression, with an additional instrumental variable approach to account for potential endogeneity concerns.

Impact of Honey Production on Food Security

To evaluate the influence of honey production on overall food security, we employ the following econometric specifi- cations:

$yi = \alpha 1 + \beta 1Ti + e1i,r$ (2)

$yi,r = \alpha 2 + \beta 2Ti + pr + e2i,r$ (3)

We estimate the first-stage regression:

$Tir = \alpha 10 + \omega 10Zir + \epsilon 10ir.$ (12)

$yi,r = \alpha 3 + \beta 3Ti + \gamma 3iXi + pr + e3i,r$ (4)

Here, yi represents the duration of food insecurity for producer i in region r, while Ti is an indicator variable

Then, we use the fitted values regressions:

$\hat{T}i$ in the second-stage

for honey production status. The vector pr captures regional characteristics, and Xi includes demographic variables such as age, education, household size, and economic indicators. Standard errors are estimated using heteroskedasticity-robust techniques [12].

Seasonal Variation in Food Insecurity

A deeper understanding of food insecurity requires exam- ining its temporal patterns. We leverage panel data to assess monthly variations, estimating:

12

yi,r = α11 + β11T^ir + γ11Xi + pr + e11i,r, (13)
yi,r,m = α12 + γ121(m ∈ {4, 5, 6}) + θ12T^ir1(m ∈ {4, 5, 6})
+pr + τi + ϵ12i,r,m. (14)
Our instrument passes standard validity tests, ensuring that it is both relevant and exogenous.
In summary, our empirical strategy integrates both theo- retical insights and practical implications, highlighting the potential for honey production to enhance food security within a broader hospitality and agritourism framework.

yi,m

= α4

+ Σ δm1
m=2 12

monthm

+ ϵ4i,m

(5)

RESULTS

Overall Effect of Honey Production
Table V presents results from specifications 2, 3, and 4,

yi,r,m = α5 +

m=2 12

δm2monthm + γ5Xi + pr + ϵ5i,r,m (6)

which estimate the effect of honey production on overall food insecurity as measured by the number of months in the past

yi,r,m

= α6

+ Σ δm3
m=2

monthm

+ τi

+ pr

+ ϵ6i,r,m

(7)

year that a producer reports food insecurity. In the baseline specification, honey producers experience -0.18 months (5 days) less food insecurity. Adding first regional and then

The coefficients δm capture seasonal trends, with January as the reference month. Additional controls and fixed effects ensure precision by accounting for individual and regional heterogeneity.

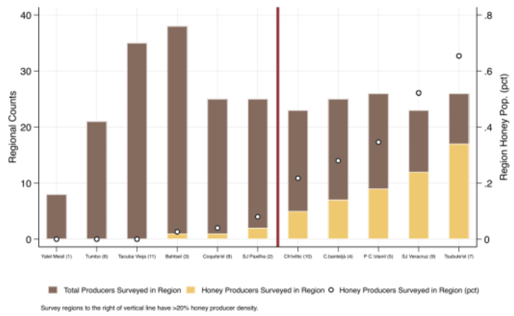
Effect of Honey Production During Peak Harvest Months

To assess whether honey production mitigates food insecu- rity during peak revenue months (April–June), we introduce an interaction term:
yi,m = α7 + β7Ti + γ71(m ∈ {4, 5, 6})
+θ7Ti1(m ∈ {4, 5, 6}) + ϵ7i,m, (8)
yi,r,m = α8 + β8Ti + γ81(m ∈ {4, 5, 6})

$+\theta 8Ti1(m \in \{4, 5, 6\}) + \delta 8Xi + pr$
$+\tau i + \epsilon 8i,r,m,$ (9)
$yi,r,m = \alpha 9 + \gamma 91(m \in \{4, 5, 6\}) + \theta 9Ti1(m \in \{4, 5, 6\})$
$+pr + \tau i + \epsilon 9i,r,m.$ (10)

The coefficient θ measures whether honey producers expe- rience less food insecurity during honey sales months.

Fig. 1. Honey Producers Count in Each Survey Region



Instrumental Variable Approach

Given that honey production is a self-selection process, we mitigate potential biases using an instrumental variable based on regional honey adoption rates [8]. The instrument is computed as:

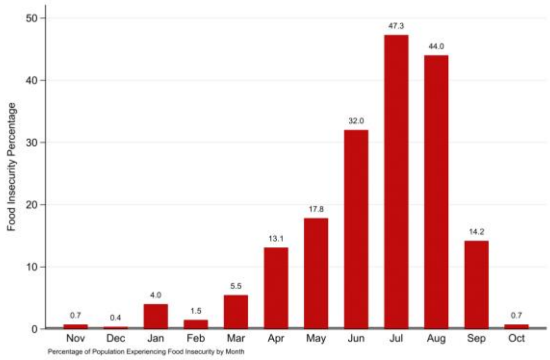


Fig. 2. Food Insecurity Exposure

Fig. 3. Food Insecurity: Honey vs Non-Honey

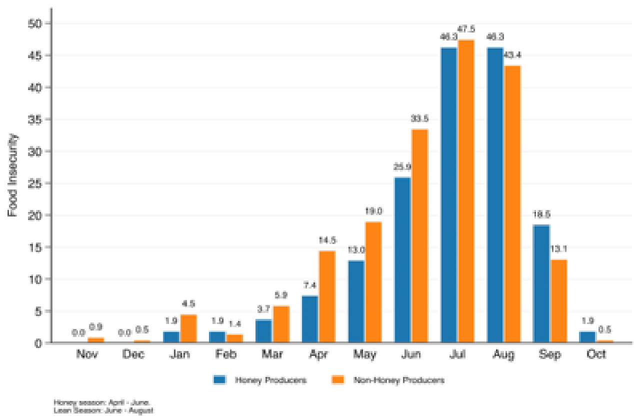


Fig. 4. Seasonal Effects

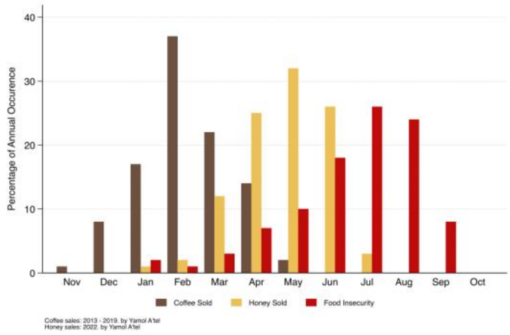


Fig. 5. Chiapas Map

This figure is comparable to Figure 5 in [6].

Fig. 6. Survey Regions

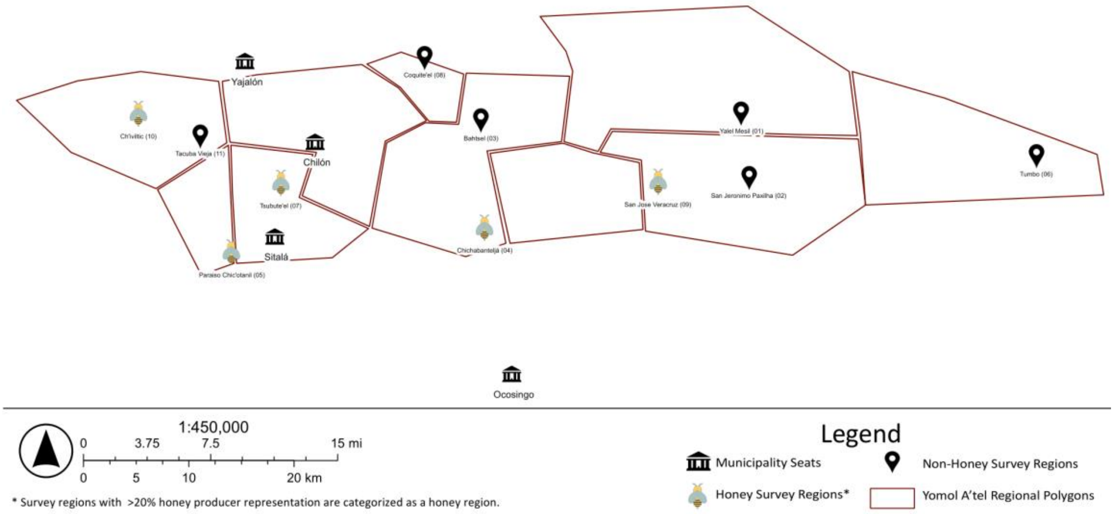


TABLE I Summary Statistics: Honey vs. Non-Honey Producers

Honey		Non-Honey	Difference
Mean (SD)		Mean (SD)	Mean (T-Stat)
Demographics			
Age	43.4 (15.3)	43.4 (15.8)	-0.05 (-0.02)
Female (%)	43.0 (50.0)	52.0 (50.0)	-9.0 (-1.19)
Household Size	7.6 (3.8)	6.6 (2.9)	1.0* (1.82)
Dependents	2.9 (3.2)	2.2 (2.2)	0.6 (1.37)
Distance to Town (km)	15.1 (12.2)	20.8 (15.5)	-5.7*** (-2.91)

Outcomes Coffee Harvest (Quintals)	7.0 (7.8)	6.0 (5.1)	1.1 (0.94)
Income (1,000 MXN)‡	17.9 (15.3)	16.8 (15.4)	1.1 (0.47)
Food Insecurity (months)	1.7 (1.3)	1.9 (1.3)	-0.2 (-0.89)
Participants	54	221	275
* p¡0.05, ** p¡0.01, *** p¡0.001			
‡Income excludes honey sales.			

TABLE II Summary Statistics by Region (Non-Honey Regions)

	Overall	1	2	3	6	8	11
Demographics							
Age	41.8	47.2	39.9	37.6	43.7	45.3	42.7
Female (%)	50.0	20.0	40.0	60.0	40.0	50.0	60.0
Household Size	6.5	6.4	6.1	6.4	7.9	5.6	6.9
Dependents	2.3	0.8	2.8	2.3	4.0	2.3	1.5
Elevation (MASL)	1015	936	946	1150	613	900	1259
Distance to Town (km)	24.3	40.3	41.3	15.6	53.5	12.0	9.3
Outcomes							
Coffee Harvest (Quintals)	5.8	2.2	5.1	5.2	6.2	3.5	9.0
Income (1,000 MXN)‡	16.2	8.1	17.8	16.5	21.7	11.8	16.4
Food Insecurity (months)	1.9	1.6	1.7	1.7	1.3	2.2	2.3
Region Honey Pop. (%)	2.6	0.0	8.0	2.6	0.0	4.0	0.0
Participants	152	8	25	38	21	25	35

* Distance measured from regional center to nearest municipality seat. ‡Income excludes honey sales.

demographic controls reduces this difference to nearly zero. These results differ from those of [11] and [6], both of whom find overall differences in the duration of the hungry season depending on whether coffee farmers diversify. The results here suggest that honey production is one of several diversification strategies for these farmers.

TABLE III Summary Statistics by Region (Honey Regions)

	Overall	4	5	7	9	10
Demographics						
Age	45.5	39.0	48.0	40.6	51.0	49.4
Female (%)	50.0	50.0	50.0	40.0	30.0	60.0
Household Size	7.2	8.5	5.8	10.2	5.2	5.8
Dependents	2.4	2.3	1.9	3.7	1.7	2.2
Elevation (MASL)	1161	962	983	1331	848	1701
Distance to Town (km)	13.9	17.9	4.4	5.3	32.7	11.3
Outcomes						
Coffee Harvest (Quintals)	6.7	5.9	7.3	9.9	6.0	4.1
Income (1,000 MXN)‡	18.0	14.6	22.0	22.7	16.7	13.4
Food Insecurity (months)	1.8	1.6	2.0	1.2	2.0	2.0
Region Honey Pop. (%)	40.7	28.0	34.6	65.4	52.2	21.7

Participants	123	25	26	26	23	23

* Distance measured from regional center to nearest municipality seat.
‡Income excludes honey sales.

TABLE IV Summary Statistics: Honey Regions vs. Non-Honey

	Honey Region		Non-Honey Region		Difference	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	T-Stat
Demographics						
Age	45.46	15.87	41.78	15.34	3.67*	(1.94)
Female (%)	46.0	50.0	53.0	50.0	-6.0	(-1.04)
Household Size	7.15	3.54	6.54	2.73	0.61	(1.58)
Dependents	2.37	2.50	2.33	2.42	0.05	(0.15)
Elevation (MASL)	1161	307	1015	210	146***	(4.50)
Distance to Town (km)	13.92	10.30	24.32	16.62	-10.40***	(-6.35)
Outcomes						
Coffee Harvest (Quintals)	6.71	6.04	5.76	5.53	0.94	(1.34)
Income (1,000 MXN)‡	18.05	15.54	16.20	15.15	1.84	(0.99)
Food Insecurity (months) 1.76		1.40	1.86	1.16	-0.10	(-0.63)
Participants 123			152		275	
* p¡0.05, ** p¡0.01, *** p¡0.001.						

* Distance measured from regional center to nearest municipality seat.
†Regions with >20% honey producers are classified as honey regions.
‡Income excludes honey sales.

TABLE V Effect of Honey Production on Total Months of Food Insecurity

	(1) OLS	(2) OLS	(3) OLS	(4) IV
	Baseline Food Insecurity1	Regional Controls Food Insecurity1	All Controls Food Insecurity1	All Controls Food Insecurity1
Honey Producer	-0.18	-0.04	0.02	-0.03
	(0.20)	(0.26)	(0.26)	(0.25)
Constant	1.85***	1.62***	0.92*	0.92*
	(0.08)	(0.31)	(0.54)	(0.52)
Observations	275	275	275	275
R2	0.003	0.066	0.105	0.105
Regional Controls	NO	NO	YES	YES
Demographic Controls2	NO	YES	YES	YES

Kindly note that robust standard errors are provided in parentheses.
The dependent variable represents the total number of months producers encountered challenges in accessing sufficient food over the past year.

Guest profile considerations include Age, Gender, Education Level, Household Size, Number of Dependents, Experience in Coffee Cultivation, Farm Size, Coffee Harvest, and Income.

Temporal Variation in Food Insecurity

Table ?? presents results from specifications 5, 6, and 7 which estimate the monthly variation in reported food insecurity. Here we find similar point estimates to Figure 2, but as these estimates use the entire 3300 month-producer panel, the resulting estimates have much smaller standard errors. The month dummies for April through December are significant either at the 5% or the 1% level. Columns (2) and (3) show that the point estimates and significance levels are robust to the inclusion of regional controls and either participant fixed effects or demographic controls, corroborating the qualitative evidence of a hungry season or "thin months" provided by [13], [14], [6].

Effect of Honey Production in Honey Months

Table VIII presents results from specifications 8, 9, and 10. All of these specifications estimate the effect of being a honey producer in the honey season: April, May, or June. Here we find an overall increase of food insecurity by 9% in these months. Honey producers, however, experience a decrease

Zir =

nr j=1,j̸=i

Tjr

(11)

of 7% in food insecurity these months. These estimates are noisy, and hover just above the 10% threshold for statistical

nr − 1

significance, indicating that while honey producers are on average able to mostly reverse the marginal food insecurity effects of these months there is ample variation in individual producers' ability to do so. These results are robust to the inclusion of regional controls and either household fixed effects or demographic controls.

Instrumental Variable Results

In this section we present the results from estimating specifications 4 and 10 with two-stage least squares (2SLS), instrumenting honey producer status with the share of honey producers in the same region. Table 11 shows the results of the first stage. An increase of 10% in the number of honey producers in a producer's region is associated with a 9% increase in the probability that a producer will produce honey. The F-statistic is 89.5, safely exceeding the typical threshold for a valid instrument.

Next we turn to column 4 of Table V, which presents the effect of honey production on overall food insecurity. Estimating the effect of honey production with 2SLS does not change the point estimate, which is still very close to zero.

Third, we turn to column 4 of Table VIII. Here estimating the effect of honey production by 2SLS more than doubles the point estimate from 7% to 19% reduction in food insecurity. We interpret this effect as follows. An increase in 10% of the number of honey producers in a region decreases food insecurity for the average producer by 1.9% in the honey months (April, May, and June) through the channel of the adoption of honey production. This result is significant at the 5% level.

Robustness Check

Finally, as a robustness check, we estimate the effect of honey production on food insecurity using an indicator vari- able for lean months (June, July, and August) instead. If we do not find an association between honey production and food insecurity in these months, then the lack of an association lends credence to our results showing a direct effect of honey production on food security during honey months. If we do find an association, then there could be systematic differences between honey producers and non-producers not captured by our econometric approach. Alternately, there could be differential dynamics between honey producers and non-honey producers, due to, e.g., differential consumption smoothing using honey earnings.

Table X presents the results. The first three columns estimate specifications 8, 9, and 10 with OLS and the fourth column estimates specification 10 with 2SLS. In all four specifications, households experience 35% higher mean food insecurity dur- ing the lean months, with honey producers not differing in overall reported food insecurity risk in specifications 1 and 2 where the exclusion of producer fixed effects allows us to identify average differences. OLS estimates in columns 1-3 show no effect systematic difference in food security among honey producers during the lean season, while IV results show an insignificant point estimate of -0.08. This result could indicate an effect that some of the benefits of honey production may last beyond the honey season for some producers. Overall, the results of the robustness check support our main finding: the association between honey production and food insecurity during the honey months.

CONCLUSION

This paper examines the effect of honey production as a livelihood diversification strategy for indigenous coffee pro- ducers in Chiapas, Mexico. Our month-producer panel allows us to estimate not only the overall effect of honey production on food insecurity but also the temporal dimension of food in- security. Our results support existing studies of the association between honey production and increased food security, and more broadly of the value of introducing diversified sources of agricultural income into cash crop production. A clear policy implication of our work is the importance of alternative livelihood strategies in general and beekeeping in particular for coffee producers in this region. NGOs and government organizations who promote these strategies should keep in mind the importance of social learning and peer effects.

Future work could address limitations of our study. First, we only consider the region that producers live in as a source of social learning about honey production. We do not ask them exactly how or from whom they learned to produce honey, and may as a result our instrumental variable estimates be vulnerable to a variety of homophily and contagion biases [15]. Second, our survey only captures producers' honey production and food insecurity at one point in time. Repeat annual visits would allow us to construct a richer panel and dig deeper into producers' ongoing experience with honey production, its evolution, as well as the source and nature of their food insecurity.

REFERENCES

1. J. Morduch, "Income Smoothing and Consumption Smoothing," vol. 9, no. 3, pp. 103–114. [Online]. Available: https://pubs.aeaweb.org/doi/10.1257/jep.9.3.103
2. V. Banerjee and E. Duflo, "The Economic Lives of the Poor," vol. 21, no. 1, pp. 141–168. [Online]. Available: https:
3. //www.aeaweb.org/articles?id=10.1257/jep.21.1.141
4. C. M. Boyd and M. F. Bellemare, "The Microeconomics of Agricultural Price Risk," vol. 12, no. 1, pp. 149–169. [Online]. Available: https://www.annualreviews.org/doi/10.1146/annurev-resource-100518-093807
5. G. Feder, R. E. Just, and D. Zilberman, "Adoption of Agricultural Innovations in Developing Countries: A Survey," vol. 33, no. 2, pp. 255–298. [Online]. Available: https://www.journals.uchicago.edu/doi/10.1086/451461
6. L. Bizikova, E. Nkonya, M. Minah, M. Hanisch, R. M. R. Turaga, C. I. Speranza, M. Karthikeyan, L. Tang, K. Ghezzi- Kopel, J. Kelly, A. C. Celestin, and B. Timmers, "A scoping review of the contributions of farmers' organizations to smallholder agriculture," vol. 1, no. 10, pp. 620–630. [Online]. Available: https://www.nature.com/articles/s43016-020-00164-x
7. J. Anderze´n, A. Guzma´n Luna, D. V. Luna-Gonza´lez, S. C. Merrill,
8. M. Caswell, V. E. Me´ndez, R. Herna´ndez Jonapa´, and M. Mier y Tera´n Gime´nez Cacho, "Effects of on-farm diversification strategies on smallholder coffee farmer food security and income sufficiency in Chiapas, Mexico," vol. 77, pp. 33–46. [Online]. Available: https://linkinghub.elsevier.com/retrieve/pii/S0743016719311611
9. D. Foster and M. R. Rosenzweig, "Microeconomics of Technology Adoption," vol. 2, no. 1, pp. 395–424. [Online]. Available: https://www.annualreviews.org/doi/10.1146/annurev.economics.102308.124433