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Article

Tourism growth and vulnerable employment in emerging and developing economies

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Abstract: International tourism is widely promoted as a source of employment in developing economies, yet its relationship with employment structure remains less clear. Using annual data for 30 emerging and developing economies from 2000 to 2022, this study examines whether international tourist arrivals are associated with vulnerable employment, self-employment, employment-to-population ratios, unemployment, and sectoral employment. Two-way fixed-effects models are estimated with country-clustered standard errors. Higher lagged tourist arrivals are associated with larger shares of vulnerable employment and self-employment, while no stable association is detected for the employment-to-population ratio, unemployment, service employment, or agricultural employment. The vulnerable-employment result remains positive under alternative tourism measures, country-specific trends, alternative inference procedures, exclusion of the COVID-19 period, and leave-one-country-out tests, but weakens in dynamic and first-difference specifications. The evidence is therefore more consistent with persistent within-country co-movement in employment status than with an immediate causal response to annual tourism shocks. By distinguishing employment absorption from employment formalisation, the study shows why tourism performance should be assessed not only through visitor growth and aggregate job creation, but also through the employment arrangements in which economic activity is organised.

Keywords: international tourism; vulnerable employment; self-employment; employment structure; emerging and developing economies; panel data

1. Introduction

International tourism is widely promoted as a development strategy because it links local services and assets to external demand and can generate employment and income [1–3]. Recent research, however, shows that aggregate tourism gains can coexist with precarious work and uneven exposure to labour-market risk [4–6]. International tourism may also have broader distributional consequences, including implications for income inequality [7]. Evaluating tourism-led development therefore requires attention not only to how much employment is generated, but also to the form in which that employment is organised.

Tourism-related work may take the form of wage employment, temporary work, own-account activity, family enterprises, or microbusinesses. These arrangements differ in contract security, social-protection coverage, and exposure to market risk [8–10]. Conventional indicators such as unemployment, the employment-to-population ratio, and broad sectoral employment shares may consequently remain stable even when employment status changes.

This study focuses on vulnerable employment, defined as own-account workers and contributing family workers as a share of total employment [11,12]. The indicator captures employment status and exposure to employment-related risk, but it should not be equated with poverty, informality, or poor job quality. Self-employment may represent either necessity-driven livelihood activity or opportunity-driven entrepreneurship [13], and country-level aggregate data cannot distinguish these motivations.

Recent tourism-work research documents continuing concerns about employment vulnerability, labour precarity, and weak protection [14–16]. Much of this evidence is destination-, occupation-, or crisis-specific [17,18]. Cross-country longitudinal evidence remains more limited on whether changes in tourism activity are systematically associated with national employment structure [19,20].

This gap motivates a distinction between employment absorption and employment formalisation. Employment absorption concerns whether economic activity broadens opportunities for labour participation; employment formalisation concerns the institutional form through which that activity is organised. These dimensions need not move together. Tourism activity may expand income-generating opportunities without a corresponding expansion of protected wage employment [14].

Against this background, the study examines international tourist arrivals and six labour-market outcomes across 30 emerging and developing economies from 2000 to 2022. Vulnerable employment is the primary outcome, self-employment is treated as a supplementary employment-status measure, and the results are compared with the employment-to-population ratio, unemployment, service employment, and agricultural employment.

The study makes three contributions. First, it distinguishes employment absorption from employment formalisation in evaluating tourism-led labour-market change. Second, it links macro-level tourism research with recent tourism-work evidence by examining whether tourism activity co-moves with national employment status over time. Third, it compares employment status, aggregate participation, unemployment, and sectoral allocation within a common empirical framework rather than treating them as interchangeable indicators of inclusive development [19,20].

2. Methods

2.1. Research design and sample

The study uses a cross-country longitudinal panel design to examine within-country associations between international tourism activity and employment structure. Country fixed effects absorb time-invariant national characteristics, while year fixed effects account for shocks common to the sampled economies.

The sample comprises 30 emerging and developing economies observed from 2000 to 2022: Argentina, Bangladesh, Bolivia, Brazil, Cambodia, Chile, China, Colombia, Ethiopia, Ghana, India, Indonesia, Kazakhstan, Kenya, Kyrgyzstan, Lao PDR, Malaysia, Mexico, Mongolia, Myanmar, Nepal, Nigeria, Pakistan, Peru, the Philippines, South Africa, Sri Lanka, Thailand, Uzbekistan, and Vietnam.

Sample inclusion was primarily determined by the availability of sufficiently complete and comparable annual data for tourism activity, labour-market outcomes,

and the time-varying controls used in the analysis. The full country-year framework contains 690 possible observations. Missing values were not imputed, and regressions used complete country-year observations for the variables required in each specification. After lag construction and complete-case restriction, the baseline model contained 592 observations.

The sample is therefore a data-eligible panel rather than a statistically representative sample of all developing economies. Countries were not selected according to the direction or magnitude of tourism growth, vulnerable employment, or estimated coefficients. The findings should consequently be interpreted for the sampled economies and not mechanically generalised to countries with substantially different tourism dependence, institutional structures, or data coverage.

2.2. Variable definitions and measurement

2.2.1. Vulnerable employment

The primary dependent variable is vulnerable employment as a percentage of total employment (World Bank indicator SL.EMP.VULN.ZS). It comprises own-account workers and contributing family workers [11,12].

Compared with wage and salaried workers, these groups are generally less likely to receive employer-provided contracts or social protection and bear more direct exposure to market risk. The indicator is therefore interpreted as a measure of employment status rather than a direct measure of poverty, informality, or individual job quality [11,12].

2.2.2. Supplementary labour-market outcomes

Self-employment was measured as a percentage of total employment (SL.EMP.SELF.ZS). Because it overlaps substantially with vulnerable employment by construction, it was analysed as a supplementary outcome rather than as an independent mechanism or a covariate entered jointly with vulnerable employment.

The employment-to-population ratio (SL.EMP.TOTL.SP.ZS) and unemployment rate (SL.UEM.TOTL.ZS) capture aggregate labour-market participation and unemployment. Service employment (SL.SRV.EMPL.ZS) and agricultural employment (SL.AGR.EMPL.ZS), both expressed as shares of total employment, capture broad sectoral allocation. Each outcome was estimated in a separate model.

2.2.3. International tourism activity

International tourist arrivals (ST.INT.ARVL) constitute the primary explanatory variable. Because arrivals are strongly right-skewed across countries, the series was transformed using the natural logarithm.

Tourist arrivals were lagged by one year to allow the association with employment structure to occur with a delay and to reduce contemporaneous simultaneity. This timing choice does not provide exogenous identification.

International tourism receipts (ST.INT.RCPT.CD), also log-transformed and lagged by one year, were used as an alternative tourism measure in robustness analysis. Because receipts in current US dollars are affected by exchange-rate and price movements, they were not used as the baseline exposure.

2.2.4. Control variables

The baseline models included four lagged, time-varying country-level controls. GDP per capita, measured in constant prices and log-transformed, captured economic development and formal-sector absorption capacity. Urbanisation measured the share of the population residing in urban areas. The proportion of the population aged 65 years and over captured demographic ageing. Access to electricity measured basic infrastructure coverage relevant to production and business activity.

2.3. Empirical model and estimation strategy

The baseline specification is a two-way fixed-effects model with country and year fixed effects. Each labour-market outcome is entered separately as the dependent variable. The main explanatory variable is the one-year lag of log international tourist arrivals, with lagged GDP per capita, urbanisation, population ageing, and access to electricity as controls. Standard errors are clustered at the country level.

The tourism coefficient therefore captures a conditional within-country association between lagged tourist arrivals and the subsequent labour-market outcome after accounting for time-invariant country characteristics, common year shocks, and the included time-varying controls.

The coefficient should not be interpreted as causal. Country and year fixed effects do not eliminate confounding from unobserved factors that vary across countries and over time. Exchange-rate movements, infrastructure investment, institutional reform, political stability, and labour-market policies may affect both tourism activity and employment structure. Because the design has no exogenous policy shock, instrumental variable, or quasi-experimental source of variation, the estimates are interpreted as conditional within-country panel associations.

2.4. Robustness and sensitivity analyses

Six robustness and sensitivity analyses were conducted for vulnerable employment. First, 2020 and 2021 were excluded to assess sensitivity to the COVID-19 disruption. Second, Driscoll–Kraay standard errors with two lags were used to allow for heteroskedasticity, serial correlation, and cross-sectional dependence. Third, country-specific linear trends were added to absorb distinct long-run national trajectories. Fourth, international tourism receipts replaced tourist arrivals as the tourism measure.

Fifth, lagged vulnerable employment was added to assess the role of persistence in employment structure; because fixed-effects estimation with a lagged dependent variable can be biased in finite samples, this was treated as a sensitivity analysis rather than the primary specification. Sixth, a first-difference model examined whether annual changes in tourist arrivals were associated with annual changes in vulnerable employment.

A leave-one-country-out analysis re-estimated the baseline model 30 times, excluding one country in each replication, to assess whether the result depended on any single economy.

2.5. Supplementary analysis of digital connectivity

Internet use, measured as the percentage of individuals using the internet and lagged by one year, was examined as a supplementary moderator, given the growing relevance of digitalization to tourism activity and self-employment [21,22].

National internet use captures general digital connectivity rather than tourism-platform participation, digital payments, online booking, digital skills, or platform regulation. The interaction is therefore not interpreted as an estimate of the effect of digital tourism platforms.

2.6. Data processing, statistical inference, and ethical considerations

Data management, variable construction, and statistical analyses were conducted in R, with fixed-effects models estimated using the fixest package. Indicators were merged by country code and year, and lags were created within countries after chronological sorting.

Descriptive statistics used all available observations for each variable, pairwise correlations used pairwise-complete observations, and regression models used complete observations for the variables required in each specification. All statistical tests were two-tailed. Interpretation considers coefficient magnitude, statistical uncertainty, and consistency across specifications rather than statistical significance alone.

All data are publicly available aggregate country-level indicators and contain no individual records or personally identifiable information. The study therefore involved no direct recruitment, intervention, or tracking of human participants.

3. Results

3.1. Descriptive statistics and correlations

Table 1 reports descriptive statistics and pairwise correlations. Vulnerable employment averaged 50.346 % of total employment and self-employment averaged 54.327 %, indicating that non-wage forms of employment are quantitatively important in the sampled economies.

Table 1. Descriptive statistics and correlations.

Variable	*N*	Mean	SD	1	2	3	4	5	6
Vulnerable employment	690	50.346	20.569	1.000					
Self-employment	690	54.327	20.496	0.984	1.000				
Employment-to-population ratio	690	60.962	10.482	0.292	0.328	1.000			
Unemployment rate	690	5.623	4.919	−0.434	−0.419	−0.611	1.000		
Ln (Tourist arrivals)	592	14.850	1.606	−0.485	−0.471	0.078	0.060	1.000	
Ln (GDP per capita)	690	7.906	0.928	−0.790	−0.766	−0.123	0.309	0.660	1.000

Note: Pairwise complete observations are used to calculate the correlation coefficients.

Vulnerable employment and self-employment are highly correlated ($r = 0.984$), reflecting their overlapping statistical definitions. The two outcomes were therefore estimated separately and were not entered jointly in the same model.

In pooled correlations, international tourist arrivals were negatively correlated with vulnerable employment and self-employment, while GDP per capita was negatively correlated with both employment-status indicators and positively correlated with tourist arrivals. These pooled correlations combine between-country level differences with within-country changes and should not be interpreted as conditional panel associations.

3.2. Baseline regression results

Table 2 reports the two-way fixed-effects estimates. Lagged log tourist arrivals were positively associated with vulnerable employment ($\beta = 1.570$, $p < 0.05$). A 10 % increase in tourist arrivals corresponds to an increase of approximately 0.150 percentage points in the vulnerable-employment share, while a doubling of arrivals corresponds to approximately 1.088 percentage points.

Table 2. Tourism arrivals and employment outcomes.

Variables	Vulnerable employment	Self-employment	Employment-to-population ratio	Unemployment rate	Service employment	Agricultural employment
L. ln (Tourist arrivals)	1.570* (0.627)	1.404* (0.646)	−0.957 (0.842)	−0.124 (0.392)	−0.821 (0.501)	0.047 (0.960)
L. ln (GDP per capita)	−9.714***(2.294)	−8.378***(2.145)	−0.214 (2.654)	−2.351 (1.742)	6.330** (1.982)	(3.467)
L. Urbanization	−0.170† (0.084)	−0.203* (0.093)	0.035 (0.082)	0.016 (0.052)	0.147 (0.098)	−0.252 (0.148)
L. Population aged 65+	1.059† (0.562)	1.166* (0.541)	−0.355 (0.519)	−0.331 (0.287)	−0.992† (0.491)	1.093† (0.570)
L. Access to electricity	0.058† (0.031)	0.068* (0.029)	−0.026 (0.043)	0.025 (0.021)	−0.001 (0.035)	−0.026 (0.057)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	592	592	592	592	592	592
R-squared	0.994	0.994	0.968	0.941	0.988	0.985
Within R-squared	0.356	0.320	0.037	0.079	0.245	0.387

Note: Country-clustered standard errors are reported in parentheses. All explanatory variables are lagged by one year. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † $p < 0.10$.

The self-employment coefficient was also positive ($\beta = 1.404$, $p < 0.05$). A 10 % increase in arrivals corresponds to approximately 0.134 percentage points in the self-employment share, while a doubling corresponds to approximately 0.973 percentage points. Because self-employment and vulnerable employment overlap substantially, this result is treated as a compositional supplement rather than an independent mechanism test.

No stable association was detected between tourist arrivals and the employment-to-population ratio, unemployment, service employment, or agricultural employment. The baseline pattern is therefore concentrated in employment status rather than aggregate participation, unemployment, or broad sectoral allocation.

The control-variable coefficients are reported as conditional estimates only and are not interpreted as independent causal effects.

3.3. Robustness and sensitivity analyses

Table 3 reports the robustness and sensitivity analyses. Excluding 2020 and 2021 produced a coefficient of 1.629, close to the baseline estimate. The coefficient was unchanged under Driscoll–Kraay inference and remained positive when country-specific trends were added (0.772) and when tourism receipts replaced tourist arrivals (1.333).

The association weakened markedly in specifications that placed greater weight on persistence and year-to-year change. After lagged vulnerable employment was included, the tourism coefficient fell to 0.218 and was no longer statistically significant. In the first-difference model, the coefficient remained positive but was only weakly significant at the 10 % level.

These results qualify rather than overturn the baseline estimate. They indicate that persistence in vulnerable employment and slower-moving within-country co-movement may account for part of the observed relationship, while evidence for an immediate annual response is limited.

Table 3. Robustness checks for vulnerable employment.

Variables	Baseline FE	Excluding COVID-19	Driscoll–Kraay SE	Country-specific trends	Tourism receipts	Dynamic FE	First differences
L.ln (Tourist arrivals)	1.570* (0.627)	1.629** (0.579)	1.570*** (0.334)	0.772* (0.348)		0.218 (0.137)	
L.ln (Tourism receipts)					1.333* (0.563)		
Δln (Tourist arrivals)							0.330† (0.171)
L.Vulnerable employment	No	No	No	No	No	Yes	No
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	No
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific trends	No	No	No	Yes	No	No	No
Observations	592	547	592	592	589	592	562
R-squared	0.994	0.994	0.994	0.997	0.994	0.998	0.080
Within *R*-squared	0.356	0.323	0.356	0.111	0.352	0.841	0.030

Note: Models (1), (2), (4), (5), and (6) use country-clustered standard errors. Model (3) reports Driscoll–Kraay standard errors with two lags. Model (2) excludes 2020 and 2021. Model (4) includes country-specific linear trends. Model (6) includes the lagged dependent variable. Model (7) is estimated in first differences. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, † $p < 0.10$.

3.4. Leave-one-country-out analysis

Figure 1 and **Table 4** report the leave-one-country-out results. The tourism coefficient remained positive in all 30 replications, ranging from 1.197 to 2.008, with a mean of 1.573 compared with 1.570 in the full sample. Twenty-seven estimates were significant at the 5 % level and all 30 at the 10 % level.

The sign stability indicates that the baseline association is not driven by a single large economy, major tourism destination, or country with an unusual employment structure.

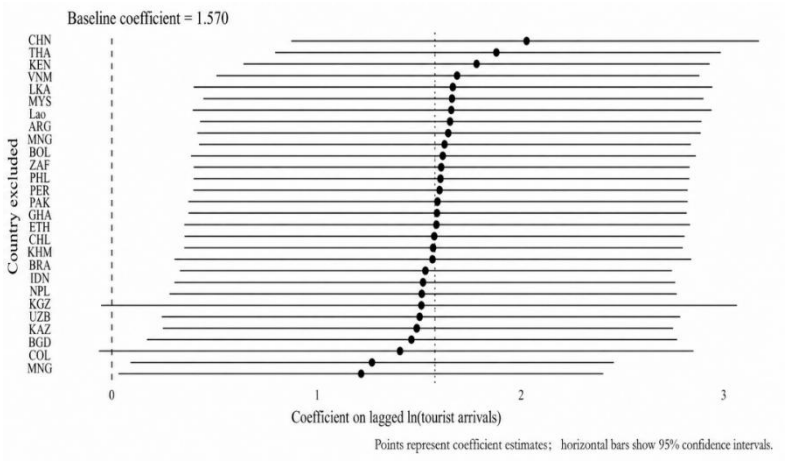


Figure 1. Leave-one-country-out estimates of the association between tourist arrivals and vulnerable employment.

Note: The figure reports the estimated coefficient on lagged ln (tourist arrivals) after excluding one country at a time. Points represent coefficient estimates, and horizontal bars indicate 95 % confidence intervals based on country-clustered standard errors. The dotted vertical line denotes the full-sample estimate of 1.570, while the dashed vertical line marks zero. All 30-point estimates remain positive, indicating that the baseline result is not driven by any single country.

Table 4. Leave-one-country-out robustness summary.

Minimum coefficient	Maximum coefficient	Mean coefficient	Positive estimates	Estimates with $p < 0.05$	Estimates with $p < 0.10$	Total replications
1.197	2.008	1.573	30	27	30	30

Note: Each model re-estimates the baseline specification after excluding one country. The tourism coefficient remains positive in all 30 replications, reaches the 5 % significance level in 27 replications, and reaches the 10 % level in all replications.

3.5. Supplementary analysis of digital connectivity

Table 5 reports the interaction between tourist arrivals and internet use. The interaction was not statistically significant for vulnerable employment, self-employment, unemployment, service employment, or agricultural employment. A negative interaction was observed for the employment-to-population ratio at the 10 % level, but it was not replicated across the other outcomes and is interpreted cautiously.

Table 5. Digital connectivity as a moderator.

Variables	Vulnerable employment	Self-employment	Employment-to-population ratio	Unemployment rate	Service employment	Agricultural employment
L.ln (Tourist arrivals) × L.Internet use	−0.003 (0.012)	−0.005 (0.011)	−0.019† (0.010)	0.009 (0.007)	0.004 (0.008)	−0.014 (0.012)
Constitutive main effects	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	588	588	588	588	588	588
R-squared	0.994	0.994	0.971	0.944	0.988	0.986

Note: All specifications include the main effects of tourist arrivals and internet use. Country-clustered standard errors are reported in parentheses. † $p < 0.10$.

The interaction between tourist arrivals and internet use was not statistically significant for vulnerable employment, self-employment, unemployment, service employment, or agricultural employment. Although the interaction was negative for the employment-to-population ratio at the 10 % significance level, this isolated result was not observed across the other labour-market outcomes and should therefore be interpreted cautiously.

4. Discussion

4.1. Employment absorption and employment formalisation

The empirical pattern is concentrated in employment status. Higher tourism activity is associated with larger shares of vulnerable employment and self-employment, while aggregate participation, unemployment, and broad sectoral shares show no stable relationship. This pattern is consistent with some tourism-related activity being organised through own-account work and family enterprises rather than protected wage employment [14–16].

Self-employment should not be interpreted as intrinsically disadvantageous. It may support entrepreneurship and local ownership or reflect necessity-driven livelihood strategies. Because the aggregate indicators cannot distinguish these pathways, the results concern employment status and the distribution of employment-related risk rather than individual welfare or job quality. This interpretation is consistent with recent tourism-labour evidence.

4.2. Possible mechanisms

Four mechanisms may help interpret the observed association, but none is directly identified by the country-level design.

First, low entry requirements may make tourism-related activities accessible to individuals and households with limited access to formal wage employment. Household assets, local knowledge, and small-scale service capabilities can support entry without the capital requirements of larger formal enterprises. Where finance, training, and bargaining power are limited, additional tourism demand may consequently expand own-account activity without proportional gains in employment protection [23].

Second, seasonality and demand uncertainty may favour flexible labour arrangements. Firms facing volatile visitor flows may rely more on temporary labour, subcontracting, independent operators, or family workers, shifting part of the demand risk from firms to workers [24,25].

Third, limited formal-sector absorption capacity may shape how workers respond to tourism demand. Where regular wage employment is scarce, workers may enter small-scale tourism activities or add tourism services to existing livelihoods [26]. The null unemployment result is consistent with adjustment occurring among people who remain classified as employed rather than through a clearly identifiable movement out of unemployment.

Fourth, value-chain position may influence how tourism income and risk are distributed. Large firms and digital platforms often control branding, booking,

payments, and customer access, while smaller local providers may operate in more competitive segments[15,22].Wider participation may therefore coexist with a higher vulnerable-employment share without implying that every small provider experiences low income or poor job quality .

Destination-level evidence provides contextual support for these interpretations, but does not validate them in this cross-national panel [27].

4.3. Why labour-market indicators differ

Employment status, aggregate participation, and sectoral affiliation capture different labour-market dimensions and need not move together. The aggregate data cannot identify the origin of workers represented by a higher vulnerable-employment share. Compatible pathways include movement from wage employment into own-account work, shifts from agriculture or other informal activities into tourism-related household businesses, and the addition of tourism activity as a secondary income source [28].

Many such transitions leave workers statistically classified as employed and may not change their broad sectoral classification. Tourism-related activity also spans accommodation, food services, transport, retail, entertainment, agriculture, and construction, so broad sectoral indicators have limited resolution. Geographic concentration creates a similar problem because changes in tourism-intensive destinations may be diluted in national averages.

4.4. Theoretical contributions and policy implications

The central theoretical contribution is to distinguish employment absorption from employment formalisation. Economic participation may expand without a corresponding shift toward more protected employment relationships. Treating employment quantity and employment status as separate outcomes connects macro-level tourism research with recent work on employment vulnerability and precarious labour. Unlike conventional tourism-employment assessments that focus primarily on employment volume, this framework treats the institutional form of employment as a distinct dimension of tourism-led development [15].

Empirically, the common panel framework shows that tourism activity is more consistently associated with employment status than with unemployment, aggregate participation, or broad sectoral allocation.

The direct policy implication is narrow: Tourism performance should not be evaluated solely through visitor numbers or aggregate employment indicators. Credit, social protection, skills, enterprise registration, and platform regulation are not directly tested in the models. They are relevant only as mechanism-informed considerations. If low entry barriers and limited formal-sector absorption contribute to the observed pattern, enterprise upgrading, finance, skills, and registration may matter. If seasonality shifts income risk toward workers, portable social protection and income diversification may be relevant. Where tourism activity is platform-mediated, contractual transparency, payment arrangements, commission structures, and bargaining conditions warrant separate investigation.

4.5. Limitations and directions for future research

First, vulnerable employment captures employment status rather than multidimensional job quality. It does not measure earnings, working hours, occupational safety, contract stability, or subjective security and cannot distinguish high-return entrepreneurship from subsistence own-account work [29].

Second, aggregate country-level data cannot establish whether changes in employment structure occur directly within tourism industries or indirectly through agriculture, retail, transport, construction, and other supply-chain activities.

Third, self-employment and vulnerable employment overlap substantially by construction, so the self-employment result is not independent evidence of a mechanism.

Fourth, the fixed-effects design, lagged explanatory variables, and robustness checks do not resolve time-varying confounding. Future research could exploit plausibly exogenous changes in visa policy, international air connectivity, or transport infrastructure using event-study, instrumental-variable, or related quasi-experimental designs.

Fifth, tourist arrivals measure tourism scale but not visitor expenditure, length of stay, local income retention, tourism value added, or ownership structure. Future research could examine these dimensions to identify which forms of tourism development are more strongly associated with vulnerable employment.

Finally, the baseline estimates average across 30 economies and may mask heterogeneity by tourism dependence, labour regulation, social-protection coverage, access to finance, rurality, gender, and industrial concentration [30,31].

5. Conclusion

Across the 30 economies studied, tourism activity is more consistently associated with employment composition than with aggregate labour-market participation. The weaker dynamic and first-difference estimates caution against interpreting this pattern as a short-run causal effect. The results therefore support evaluating tourism performance not only by visitor growth or aggregate employment, but also by the employment arrangements through which activity is organised. Future research using stronger identification strategies and richer micro-level data could clarify the causal pathways and institutional conditions behind these patterns.

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