



# Academic Research Poster

Chin-Mei, Chou • Department of Tourism Leisure and Health, Deh Yu College of Nursing and Health

## Economic Policy Uncertainty and Profit Dynamics in Taiwan's Tourism Industry: A Nonlinear Threshold Analysis

### Abstract

The study examines how global economic policy uncertainty affects profit persistence in Taiwan's tourism industry. When the GEPU Index exceeds 286.0371, the influence of past profits weakens (0.9644 → 0.8927), showing that high uncertainty reduces profitability momentum.

**Keywords:** tourism industry; economic policy uncertainty; stepwise regression; smooth transition autoregressive model; threshold effect

### Introduction

- Global disruptions have increased economic policy uncertainty, leaving the tourism industry highly vulnerable despite partial recovery.
- Taiwan has introduced post-pandemic strategies—such as digital transformation, sustainability, and global market expansion—to boost industry resilience.
- Because prior research rarely examines the long-term nonlinear link between uncertainty and profit persistence, this paper uses the STAR model to analyze GEPU's moderating effects.

### Methodology

$$R_t = \omega_0 + \sum_{j=1}^j \omega_j R_{t-j} + \theta_t \dots \dots \dots (1)$$

$$R_t = \omega_0 + \sum_{j=1}^j \omega_j R_{t-j} + (\omega'_0 + \sum_{j=1}^j \omega'_j R_{t-j}) G(GEPU_{t-d}; \gamma, c) + \varepsilon_{it} \dots \dots \dots (2)$$

$$G(Z_{t-d}; \gamma, C) = \{1 + \exp[-\gamma(1/\sigma)(Z_{it-d} - C)]\}^{-1} \dots \dots \dots (3)$$

or

$$G(Z_{it-d}; \gamma, C) = 1 + \exp[-\gamma(1/\sigma^2)(Z_{it-d} - C)^2] \dots \dots \dots (4)$$

$$\delta_t = \pi_0 + \sum_{j=1}^p (\pi_{1j} \varphi_{t-j} + \pi_{2j} \varphi_{t-j} Z_{t-d} + \pi_{3j} \varphi_{t-j} Z_{t-d}^2 + \pi_{4j} \varphi_{t-j} Z_{t-d}^3) + \tau_t$$

$$H_0: \pi_{2j} = \pi_{3j} = \pi_{4j} = 0 \dots \dots \dots (5)$$

(1) AR MODEL  
(2-5) STAR MODEL

### Result

**Table 2.** Unit Root Test Results

Variable	ADF	PP	DF
R	-2.6954	-3.4336**	-1.8199*
GEPU	-3.1543*	-5.0616***	-2.7767*

Note: The values in the table represent the t-statistics from each unit root test. The asterisks \*, \*\*, and \*\*\* indicate the rejection of the null hypothesis of a unit root at the 10%, 5%, and 1% significance levels, respectively.

**Table 4.** Lag Selection for the Transition Variable

Variable	STAR Model for Profit Persistence in Taiwan's Tourism Industry				
	d	1	2	3	4
Coefficient	1.9198(0.0349)	2.2340(0.0420)	2.0058(0.0263)	0.6863(0.7632)	
d	5	6	7 <sup>#</sup>	8	
Coefficient	0.8955(0.5528)	2.3030(0.0095)	2.4747(0.0052)	1.7318(0.0638)	

**Table 5.** F-Test Results for Selecting the Transition Function Form

model	$H_{04}: \pi_{4j} = 0$	$H_{03}: \pi_{3j} = 0$ $ \pi_{4j} = 0$	$H_{02}: \pi_{2j} = 0$ $ \pi_{3j} = \pi_{4j} = 0$	Function
Coefficient	2.5223(0.0831)	4.5885(0.0006)	3.5899(0.0007)	Logistic

**Table 6.** Parameter Estimates of the STAR Model for Profit Persistence in Taiwan's Tourism Industry

Variable	Coefficient	p-value
$\omega_0$	6.0659	0.2165
$\omega_1$	0.7552	0.0000***
$\omega_5$	0.1951	0.0005***
$\omega_7$	0.0141	0.7649
$\omega'$	11.1131	0.6272
$\omega'_1$	0.5693	0.0001***
$\omega'_5$	-0.1760	0.3973
$\omega'_7$	-0.4650	0.0420**
$\gamma$	11.0220	0.4960
C	286.0371	0.0000***

Note: \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively.

### Conclusion

- Empirical results show strong profit persistence in Taiwan's tourism industry, but with heterogeneity, time dependence, and asymmetric threshold responses to GEPU changes.
- When GEPU exceeds 286.0371, the effect of past profitability weakens (from 0.9644 to 0.8927), indicating that heightened global uncertainty reduces profit momentum.
- The study highlights how policy uncertainty shapes profitability dynamics and provides risk-warning indicators and strategic guidance for tourism policymakers and industry practitioners.

### Suggestions for Future Research

To advance this field, scholars can apply panel smooth transition regression with firm- and industry-level panel data to capture heterogeneous, time-varying threshold effects across different GEPU levels; examine the tourism-related food and beverage sector to evaluate its nonlinear profit dynamics and compare the risk resilience of different business models; and analyze how business strategies and policy tools moderate GEPU's threshold effects and help mitigate uncertainty's negative influence on long-term industry stability.