

# Revisiting place-based industrial policy: Evidence from Thailand's special economic zones

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## 1 Introduction

Special Economic Zones (SEZs) have become a prominent policy instrument in developing countries to attract investment, promote industrialization, and accelerate structural transformation. By offering fiscal incentives, streamlined regulations, and dedicated infrastructure, SEZs are expected to stimulate economic activity and regional development. The number of SEZs worldwide has expanded rapidly over the past few decades, particularly in Asia.

Despite their popularity, evidence on their developmental impacts remains mixed. While some studies find positive effects on growth, employment, and industrialization (Ciżkowicz et al. 2017; Alkon 2018; Arbolino, Lantz, and Napolitano 2023), others highlight limited benefits due to implementation challenges, unfavorable locations, and weak linkages with local economies (Farole 2011; Frick, Rodríguez-Pose, and Wong 2019; Görg and Mulyukova 2024). Moreover, most empirical evidence comes from China and India (Wang 2013; Abeberese, Ackah, and Asuming 2024; Gallé et al. 2024), leaving the experience of other developing countries relatively underexplored.

## 2 Objective

- To estimate the causal effect of Thailand's 2015 border SEZ program on local economic development using satellite-derived Nighttime Lights (NTL) as a proxy for economic activity.
- To identify the geographic extent and decay of SEZ spillovers by examining impacts across non-parametric 5-km distance bands.

## 3 Methodology

This study utilizes annual subdistrict-level panel data (2013–2024), pairing satellite-derived Nighttime Lights (NTL) intensity with geocoded border SEZ locations. To capture localized treatment effects and geographic decay, a spatial difference-in-differences (DiD) model estimates changes across mutually exclusive 5-km distance rings radiating up to 60 km, relative to an omitted baseline control group (>60 km).

The baseline specification includes subdistrict and year fixed effects. To control for time-varying macroeconomic shocks and regional growth heterogeneity, the model is sequentially tightened with Province-Year fixed effects, District-Year fixed effects, and district-specific linear time trends. Standard errors are clustered at the subdistrict level to ensure robustness against spatial and serial correlation.

## 4 Results

- Highly localized growth:** Economic benefits concentrate heavily within the hosting SEZ subdistricts across all specifications.
- Rapid spatial decay:** Positive spillovers extend up to 10 km but fade completely by 15 km.
- Spurious displacement effects:** Baseline negative coefficients beyond 15 km disappear under stricter regional fixed effects.
- Robust policy shocks:** Localized impacts remain statistically significant even when penalizing the model with district trends.

	(1)	(2)	(3)	(4)	(5)
SEZ subdistricts	0.217 (0.168)	0.725*** (0.164)	0.698*** (0.197)	0.721*** (0.145)	0.336*** (0.089)
5 Km	0.054 (0.171)	0.517*** (0.185)	0.128 (0.344)	0.534*** (0.168)	-0.029 (0.265)
10 Km	-0.084 (0.182)	0.396** (0.197)	0.333* (0.195)	0.404** (0.179)	0.25 (0.164)
Constant	2.994*** (0.004)	2.951*** (0.006)	2.920*** (0.006)	2.948*** (0.003)	2.948*** (0.002)
Observations	89,100	89,100	88,992	89,100	89,100
R-squared	0.972	0.981	0.988	0.98	0.986
Subdistricts FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes			Yes	Yes
Province-Year FE		Yes			
District-trend					Yes
Province-trend				Yes	
District-Year FE			Yes		

## Policy implication

The findings suggest that SEZs can successfully promote local economic development, but the benefits are concentrated geographically. Policymakers seeking broader regional development may need complementary infrastructure and connectivity investments to extend gains beyond the immediate vicinity of the SEZ.

## 5 Conclusion

This study demonstrates that Thailand's border Special Economic Zones (SEZs) serve as highly effective catalysts for localized economic development, generating a sharp and statistically significant increase in nighttime luminosity within the hosting Tambon. However, the economic benefits exhibit a rapid geographic decay, dropping off completely and becoming statistically insignificant past a strict 10-to-15 km radius.

Notes: Coefficients for distance bins beyond 10 km are omitted for brevity. The coefficients on Robust standard errors in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



### Related work by the authors

This study extends the authors' recent publication: Durongkaveroj, W., & Phommachanh, N. (2026). Special Economic Zones and Local Economic Activity: Evidence from Thailand. *Asian Economic Papers*, 25(1): 78-99.

While our previous work utilized district-level socioeconomic data to analyze broad regional outcomes, this current paper advances that research by pivoting to high-resolution satellite Nighttime Lights (NTL) to map precise 5-km spatial spillovers at the subdistrict level.