



WP/20/170

IMF Working Paper

The Socio-Economic Impact of Special Economic Zones:
Evidence from Cambodia

by Mariya Brussevich

***IMF Working Papers* describe research in progress by the author and are published to elicit comments and to encourage debate.** The views expressed in IMF Working Papers are those of the author and do not necessarily represent the views of the IMF, its Executive Board, IMF management, or FCDO.

I N T E R N A T I O N A L M O N E T A R Y F U N D

IMF Working Paper

Asia & Pacific Department

The Socio-economic Impact of Special Economic Zones: Evidence from Cambodia**Prepared by Mariya Brussevich***

Authorized for distribution by Era Dabla-Norris

August 2020

IMF Working Papers describe research in progress by the author(s) and are published to elicit comments and to encourage debate. The views expressed in IMF Working Papers are those of the author(s) and do not necessarily represent the views of the IMF, its Executive Board, IMF management, or FCDO.

Abstract

This study examines the socio-economic impact of special economic zones (SEZs) in Cambodia--- a prominent place-based policy established in 2005. The paper employs a database on existing and future SEZs in Cambodia with matched household surveys at the district level and documents stylized facts on SEZs in a low-income country setting. To identify causal effects of the SEZ program, the paper (i) constructs an alternative control group including future SEZ program participants and districts adjacent to SEZ hosts; and (ii) employs a propensity score weighting technique. The study finds that entry of SEZs disproportionately benefits female workers and leads to a decline of income inequality at a district level. However, the findings also suggest that land values in SEZ districts tend to rise while wage levels remain largely unchanged relative to other districts. In addition, the paper tests for socio-economic spillovers to surrounding areas and for agglomeration effects associated with clusters of multiple SEZs.

JEL Classification Numbers: F21, O18, O25, R23, R58,

Keywords: Special Economic Zones; Place-Based Policy; Low-Income Country; Foreign Direct Investment

Author's E-Mail Address: mbrussevich@imf.org

* I thank Jarkko Turunen, Alasdair Scott, Davide Furceri, APD seminar participants, and Staff at the Council for the Development of Cambodia, Cambodia's Ministry of Economy and Finance, and Research and International Cooperation Departments of the National Bank of Cambodia for providing valuable comments and suggestions. Hibah Khan provided excellent research assistance. This research is part of a Macroeconomic Research in Low-Income Countries project (Project ID: 60925) supported by the UK's Foreign, Commonwealth and Development Office (FCDO). The views expressed in this paper are those of the authors and do not necessarily represent the views of the International Monetary Fund (IMF), its Executive Board, or FCDO.

Contents

1	Introduction	1
2	Stylized Facts	4
2.1	Background	4
2.2	Data	5
2.3	Geographic Distribution of SEZs and Socio-Economic Indicators	5
3	Estimation Strategy	9
4	Main Results	11
4.1	Employment	11
4.2	Incomes and Land Prices	13
4.3	Education	14
5	Effect of Multiple SEZs	14
6	Spillover Effects on Neighboring Districts	16
7	Robustness Checks	17
8	Policy Implications	18
9	Conclusion	20
	References	22

1. Introduction

Place-based policies are gaining popularity in both advanced and developing countries. While many advanced countries use place-based policies like Special Economic Zones (SEZs) to target economically disadvantaged locations, low-income countries rely on SEZs to promote export diversification and attract foreign investment. What is the socio-economic impact of such policies on local labor markets? The answer to this question is not theoretically obvious and empirical evidence remains inconclusive. Theoretically, SEZs are shown to result in rising property prices offsetting potential wage gains whereas labor market gains in targeted areas are shown to come at an expense of areas not participating in SEZ programs. Empirically, causality is difficult to establish, given that SEZ locations are generally not selected at random. While a number of studies have employed various identification techniques to disentangle the impact of place-based policies, predominantly in advanced country settings, there is no clear consensus on the overall effectiveness of place-based policies in supporting local labor markets. For low-income countries, empirical evidence of SEZ effects on labor markets is absent altogether.

This paper aims to close the gap in the literature by examining the impact of Cambodia's recently established SEZ program on local labor markets. The paper is the first to provide causal evidence on socio-economic impact of a place-based policy on local communities in a low-income country setting. In addition, this is the first study to evaluate SEZs' effects on composition of local employment including female employment as well as effects on income inequality. What makes the case of a low-income country particularly interesting? Unlike their counterparts in advanced and emerging countries, SEZ programs in Cambodia and many other low-income countries do not necessarily target economically-distressed areas. On the contrary, low-income countries' SEZ programs serve as a vehicle for a broader export diversification policy and target locations with more developed infrastructure and access to transportation networks.

This paper constructs a novel geo-tagged SEZ database and matches it to Cambodia's household survey data at the district level between 2007 and 2017. Since its conception in 2005, 30 SEZs have been established or authorized to begin operation, and more locations are currently being considered for hosting new SEZs. The database contains information on location and entry of all existing SEZs as well as information on locations which have been considered or are being reviewed for participation in the SEZ program. I perform an event-study analysis to examine changes in local labor markets following an SEZ entry, including changes in employment, wages, income levels and income inequality, as well as price levels and high school drop-out rates. Given non-random selection of districts for participation in the SEZ program mainly in capital and border regions, I rely on two identification strategies to pin down the causal effects. Firstly, I construct inverse propensity scores, based on the districts' initial characteristics. Secondly, I construct an alternative control group of (non-SEZ) districts with characteristics closely mimicking those of treatment (SEZ)

districts. This control group includes future participants in the SEZ program as well as districts bordering SEZ locations.

The paper finds that entry of SEZs boosts female employment but has a limited effect on aggregate formal employment share. Despite being mostly foreign-owned, firms operating in SEZs hire predominantly local labor, with female workers accounting for more than 60 percent of employment. The majority of these jobs are low-skilled and concentrated in garments and other light manufacturing industries. In addition, the paper finds that entry of SEZs contributes to declining income inequality within a district. Nevertheless, local wage levels remain unchanged while land values tend to rise in treated districts—a result that is consistent with spatial equilibrium model predictions in the literature. The paper also tests for the presence of agglomeration effects by investigating locations hosting multiple SEZs. These findings suggest that agglomeration effects are limited and that SEZ program intensity has little additional effect on labor market outcomes.

The paper also investigates indirect spillover effects from SEZs to neighboring districts not participating in the SEZ program. I document small spillovers on female employment that could be attributed to commuting across district borders. Interestingly, the paper finds an increase in high school drop-out rates in neighboring districts, suggesting that employment in SEZs is an attractive outside option to remaining in the educational system for the youth.

This paper is related to the literature examining the impact of place-based policies in theoretical and empirical settings. Theoretical literature examining the welfare effects of place-based policies highlights several mechanisms that inform testable empirical hypotheses. Agglomeration effects and knowledge spillovers are among the most widely studied. Whereas agglomeration economies imply higher productivity in more densely populated areas, knowledge spillovers are generated by attracting highly educated people to a given location.¹ However, Glaeser and Gottlieb (2008) show that labor mobility can undermine the effect of local policies aimed to generate agglomeration and knowledge spillovers. In the extreme case, where labor mobility is perfect, landowners benefit from higher housing prices, and the place-based policy like SEZs generates no welfare gains for local labor. Moreover, Neumark and Simpson (2015) demonstrate that local welfare effects may differ substantially from aggregate effects of place-based policies. Positive agglomeration externalities in a targeted location could come at an expense of other areas not participating in the place-based programs. In addition, while theory suggests that place-based policies could result in new high-productivity equilibria in targeted locations, it is plausible that some locations may revert to their previous steady states over time.

Empirical literature on the effect of SEZs is limited to mainly advanced and only a handful of emerging economies. Neumark and Simpson (2015) provide a detailed overview of the existing evidence on the effects of enterprise zones in the United States and France. Overall, evidence on

¹Other theoretical motivations for establishment of SEZs include preferential tariff reductions for certain industries (Grant, 2020), industry localization (Duranton, 2011), as well as spatial income redistribution (Moretti, 2010).

employment effects of enterprise zones is mixed—some studies reviewed by Neumark and Simpson (2015) fail to find any effects (e.g., Neumark and Kolko, 2010), while others find substantial gains in employment rate due to SEZ program expansion in the United States (e.g., Busso et al., 2013). Studies on the developmental impact of SEZs are also available for China (Wang, 2013; Lu et al., 2019) and India (Alkon, 2018). Wang (2013) finds significant positive spillovers of SEZs on local economies in terms of FDI, exports, productivity, and wage growth in China. Alkon (2018), however, finds that SEZs have little effect on development of social infrastructure, such as schools and roads, and employment in India.

Evidence of limited effects on employment and wages in treated districts is consistent with earlier studies focusing on the firm-level effects of SEZ entry in Cambodia (World Bank and Asian Development Bank, 2014; Warr and Menon, 2016). These studies find that SEZs have attracted significant levels of FDI and boosted exports as firms in SEZs are predominantly foreign and sell more than two thirds of their products outside of Cambodia. Nevertheless, these studies find that SEZ firms are less likely to invest in R&D due to reliance on technologies from the foreign parent firms and are less likely to source inputs from local suppliers, suggesting that knowledge and technology spillovers from SEZs in Cambodia are limited.

Key obstacles to generating greater spillovers from SEZs to local areas include lack of basic infrastructure, labor skills, and low productivity of domestic suppliers. Firstly, availability of stable electricity supply, transport links, and water and sewage systems determines where SEZs choose to locate. By construction, this limits potential spillovers geographically to more developed and faster growing areas. Secondly, in low-income countries with lack of skilled labor, a significant share of foreign investment takes place in labor-intensive and oftentimes footloose industries. Thirdly, low level of productivity among domestic firms prevents generation of effective input-output linkages with foreign investors. Domestic productivity growth relies, in its turn on the aforementioned access to infrastructure and human capital. In addition, governance and transparency of tax and business regulations also play a major role in both promoting domestic firm productivity and attracting high value-added foreign investment. Thus, addressing the bottlenecks in business environment by investing in infrastructure and education, and improving governance and transparency of the tax system and regulatory institutions are necessary conditions for generating greater socio-economic benefits of the SEZ program.

The rest of the paper proceeds as follows. Section 2 provides background of Cambodia's SEZ program and outlines a set of key stylized facts on SEZ locations and district-level characteristics. Section 3 discusses the identification strategy. Section 4 contains the key findings. Section 5 details the findings on agglomeration effects, Section 6 focuses on spillover effects in neighboring districts, and Section 7 discusses additional robustness checks. Section 8 details policy implications based on the findings and Section 9 concludes.

2. Stylized Facts

2.1. Background

The Council for the Development of Cambodia (CDC) authorizes and oversees operation of SEZs in Cambodia. The legal framework for the SEZ scheme was established in 2005 by a “Sub-Decree No.147 on the Organization and Functioning of the CDC.” SEZs are defined as geographically bounded areas larger than 50 hectares designated for industrial production and any of its support activities. Construction and operation of SEZs are left solely to the private sector. SEZs must provide basic infrastructure for production, including energy supply, sewage and waste water treatment networks, storage facilities, and management of solid waste. In addition, SEZs must operate management and zone administration offices. Zone administrations serve as a one-stop service providers for firm registration and oversight, with a goal to streamline regulatory requirements for firms operating within SEZs. SEZs located within 20km from the border also benefit from expedited customs clearing process, under which all goods are cleared within SEZs.

In 2019, there were 23 operating SEZs and 7 have been authorized to begin operation and were at various stages of construction and development. At least 13 additional locations have been considered as potential zones but have not received official authorization as of 2019. Currently, zone administrations are set up in 18 out of 23 operational SEZs. Existing SEZs mainly specialize in manufacturing of garments, footwear, travel goods, electronics, vehicle parts, plastics, and other consumer products. Most production is export-oriented. In 2018, SEZs alone accounted for approximately 18 percent of total goods exports. The number of registered firms varies widely from one to over a hundred across SEZs. Between 2005 and 2019, SEZs have received over US\$2 billion in initial investment. SEZs in Cambodia employ predominantly local workers, given low-skilled nature of the majority of the jobs created by SEZ firms. By 2019, SEZs have employed more than 131,000 Cambodians, accounting for over 22 percent of formal employment in Cambodia. 64 percent of these workers are Cambodian women.

Cambodia’s Law on Investment outlines a two-tier incentive structure—for SEZ developers and firms operating in SEZs. Firstly, SEZ developers are initially exempt from the profit tax, import duties and other taxes on machinery and construction equipment, and receive other temporary and permanent concessions. Secondly, firms within SEZs are eligible to generous tax incentives, in addition to access to infrastructure and streamlined administrative and regulatory treatment. They are exempt, in whole or in part, from VAT, import and export duties, excise taxes, corporate and dividend taxes. In return, firms must pay a set fee to an SEZ developer and provide relevant training to Cambodian workers that they employ.

2.2. Data

Household Data. All district-level socio-economic characteristics are derived from the Cambodia Socio-Economic Survey (CSES), conducted by Cambodia’s National Institute of Statistics (NIS) with support from several international donors. The CSES is a nationally representative household survey, conducted annually since 2007, with a focus on households’ income, employment, education, consumption, and living conditions. The CSES provides demographic information and location of all members of the household.

In this paper, districts and municipalities are the principal units of analysis (referred to as districts hereafter). There are 202 districts and municipalities in Cambodia and the survey covers 180 of them between 2007 and 2017. Given the repeated cross-sectional nature of the CSES, I construct a district-level panel of weighted-average household characteristics based on the location of the surveyed households. The resulting district-level panel is unbalanced since several districts enter the sample only in the later waves.

SEZ Data. Data on current SEZs, including location, number of firms, initial investment amount, age, and employment in 2019 are provided by the Council for Development of Cambodia (CDC). Establishment of SEZs is approved by the CDC by means of a sub-decree. After the construction process is complete, firms begin production activities within the zone. In the analysis, entry of an SEZ into a district is defined by the start of operation of the first firm within a given zone.

Location of SEZs is non-random, with the majority of zones located in capital, border, and coastal regions. Therefore, as described in Section 3, I identify a subset of districts which did not have an SEZ between 2007 and 2017 but would have one after 2017 or were at any point in time considered for hosting a zone. Information on planned SEZs was collected from the CDC and Open Development Cambodia.²

2.3. Geographic Distribution of SEZs and Socio-Economic Indicators

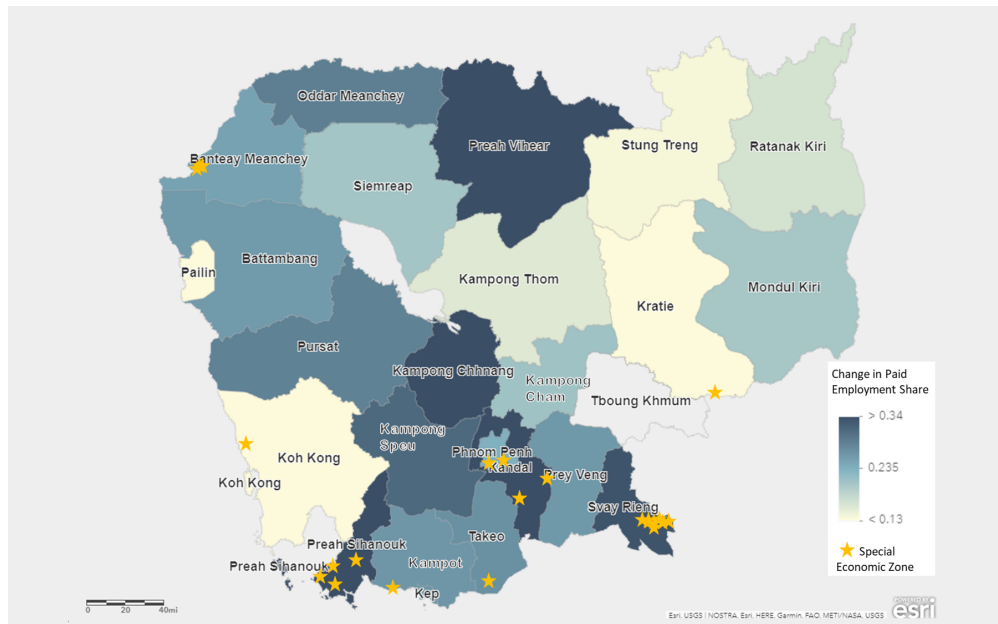
SEZs are concentrated along western and southern borders of Cambodia (Figures 1-4). Two provinces—Sihanoukville and Svay Rieng—are home to 15 of the 23 currently operating SEZs. While Svay Rieng province is bordering Vietnam, Sihanoukville has access to a port in the Gulf of Thailand—both geographic features are conducive to international trade. Banteay Meanchey, located on the border with Thailand, is the next largest SEZ destination currently hosting three zones. These SEZs are specialized in export processing and assembly for the Thai market. Provinces in the central and northeastern parts of Cambodia (Kampong Thom, Mondul Kiri, Stung Treng, Ratanak Kiri, and Preah Vihear), specialized in agricultural production, currently have no operational SEZs. However, Kampong Thom and Ratanak Kiri have been previously considered for hosting a zone

²Open Development Cambodia is a non-governmental organization operation in Southeast Asia. Open Development Cambodia collects publicly available data on economic and social development and posts compiled data on its [website](#).

and, thus, are included in the alternative control group described in Section 3.

Figures 1-4 depict locations of current SEZs as well as changes in key socio-economic characteristics at the province level between 2007 and 2017—paid employment, manufacturing employment share, wages, and educational attainment.³ Positive association between presence of SEZs and growth in employment and wages is evident at the province level.

Figure 1: Geographic Distribution of SEZs and Change in Employment (2007-2017)



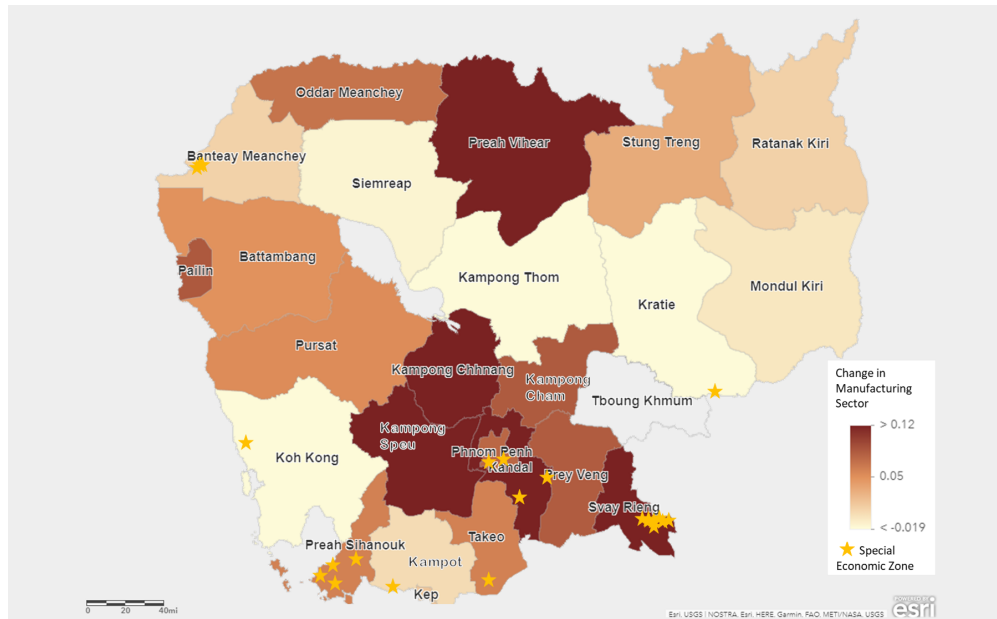
Notes: This figure plots percentage changes in the paid employment share at the province level and locations of operating SEZs between 2007 and 2017. Data on employment is from the CSES and data on SEZ locations is from the CDC.

Between 2007 and 2017, provinces with the highest concentration of SEZs (Svay Rieng, Preah Sihanouk, Kandal, Phnom Penh, Banteay Meanchey) experienced at least 20 percent growth in paid employment (Figure 1). Some surrounding provinces without SEZs (Kampong Chhang, Kampong Speu, Kampong Cham, Oddar Meanchey) have also witnessed significant growth in paid employment, potentially, due to spillovers from the treated provinces—a hypothesis that is tested in Section 4.5. Slowest growth in paid employment is documented in the northeastern part of the country, where industrial activity remains limited, as depicted in Figure 2. Areas that experienced faster growth in paid employment have also seen the largest gains in manufacturing share (with an exception of Preah Vihear, where manufacturing share of employment was initially close to zero). The share of manufacturing employment has risen by more than 10 percent in provinces with the highest concentration of SEZs and dropped or remained flat in areas with no SEZs (Figure 2). Manufactur-

³Mondul Kiri province was present in the sample only between 2011 and 2016. Pailin and Ratanak Kiri entered the sample in 2011. Therefore, differences for these provinces are taken between the first and the last available years. Tboung Khmum province is not included in the CSES survey.

ing sector growth, however, cannot be attributed to SEZs alone as many factories, especially in the garments sector, are operating outside of SEZs.

Figure 2: Geographic Distribution of SEZs and Change in Manufacturing Employment (2007-2017)

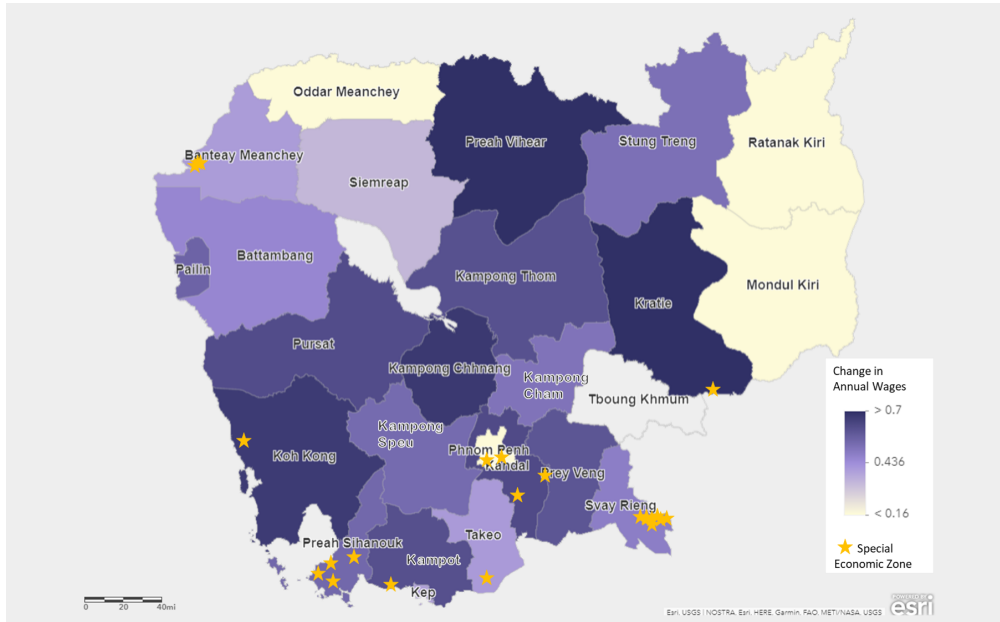


Notes: This figure plots percentage changes in the manufacturing employment share at the province level and locations of operating SEZs between 2007 and 2017. Data on employment is from the CSES and data on SEZ locations is from the CDC.

Real wages, on average, have risen by more than 40 percent across the country since 2007 (Figure 3). However, the association between wage growth and presence of SEZs is less evident at the province level, compared to employment growth. There is considerable variation of wage gains in areas where SEZs are present—from about 10 percent wage growth in Phnom Penh area to 62 percent growth in Kandal province. Nevertheless, real wages have declined in the eastern-most provinces—Ratanak Kiri and Mondul Kiri—which are furthest removed from SEZ activity.

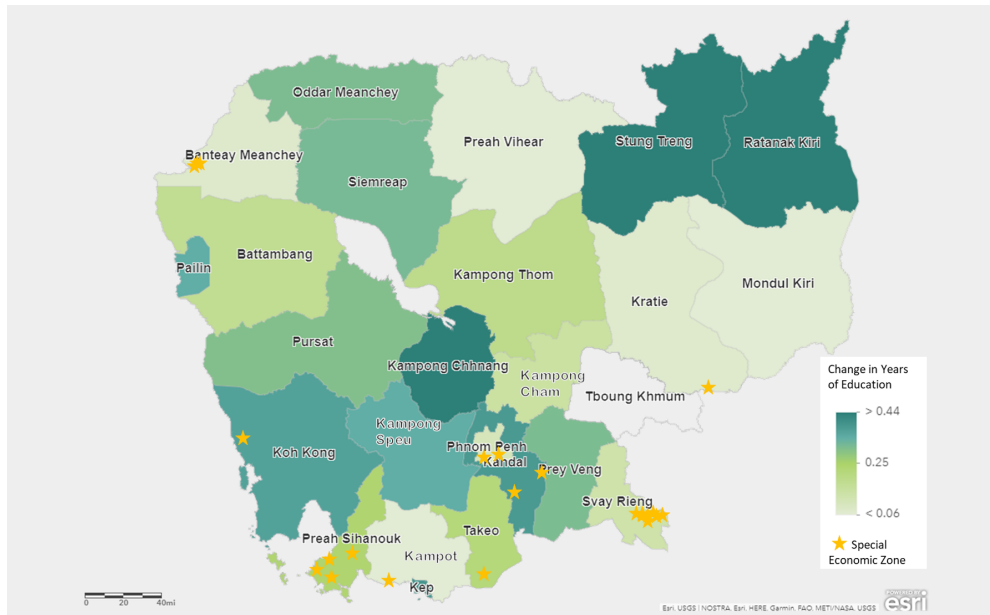
Evidence pertaining to the distribution of SEZs and growth in educational attainment as measured by the average number of years of education completed is less conclusive (Figure 4). While some areas have seen significant gains in educational attainment, others have seen a decline. In fact, educational attainment in the capital region of Phnom Penh has risen by only 10 percent, compared to the national average of 25 percent. In part, this could be due to inter-provincial convergence in educational attainment, with Phnom Penh’s initial educational attainment exceeding the national average. Overall, the relationship between changes in educational attainment and entry of SEZs appears to be weak, based on the province-level patterns.

Figure 3: Geographic Distribution of SEZs and Wage Changes (2007-2017)



Notes: This figure plots percentage changes in average wages at the province level and locations of operating SEZs between 2007 and 2017. Data on wages is from the CSES and data on SEZ locations is from the CDC.

Figure 4: Geographic Distribution of SEZs and Change in Educational Attainment (2007-2017)



Notes: This figure plots percentage changes in the average number of completed years of education at the province level and locations of operating SEZs between 2007 and 2017. Data on educational attainment is from the CSES and data on SEZ locations is from the CDC.

3. Estimation Strategy

Baseline Specification.

The identification strategy of SEZ effects on district-level socio-economic outcomes relies on the variation in location and timing of SEZ entry across districts. I perform an event-study analysis comparing differences in district outcomes before and after an SEZ entries as well as differences between districts with (hereafter referred to as a treatment group) and without an SEZ (hereafter referred to as a control group). I estimate the effect of SEZ entry on a wide range of socio-economic outcomes. First, employment indicators include paid employment share, manufacturing employment share, and female employment rate. Second, I evaluate changes in average real wages, size-adjusted household incomes, as well as district-level income inequality as measured by the Gini coefficient. Third, to evaluate the effect of SEZs on the overall price level, I consider self-reported residential land resale values. Finally, adult high-school drop-out rate allows to evaluate the effects of SEZ entry on youth's choices between continuing education or entering low-skilled manufacturing jobs. Changes in educational composition of a given location can also be indicative of high- or low-skilled migration. The aforementioned dependent variables are denoted by y_{dt} in the specification below, where d denotes a district and t denotes a year:

$$y_{dt} = \alpha + \beta D_{dt} + \lambda T_{dt} + \delta_d + \gamma_{pt} + \varepsilon_{dt}. \quad (1)$$

In Equation 1, coefficients on the dummy variables D_{dt} and T_{dt} are of main interest. D_{dt} denotes district d 's status at time t and takes a value of one if an SEZ is present in the district and zero otherwise. The term T_{dt} denotes a post-SEZ entry time trend. T_{dt} is defined as a difference between the current year and the year of establishment of the first SEZ in a district. T_{dt} is zero for all non-SEZ districts. δ_d denotes district fixed effects that capture time-invariant district characteristics (i.e., proximity to the border or the coastline). γ_{pt} denotes province p and year t fixed effect and captures shocks common to all district in a given province. ε_{dt} is an error term. All standard errors are clustered at the province level.

Given the non-random location of SEZs, baseline event-study specification is likely to produce biased results. District-level fixed effects alone may not be sufficient to control for differences in treatment and control groups. Namely, districts attracting SEZs may have faster-growing infrastructure, higher-skilled labor, and faster-rising cost of living. Therefore, the control group of non-SEZ districts must be comparable to the treatment group of districts with SEZs, based on the initial characteristics prior to the treatment. To adjust for potential bias resulting from the intrinsic differences between treatment and control groups, I adopt several alternative specifications and perform a set of robustness checks.

Table 1: Summary Statistics

	(1)	(2)		(3)		(4)	
	SEZ dis- tricts	Non-SEZ districts	Diff.	Weighted non-SEZ districts	Diff.	Adjacent & future SEZ districts	Diff.
<i>Geographic Location</i>							
Vietnam Border	0.14	0.12	0.02	0.15	-0.01	0.19	-0.05
Thailand Border	0.14	0.10	0.04	0.15	-0.01	0.14	0.00
Lao Border	0.00	0.03	-0.03**	0.00	0.00	0.00	0.00
Coastal Region	0.14	0.04	0.10	0.14	0.00	0.11	0.03
Capital Region	0.43	0.08	0.35*	0.41	0.02	0.17	0.26
<i>Employment</i>							
Paid employment	0.36	0.18	0.18	0.32	0.04	0.20	0.16**
Manuf. employment	0.14	0.08	0.06	0.13	0.01	0.11	0.03
Female employment	0.77	0.85	-0.08**	0.81	-0.03	0.88	-0.10***
<i>Income</i>							
Log(Wage)	16.15	16.42	-0.27*	16.13	0.02	16.59	-0.43
Log(Household income)	15.48	15.05	0.43**	15.39	0.09	15.22	0.25
Gini coefficient	0.43	0.42	0.01	0.42	0.01	0.44	0.00
Log(House value)	15.05	15.06	-0.01	15.05	0.00	14.99	0.06
<i>Education</i>							
Log(Years of education)	1.76	1.45	0.31***	1.72	0.04	1.56	0.20*
High school dropout rate	0.64	0.59	0.05	0.60	0.04	0.62	0.02

Notes: The SEZ sample includes seven districts and full non-SEZ sample includes 173 districts. There are 36 districts in the alternative control group consisting of adjacent and future SEZ districts. Statistical significance levels are reported for t-tests of differences in group averages between treatment group in Column 1 and control groups in Columns 2, 3, and 4.

*** p<0.01, ** p<0.05, * p<0.1

Weighting Strategy.

Table 1 provides averages of key geographic and socio-economic characteristics of the treatment (SEZ) group in Column 1 and full and alternative control (non-SEZ) groups in Column 2, 3, and 4. For each control group, I test the null hypothesis that its initial average characteristics are statistically different from those of the treatment group. I find that districts in the treatment group are less likely to be located along the border with Lao P.D.R., more likely to be located in the capital region, have lower female employment, lower wages, higher household incomes, and higher educational attainment, on average.

I use a propensity score weighting strategy to correct for the mean differences in pre-treatment characteristics. Weights are defined as an inverse of a propensity score from the logistic regression

of SEZ status on location (whether a district borders Vietnam, Thailand, Lao P.D.R., or is located in the coastal or capital region), as well as initial wages, manufacturing employment share, average educational attainment, and land values. Column 3 of Table 1 reports propensity score-weighted means for the control group along with the differences relative to the treatment group. The t-test for group differences shows that all initial mean differences between treatment and control groups are not statistically different from zero. Section 4 discusses the results of estimating the weighted event-study specification.

Adjacent and Future SEZ Controls.

I construct an alternative set of control districts to identify the causal impact of SEZs based on two selection criteria. The first criterion for selecting districts into the alternative control group relies on the discontinuity design (method applied by Lu et al., 2019). The discontinuity design relies on the assumption that control districts bordering treated districts are similar in their characteristics (i.e., access to infrastructure, demographics, and access to trade partners) and thus are plausible candidates for hosting SEZs.

The second criterion relies on the information about districts that (i) are approved to host an SEZ after 2017; or (ii) have been considered for hosting an SEZ but either have been rejected or the approval status is pending (method applied by Busso et al., 2013). Districts, that were considered for an SEZ program at some point in time or have been already authorized and are currently in the construction stage, are likely to share similar characteristics with districts in the treatment group.

In sum, the alternative control group consists of the following districts: (i) “future SEZ districts”—districts, authorized to host an SEZ but not operating as of 2017 or districts that have been considered for an SEZ status previously; and (ii) “adjacent districts”—districts sharing a border with the treated districts.

4. Main Results

In this section, I present the evidence of direct SEZ effects on districts’ employment, incomes, land prices, and educational attainment. Panels A and B of Table 2 show the results for the entire sample of treated and control districts: Panel A contains baseline results and Panel B contains the results for the specification with propensity score weights. Panel C shows the results for the alternative sample of control districts—adjacent districts and future SEZ districts.

4.1. Employment

Columns 1-3 in Table 2 summarize the effects of SEZs on employment in treated districts. Paid employment share in Column 1 serves as a proxy for formal employment and is defined as a share of workers receiving a salary or a wage from an employer in total working-age population in a district. This definition does not encompass self-employment or work for a family business—activities that

are predominantly informal and prevalent in rural areas. Column 1 shows that entry of an SEZ has little effect on paid employment rate across all specifications in Panels A-C. Similarly, SEZ effects on the overall manufacturing employment share are also negligible, as evidenced by the results in Column 2 across Panels A-C. While the impact of SEZs on overall employment at the district level is negligible, potentially due to reallocation of workers from non-SEZ firms to SEZ firms, female employment rises significantly with entry of SEZs in the district.

Table 2: Local Effects of SEZ Entry

	(1) Paid empl.	(2) Mnf. empl.	(3) Female empl.	(4) Wages	(5) HH Income	(6) Gini coef.	(7) Land value	(8) Drop-out rate
<i>Panel A. Baseline Specification</i>								
SEZ	0.004 (0.011)	0.009 (0.005)	0.060*** (0.009)	-0.035 (0.223)	0.031 (0.072)	-0.049*** (0.009)	0.034 (0.101)	0.008 (0.036)
Post-SEZ Trend	-0.001 (0.004)	0.000 (0.007)	-0.002 (0.003)	0.004 (0.046)	0.017 (0.038)	0.008*** (0.003)	-0.028 (0.027)	0.003 (0.005)
<i>Panel B. Propensity Score Weights</i>								
SEZ	-0.011 (0.011)	0.009 (0.009)	0.053*** (0.014)	-0.018 (0.144)	0.011 (0.076)	-0.046*** (0.012)	0.105** (0.042)	-0.011 (0.035)
Post-SEZ Trend	0.004 (0.007)	0.008 (0.009)	-0.009** (0.004)	0.057 (0.043)	0.061* (0.035)	0.007 (0.005)	0.033 (0.023)	0.001 (0.008)
<i>Panel C. Adjacent & Future SEZ Controls</i>								
SEZ	-0.003 (0.014)	-0.005 (0.005)	0.050*** (0.013)	-0.137 (0.177)	0.042 (0.073)	-0.047*** (0.007)	-0.043 (0.142)	0.004 (0.042)
Post-SEZ Trend	0.002 (0.008)	0.003 (0.007)	-0.002 (0.003)	0.015 (0.046)	0.021 (0.042)	0.009*** (0.002)	-0.021 (0.028)	0.002 (0.006)
Observations (A and B)	1,555	1,555	1,555	1,555	1,555	1,555	1,555	1,555
Observations (C)	354	354	354	354	354	354	354	354

Notes: Robust standard errors clustered by province are in parentheses. All regressions include district and province-year fixed effects.

*** p<0.01, ** p<0.05, * p<0.1

Evidence of positive effect of SEZs on female employment rates at the district level, however, is consistent across all specifications in Panels A-C (Column 3). On average, SEZ entry is associated with about five percent increase in female employment rate.⁴ Evidence on favorable impact of SEZs on female employment is consistent with their sectoral profile. Most SEZs specialize in garments production and other types of light manufacturing—activities that have disproportionately higher demand female labor. Over 60 percent of jobs created by SEZ firms are taken up by women, transitioning from informal service jobs in urban areas or agricultural jobs in rural areas.

⁴In Panel B, coefficient on the time trend is negative and, given that the average length of the post-treatment period is about four years, the total size of the SEZ effect on female employment is attenuated to about 2 percentage points. Negative growth effect, however, is not robust to other specifications in Table 2 and Section 7.

4.2. Incomes and Land Prices

Columns 4-7 in Table 2 contain evidence on income and price effects of SEZs. Presence of SEZs does not appear to result in higher real wage levels or acceleration in wage growth across districts (Column 4)—a finding that is consistent across all specifications. Many firms in the garments industry and other types of light manufacturing operate on slim margins. Thus, when entering low-income countries like Cambodia, these firms set wages at the national minimum wage level. Therefore, wage premiums, if at all offered by SEZ firms, are negligible enough to raise overall wage level in a given location. In addition, since SEZ firms tend to attract predominantly female workers—consistent with the evidence in Column 3—wage premiums are likely to be minimal, because women have very few comparable outside options in the formal sector.

Wage results at the district level are consistent with negligible effects of SEZ entry on average household incomes (Column 5). While SEZs account for a sizable share of formal employment, wages of workers employed in SEZs are still a small share of total household incomes. Most households continue to rely on non-wage income, predominantly from farming and self-employment. This finding, therefore, suggests that incomes from employment in SEZs are likely to be substituting parts of non-formal incomes rather than augmenting household incomes. Nevertheless, while SEZ jobs may not always be better enumerated, some employers provide additional benefits to workers, including transportation, housing, and access to canteens. These non-monetary benefits may be incentivizing workers to substitute non-formal employment for formal jobs in SEZs.

While evidence of SEZ effects on overall levels of incomes and wages is limited, I find that SEZ entry is associated with declining income inequality as measured by the Gini coefficient at the district level (Table 2, Column 6). Entry of SEZs is associated with about 1.5 percentage point decline in income inequality, based on the combined effect of SEZ entry and post-SEZ time trend in Panels A and C. Positive coefficient on the SEZ dummy suggests that entry of SEZ contributes to a sizable decline in the district-level Gini coefficient of about 5 percent. While a negative coefficient on the post-SEZ trend suggests that this effect dissipates over time, the net effect on income inequality is still negative, given that an average age of an SEZ is about 4 years.⁵

Finally, I test the theoretical prediction that, in the presence of even imperfect labor mobility, labor market gains could be offset by rising land prices.⁶ Namely, higher economic activity generated by SEZs could drive up demand for land and thus disproportionately benefit the land owners. To test this hypothesis, I use average household-reported land prices by district. Column 7 in Table 2 shows that the overall effect of SEZs on land prices is negligible in Panels A and C. Positive and statistically significant coefficient on SEZ dummy in Panel B suggests that entry of SEZs could lead to an

⁵Specification in Panel B shows that entry of SEZs is associated with about 4.6 percent decline in income inequality. However, the dynamic effect is not statistically significant. Given evidence provided by specifications in Panel C and Section 7, a more conservative estimate is appropriate in this case.

⁶CSES survey does not allow for a direct test of SEZ effects on labor migration due to lack of data.

increase in average land prices. This result is further explored in Sections 5 and 6.

4.3. Education

Theoretical motivation for the potential effect of SEZ entry on educational attainment may be somewhat ambiguous. On one hand, entry of SEZs may result in higher average educational attainment in a treated district, if SEZs demand higher skills and incentivize youth to remain in school longer or attract higher-skilled migrants. On the other hand, if SEZ jobs mainly require routine motor skills, entry of SEZs may provide an incentive to drop out of school for relatively attractive low-skilled assembly work. In this case, educational attainment rate can decrease or remain unchanged. The latter argument is supported by higher concentration of high-school dropouts in SEZ districts (Table 1). Evidence in Column 8 of Table 2 provides support for the latter hypothesis. High school drop-out rates, defined as a share of population older than 18 years, currently not in school, and without a high-school diploma, remain unchanged in the treated districts. Thus, the direct impact of SEZs on drop-out rates is negligible in the baseline.

5. Effect of Multiple SEZs

This section investigates agglomeration effects determined by the intensive margin of the SEZ program participation or the number of SEZs in treated districts. As demonstrated in Section 2.3, several districts host more than one SEZ, suggesting that agglomeration effects may be at play. Namely, treated districts, on average, were hosting 2.4 SEZs at the end of the sample period. Given potential endogeneity concerns associated with including the number of SEZs in a given year within a district as a dependent variable, I construct an indicator variable for SEZ intensity, following Wang (2013). The indicator variable, M_d , is equal to one for the treated district, if, at the end of the sample period, more than one SEZ is located within a district, and is equal to zero when only one SEZ is present. I augment the baseline specification by interacting the indicator variable for multiple SEZs with the dummy for SEZ presence. The resulting specification for testing the intensive margin of the SEZ program participation is as follows:

$$y_{dt} = \alpha + \beta D_{dt} + \lambda T_{dt} + \beta^M M_d \times D_{dt} + \delta_d + \gamma_{pt} + \varepsilon_{dt}. \quad (2)$$

All terms in the specification above are defined as in the baseline specification, whereas M_d denotes SEZ intensity.

Table 3 contains the results based on the specification in Equation 2.⁷ Most of the main results

⁷I exclude the interaction of post-SEZ trend and multiple SEZs dummy from this specification. None of the coefficients on the interaction terms were statistically significant and their inclusion does not affect the overall results. I only include results based on the specifications that robust to SEZ selection bias (i.e., specifications with propensity score weights and alternative control group).

documented in Table 2 remain unchanged when the number of SEZs is controlled for, suggesting that these results are unlikely to be driven by few districts with multiple SEZs. I also find that presence of multiple SEZs has no additional impact on any of the employment indicators, including paid and manufacturing employment shares as well as female employment rate. There is evidence that agglomeration of multiple SEZs may push up wages in a given location (Column 4). However, the coefficient on the interaction term is only marginally significant in Panel B and should be interpreted with caution, since the coefficients on SEZ and the interaction term are not jointly significant. There is also no additional heterogeneity in the effect on district-wide incomes, income inequality, or high school drop-out rates, depending on the size of the SEZ program (Columns 5, 6, and 8).

Table 3: Local Effect of Multiple SEZs

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Paid empl.	Mnf. empl.	Female empl.	log(Wages)	log(HH Income)	Gini coef.	log(Land value)	School Drop-out rate
<i>Panel A. Propensity Score Weights</i>								
SEZ	-0.009 (0.011)	0.010 (0.008)	0.052*** (0.016)	-0.050 (0.127)	0.004 (0.079)	-0.042*** (0.010)	0.138*** (0.035)	-0.014 (0.035)
Post-SEZ Trend	0.005 (0.007)	0.008 (0.010)	-0.009** (0.004)	0.051 (0.048)	0.059* (0.034)	0.008 (0.006)	0.039 (0.024)	0.000 (0.007)
SEZ × Multiple SEZs	-0.020 (0.032)	-0.012 (0.023)	0.009 (0.030)	0.325 (0.419)	0.078 (0.094)	-0.042 (0.036)	-0.341*** (0.096)	0.033 (0.019)
<i>Panel B. Adjacent & Future SEZ Controls</i>								
SEZ	-0.002 (0.009)	-0.003 (0.007)	0.050** (0.016)	-0.228 (0.147)	0.014 (0.074)	-0.047*** (0.004)	0.114*** (0.023)	-0.026 (0.024)
Post-SEZ Trend	0.002 (0.008)	0.003 (0.007)	-0.002 (0.003)	0.008 (0.047)	0.019 (0.042)	0.009*** (0.002)	-0.010 (0.027)	-0.000 (0.007)
SEZ × Multiple SEZs	-0.004 (0.029)	-0.008 (0.010)	0.001 (0.016)	0.327* (0.168)	0.102 (0.074)	0.003 (0.028)	-0.562*** (0.135)	0.107** (0.036)
Observations (A)	1,555	1,555	1,555	1,555	1,555	1,555	1,555	1,555
Observations (B)	354	354	354	354	354	354	354	354

Notes: Robust standard errors clustered by province are in parentheses. All regressions include district and province-year fixed effects.

*** p<0.01, ** p<0.05, * p<0.1

The effect of SEZ entry on land values, however, is heterogeneous based on the number of SEZs. While land values initially rise with the entry of the first SEZ, they tend to drop dramatically when subsequent SEZs enter the district (Column 7 of Table 3). The joint effect amounts to 20 to 44 percent decline in residential land values in districts with multiple SEZs. These findings appear to contradict a common theoretical prediction stating that entry of SEZs would lead to appreciation of property prices. However, the vast majority of these predictions are based on studies focusing only on the extensive margin of SEZ programs and are tailored to advanced or emerging countries. In a low-income country settings, governance shortcomings (i.e., land grabbing for industrial production) could negatively affect residential or agricultural land prices, when multiple SEZs establish their operation in a given location.

6. Spillover Effects on Neighboring Districts

Control districts bordering treated districts may experience spillovers from economic activity taking place within SEZs. On one hand, proximity to SEZs may result in a boost to wages and employment due to higher demand for labor, conditional on the possibility of commuting. On the other hand, SEZs may divert economic activity away from surrounding districts by incentivizing firms to locate within the zone. Negative spillovers on surrounding districts may also be generated by migration of more productive workers to treated districts.

To test for the presence of spillover effects on neighboring districts, I extend the analysis to the non-SEZ districts sharing a border with a treated district. In addition to the baseline variables—presence of an SEZ in a given year and post-SEZ time trend—I include a variable denoting entry of an SEZ in a neighboring district, D_{dt}^N , and a corresponding post-entry time trend, T_{dt}^N :

$$y_{dt} = \alpha + \beta D_{dt} + \lambda T_{dt} + \beta^N D_{dt}^N + \lambda^N T_{dt}^N + \delta_d + \gamma_{pt} + \varepsilon_{dt}. \quad (3)$$

D_{dt}^N is equal to one when a control district shares a border with a treated district. The coefficient on T_{dt}^N measures dynamic spillover effects in control districts neighboring a treated district.

Table 4 documents spillover effects of SEZ entry on neighboring districts. Consistent with the findings on direct effects, spillover effects on paid and manufacturing employment shares are negligible. However, I find a small positive effect on female employment, which is likely capturing commuting of female workers from neighboring districts. In this case, while manufacturing activities are taking place in the treated district, an increase in female employment is captured in the neighboring control district, where workers officially reside and from where they are commuting to treated districts. I also find no evidence of spillover effects on wages, incomes, and income inequality in neighboring districts. This suggests that the extent of workers sending remittances to families in neighboring districts is likely to be limited.

While direct effects of SEZ entry on female employment and income inequality in treated districts remain unchanged relative to the baseline specification, we see changes in direct effects on land values and school drop-out rates when adding spillover variables to the baseline specification. Firstly, results in Column 7 of Table 4 suggest that land valuations rose in treated districts after the entry of the first SEZ. The increase in land values is both statistically and economically significant at about 15 percent. Secondly, the results show a decrease in school drop-out rates in treated districts relative to the neighboring districts. Jointly, coefficients on neighboring district variables suggest that drop-out rates increase slightly in neighboring districts by 1.5 percent, assuming that an average age of an SEZ is about 4 years. On the contrary, the direct effect on high school drop-out rates in treated districts is negative, implying that, on average, educational attainment in these districts rises relative to their neighbors. These findings may not necessarily suggest behavioral changes, but rather changes in migration patterns of more educated workers from neighboring districts to SEZ

districts.

Table 4: The SEZ Spillover Effects on Neighboring Districts

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Paid empl.	Mnf. empl.	Female empl.	log(Wages)	log(HH Income)	Gini coef.	log(Land value)	School Drop-out rate
SEZ	-0.001 (0.007)	0.011 (0.010)	0.058*** (0.014)	-0.051 (0.133)	-0.003 (0.069)	-0.044*** (0.008)	0.149** (0.054)	-0.037* (0.021)
Post-SEZ Trend	-0.001 (0.003)	0.006 (0.011)	-0.011*** (0.004)	0.069 (0.048)	0.064 (0.042)	0.007 (0.007)	0.020 (0.026)	0.009 (0.008)
SEZ in Neighboring District	0.043 (0.030)	0.016 (0.023)	0.018* (0.010)	-0.075 (0.130)	0.002 (0.082)	-0.003 (0.017)	0.066 (0.087)	-0.045*** (0.014)
Post-SEZ Trend in Neighboring District	0.001 (0.005)	0.003 (0.005)	0.000 (0.002)	0.014 (0.018)	0.017 (0.012)	-0.003 (0.002)	-0.028 (0.019)	0.015*** (0.002)
Observations	1,555	1,555	1,555	1,555	1,555	1,555	1,555	1,555

Notes: Robust standard errors clustered by province are in parentheses. All regressions include district and province-year fixed effects and are weighted using inverse propensity score weights.

*** p<0.01, ** p<0.05, * p<0.1

7. Robustness Checks

In addition to two identification strategies described above, I conduct two robustness checks. Firstly, I combine both methods described in Section 3 and estimate an inverse propensity score-weighted regression with the alternative control group. Secondly, I use lags of the dependent variables. Table 5 contains the results from both specifications.

Under the most restrictive specification (Panel A of Table 5), direct SEZ effects on female employment and district-level income inequality remain largely unchanged relative to the results in Table 2. There are, however, two changes worth mentioning. One, Panel A shows that presence of SEZs may have a negative impact on paid employment (Column 1). This effect is plausible, if entry of SEZs leads to higher level economic activity and results in growth of total employment, including informal activities. Two, I find that land values rise in treated districts, suggesting that land owners may benefit from growth of local economies disproportionately more.

Given that differences in initial conditions across districts determining location of SEZs are the main threat to identification, I also employ lags of dependent variables as controls. The results outlined in Panel B are largely consistent with the baseline specifications in Table 2 and Panel A of Table 4. In addition, I find a small negative post-treatment trend in manufacturing employment share. This result is consistent with the slowdown in total paid employment growth also documented in Panel A: auxiliary economic activity generated by the entry of SEZs may take place in sectors other than manufacturing.

Table 5: Additional Robustness Tests: The SEZ Effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Paid empl.	Mnf. empl.	Female empl.	Wages	HH Income	Gini coef.	Land value	Drop-out rate
<i>Panel A. Propensity Score Weights and Adjacent & Future SEZ Controls</i>								
SEZ	-0.024*** (0.004)	-0.004 (0.008)	0.050** (0.017)	-0.072 (0.104)	0.018 (0.072)	-0.039** (0.014)	0.082* (0.041)	-0.030 (0.029)
Post-SEZ Trend	0.004 (0.008)	0.013 (0.009)	-0.008 (0.004)	0.077* (0.038)	0.069 (0.040)	0.008* (0.004)	0.047 (0.028)	0.003 (0.007)
<i>Panel B. Lagged Specification</i>								
SEZ	0.012 (0.018)	-0.015 (0.015)	0.033* (0.019)	0.014 (0.231)	0.034 (0.099)	-0.036** (0.013)	0.067 (0.089)	-0.012 (0.047)
Post-SEZ Trend	-0.018* (0.010)	-0.013** (0.006)	0.001 (0.005)	-0.090 (0.062)	-0.005 (0.043)	0.014** (0.006)	-0.039 (0.027)	0.007 (0.012)
Observations (A)	354	354	354	354	354	354	354	354
Observations (B)	1,084	1,084	1,084	1,084	1,084	1,084	1,084	1,084

Notes: Robust standard errors clustered by province are in parentheses. All regressions include district and province-year fixed effects. Regressions in Panel B control for lagged dependent variables.

*** p<0.01, ** p<0.05, * p<0.1

8. Policy Implications

The paper shows positive spillovers of SEZ program on female employment and income inequality in local labor markets in Cambodia. However, relatively limited effects of SEZs on wage and income growth in local labor markets may be linked to clustering of SEZs in more developed areas with better access to infrastructure and labor as well as low-skilled labor-intensive nature of industries located within the zones. Policies outlined in this section focus on promoting foreign investment in higher value-added industries and across a wider range of geographic areas as well as establishing stronger input-output linkages with the local economy. Namely, investing in infrastructure and human capital, fine-tuning the tax incentives system, and supporting domestic entrepreneurial activity would result in greater socio-economic spillovers of the SEZ program and support Cambodia's diversification strategy.

Investment in Infrastructure and Human Capital.

Place-based policies, including SEZ programs, in many advanced and emerging countries focus on development of economically depressed areas (Neumark and Simpson, 2015). Empirical evidence in the case of Cambodia, however, suggests that locations with higher incomes and more educated labor tend to attract more SEZs. Differences in SEZ assignment strategies may reflect countries' objectives of establishing an SEZ program. Whereas employment and income convergence across geographic locations is one of the key objectives of place-based policies in advanced and emerging economies, export diversification may play a bigger role in low-income and developing countries like Cambodia. In the latter case, availability of infrastructure and established trade routes plays a more important role for SEZs' location decisions. Therefore, investment in energy,

transportation, and water and sanitation would allow to reap broader socio-economic benefits of the SEZ program and promote faster income convergence between urban and rural areas. Better transport connectivity, reliable electricity and water supply would allow Cambodia to attract foreign investment in more technologically sophisticated industries and thus further support the main objective of the program—promotion of export diversification.

Similarly, investment in labor skills is important for effectiveness of the SEZ program. Empirical evidence provides little support for the claim that existing SEZs create higher-paid jobs or attract higher-skilled labor. In fact, many existing investors, especially in the garments manufacturing industry, are low-skilled labor-intensive and relatively footloose. Availability of low-skilled jobs in SEZs, on the other hand, provides competing incentives for the youth, potentially impacting high school retention rates as shown in Section 6. In addition to government investment in education, attracting foreign investment in industries requiring higher skills and encouraging foreign firms to provide worker training are paramount to knowledge transfer and quality upgrading as part of the greater diversification strategy.

In the presence of labor mobility, policies targeting specific locations may result in unintended consequences, including rising land prices and increasing school drop out rates, as shown in this paper. While the former issue is endemic to place-based policies irrespective of the level of development of a country implementing these policies as shown in Moretti (2010), the latter issue is more endemic to developing countries. In addition, literature studying the impact of place-based policy has so far failed to demonstrate self-sustaining economic gains in the long run. While SEZs could provide a momentum in attracting foreign investment in the short run, deeper structural reforms are needed to sustain diversification and economic growth in the long run.

Tax Incentives System.

Cambodia offers an array of tax holidays and other tax incentives to attract and retain foreign firms investing in SEZs. However, despite high cost of these tax incentives due to foregone revenues, effectiveness of tax holidays has been shown to be limited (IMF et al., 2015; Ghazanchyan et al., 2018). In addition, tax holidays may encourage investment by predominantly labor-intensive firms that exit upon expiration of the preferential treatment. Moving away from tax holidays and instead providing incentives which are more directly linked to the size of investment may be a more effective way to attract long-term investment with higher potential for bringing positive socio-economic spillovers. Tax incentives linked directly to the size of the investment bears additional benefits in that it allows for less discretion at the granting stage and discourages rent-seeking behavior linked to the temporary nature of tax holidays (Ghazanchyan et al., 2018).

Tax incentives are also shown to be less effective in countries with poor investment climate (James, 2013). Gains from improving the overall business climate for both foreign and domestic firms are far greater than those brought by the tax incentives when it comes to promoting competition and diversification (Warr and Manon, 2016). Policies ranging from increasing investment in

infrastructure and skill to strengthening the rule of law and enhancing transparency and governance practices are cited as the most effective at improving the overall investment climate (IMF et al. 2015).

Domestic Firms.

While the study does not explicitly examine SEZ effects on domestic firms, evidence on employment and wages suggests that these may be limited as well. Generally, spillovers from foreign firms within SEZs to domestic firms can transmit via several channels. First, knowledge transfers to domestic workers can benefit other domestic firms if workers are mobile or use this knowledge to start their own businesses. While this study documents limited spillovers from SEZs on educational attainment, there may still be knowledge spillovers to domestic firms that are not captured by the number of years of formal education. Second, domestic firms can benefit from supply chain linkages due to increased demand for their products, availability of more sophisticated inputs from foreign firms, and overall knowledge sharing about demand abroad, for instance.

The supply chain channel is explored in the World Bank and Asian Development Bank’s study on investment climate in Cambodia (2014). The study finds that firms located within Cambodian SEZs are significantly less likely to source inputs domestically—only 12 percent of inputs are purchased domestically by firms within SEZs compared to 62 percent by non-SEZ firms. This difference implies that SEZ firms have weak links to the domestic economy, which is consistent with the large share of SEZs specializing in assembly of imported inputs and re-exporting of final goods. Limited backward linkages can in part be explained by low productivity of domestic firms and proximity of foreign firms to their existing suppliers predominantly from parent companies (Brussevich and Tan, 2020). Therefore, promoting productivity of domestic firms by improving governance and transparency of the tax and business registration systems, investing in human capital and infrastructure are key policy priorities for strengthening input-output linkages with domestic economy and generating positive productivity spillovers from SEZs.

9. Conclusion

This study investigates local socio-economic effects of Cambodia’s SEZ program. The identification strategy relies on the variation in location of SEZs and timing of their entry. While SEZ entry is non-random and is largely driven by the availability of infrastructure and access to trading partners, this paper employs several identification strategies and robustness checks to establish causal effects of SEZs on local economies. First, it uses district characteristics in the beginning of the sample period to construct propensity score weights. Secondly, it specifies an alternative control group that shares similar characteristics with the treated districts. An alternative control group includes districts directly adjacent to the treated districts and districts that are either authorized to host an SEZ or are being considered for hosting an SEZ in the future.

Between 2007 and 2017, Cambodia's SEZ program has yielded some socio-economic gains, including increasing female employment rates and declining income inequality in SEZ host districts. Nevertheless, land values in treated districts have increased compared to neighboring districts while real wages have not changed, suggesting that land owners may have benefited from the SEZ program more compared to the workers. While agglomeration effects due to the presence of multiple SEZs in a district are limited, I find evidence of rising high school drop out rates in districts with higher concentration of SEZs and control districts sharing a border with treated districts.

Despite positive spillovers of SEZ programs on female employment and income inequality, evidence of Cambodia's SEZ program on aggregate formal employment and wage levels is limited. In addition, SEZ activity is predominantly concentrated in areas with better access to infrastructure and transportation networks, widening the economic divide with remote and less developed areas. This is explained by the objective of the program to promote export diversification by attracting foreign investment rather than targeting economically disadvantaged locations, which is the objective of many SEZ programs in advanced and emerging countries.

The paper concludes with a discussion of key policy priorities aimed at boosting positive socio-economic spillovers from SEZs. Firstly, investment in energy, transportation, and water and sanitation infrastructure would encourage entry of SEZs into more economically disadvantaged areas and promote formation of input-output linkages with domestic firms. Secondly, investment in human capital is necessary to attract foreign investment in more technologically advanced sectors and support the long-term diversification strategy of Cambodia. Finally, moving away from tax holidays and towards tax incentives linked to the size of investment would promote long-term investment and potentially limit investor's rent-seeking behavior.

References

- Alkon, Meir (2018). "Do Special Economic Zones Induce Developmental Spillovers? Evidence from India's States." *World Development*, 107, 396-409.
- Brussevich, Mariya, and Shawn Tan (2020). "Learning from Foreign Firms: does FDI Increase Exporter Competitiveness?" Unpublished Manuscript.
- Busso, Matias, Jesse Gregory, and Patrick Kline (2013), "Assessing the Incidence and Efficiency of a Prominent Place Based Policy." *American Economic Review*, 103(2), 897-947.
- Duranton, Gilles (2011). "California Dreamin': the Feeble Case for Cluster Policies." *Review of Economic Analysis*, 3, 3-45.
- Ghazanchyan, Manuk, Alexander Klemm, and Yong Sarah Zhou (2018). "Tax Incentives in Cambodia." IMF Working Paper WP/18/71, Washington DC, USA.
- Glaeser, Edward, Gottlieb, Joshua (2008). "The economics of place-making policies." *Brookings Pap. Econ. Act.* 1, 155-239 (Spring).
- Grant, Matthew (2020). "Why Special Economic Zones? Using Trade Policy to Discriminate across Importers." *American Economic Review*, 110(5): 1540-1571.
- IMF, OECD, UN, and World Bank (2015). "Options for Low Income Countries' Effective and Efficient Use of Tax Incentives for Investment." Report to the G20 Development Working Group, IMF Policy Papers.
- James, Sebastian (2014). "Tax and Non-Tax Incentives and Investments: Evidence and Policy Implications." Investment Climate Advisory Services, World Bank Group.
- Lu, Yi, Jin Wang, and Lianming Zhu (2019). "Place-Based Policies, Creation, and Agglomeration Economies: Evidence from China's Economic Zone Program." *American Economic Journal: Economic Policy*, 11(3), 325-360.
- Moretti, Enrico (2010). "Local labor markets." *Handbook of Labor Economics*, 4B.
- Neumark, David, and Jed Kolko (2010). "Do Enterprise Zones Create Jobs? Evidence from California's Enterprise Zone Program." *Journal of Urban Economics*, 68 (1), 1-19.
- Neumark, David, and Helen Simpson (2015). "Place-Based Policies." *Handbook of Regional and Urban Economics*, 5B, 1197-1287.
- Wang, Jin (2013). "The economic impact of Special Economic Zones: Evidence from Chinese Municipalities." *Journal of Development Economics*, 101, 133-147.
- Warr, Peter and Jayant Menon (2016). "Cambodia's Special Economic Zones." *Journal of South-east Asian Economies*, 33(3), 273-90.
- World Bank (2012). "Cambodia Enterprise Survey." World Bank, Washington, DC, USA.

World Bank and the Asian Development Bank (2014). “The Investment Climate Assessment, 2014. Creating Opportunities for Firms in Cambodia.” World Bank, Phnom Penh, Cambodia.