

Place-Based Preferential Policies and Firm Performance

Rami Galal



WORLD BANK GROUP

Finance, Competitiveness and Innovation Global Practice

May 2024

Abstract

Economic zone programs are generally pursued to improve firms' performance within discrete areas by removing the constraints firms face. Whether or not they succeed in doing so is an empirical question. This paper capitalizes on a unique survey of firms within and outside zones in South Asia to assess the effects of zone programs on firms' performance in exports, investment, employment, and productivity. Adopting a propensity score matching approach and district-level fixed effects, the paper explores

four questions: whether zones support firm performance; whether the type of zone makes a difference, which kinds of public support services matter more, and whether firms inside zones grow faster. The results show that (i) being inside a zone positively affects foreign direct investment and employment, (ii) the effects across zone types are mixed, (iii) infrastructure and trade facilitation play a greater role in firm performance than fiscal incentives and governance facilities, and (iv) firms inside zones grow faster.

This paper is a product of the Finance, Competitiveness and Innovation Global Practice. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at <http://www.worldbank.org/prwp>. The author may be contacted at rgalal@worldbank.org.

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

Place-Based Preferential Policies and Firm Performance

Rami Galal^{*}

JEL codes: O21, O53, R12, R58

Keywords: Place-based policies, Enterprise zones, Industrial clusters, Agglomeration

^{*}The author is an Economist in the World Bank's Finance, Competitiveness and Innovation Global Practice. The views expressed in this paper do not necessarily represent the views of the World Bank, its affiliated organizations, the executive directors of the World Bank, or the governments they represent. The author would like to thank Franziska Ohnsorge, Siddharth Sharma, Thomas Farole, Hemang Jani, and Somik Lall for their helpful suggestions. Email correspondence: rgalal@worldbank.org.

1 Introduction

In principle, place-based development programs can bring substantial advantages to firms (Duranton and Venables, 2018). The expectation is that firms in these zones would perform better because they would operate under better institutional arrangements, superior infrastructure, and benefit from other fiscal and non-fiscal incentives than their peers outside. Moreover, the urban economics literature emphasizes the returns from "sharing, matching, and learning" brought about through agglomeration effects (Duranton and Puga, 2004) and improved matching between workers and firms through denser labor markets (Moretti, 2010).

In practical terms, policymakers find it attractive to adopt zone programs, under a variety of names, for understandable reasons (UNCTAD, 2019). Firstly, initiatives targeting subnational regions or discrete local areas are easier to implement than national-level enabling environment reforms, especially in countries with weak institutional capacity. Secondly, they are less costly to adopt than upgrading industrial infrastructure on an economy-wide scale, and if their financing is shared with private developers, the government budget burden is reduced. Thirdly, they can serve as an effective tool to attract international investors, who typically shop around globally for better investment incentives.

Despite the solid theoretical foundations supporting the advantages of spatial development programs, their real-world effectiveness is not assured. Global experiences with such programs have revealed potential pitfalls in their planning, development, and operation. These include costs stemming from inadequate strategic planning, a failure to adopt a demand-driven approach, neglect of critical market and government failures, a poor policy and regulatory environment, weak implementation capacity, and an inability to address environmental and social risks effectively (Zeng, 2021). As a result, the effectiveness of any given zone programs remains an empirical question.

The contribution of this paper is that it provides some answers to this question drawing from a comprehensive and unique firm-level survey conducted across South Asian countries. While there has been ample empirical work focused on the efficacy of zone programs in economically advanced countries (Neumark and Simpson (2015) provides an extensive

review) and to a lesser extent on China (Lu et al., 2019; Zheng et al., 2017; Wang, 2013), a lack of data has limited the body of empirical work in developing countries (Farole et al., 2011; Akinci and Crittle, 2008) or rendered it largely descriptive (Boyenge, 2007; UNCTAD, 2019). This paper also contributes to the strand of literature that focuses on the effects of zone programs on firms’ performance, where work has focused on various metrics, including FDI (Song et al., 2020; Bartlett et al., 2019), exports (Davies and Mazhikeyev, 2019), employment (Brussevich, 2023; Lu et al., 2019; Kolko and Neumark, 2010), and productivity (Aritenang and Chandramidi, 2020; Li et al., 2021; Liu and Jin, 2022).

In this paper, we explore the impact of zones on firm performance, particularly on their exports, FDI, employment, and productivity. We also estimate the effects of different zone types, the role of public support services in governance facilitation, trade and connectivity support, infrastructure, and fiscal incentives. Finally, we test whether firms inside zones grow faster than those outside.

To estimate the effect of zone status on firm performance, our empirical strategy employs a propensity score matching technique commonly used in the literature on economic zones to mitigate bias from the self-selection of firms into zones. To estimate the effect of support services on firm performance and the impact of zone status on firm growth, we rely on a linear panel data model with district-level fixed effects.

The results show that being inside a zone has a positive effect on FDI and employment, which is expected as firms in zones tend to face fewer constraints than their peers outside. However, the effects across zone types are mixed, where export processing zones and industrial parks have positive effects on firm performance, while industrial areas and estates have negative effects. The heterogeneous performance of zone types underscores the importance of zone design and implementation arrangements. Infrastructure and trade support seem to play a greater role in supporting firm performance than fiscal incentives and governance facilities. In addition, firms inside zones grow faster than those outside zones.

The rest of this paper is structured as follows. Section 2 describes the data and methodology. Section 3 discusses the results. Section 4 concludes with some policy implications.

2 Data and Methodology

By way of background, zones and other cluster-based programs have steadily increased in South Asia. Starting from the first export processing zone (EPZ) in Gujarat in 1965, India has developed over 3,350 zones, according to the Ministry of Commerce and Industry. Bangladesh, Nepal, and Bhutan have all announced plans to establish and expand Special Economic Zones (SEZs), industrial districts and parks. The passage of SEZ Acts and Policies signal more to come ([Galal, 2021](#)).

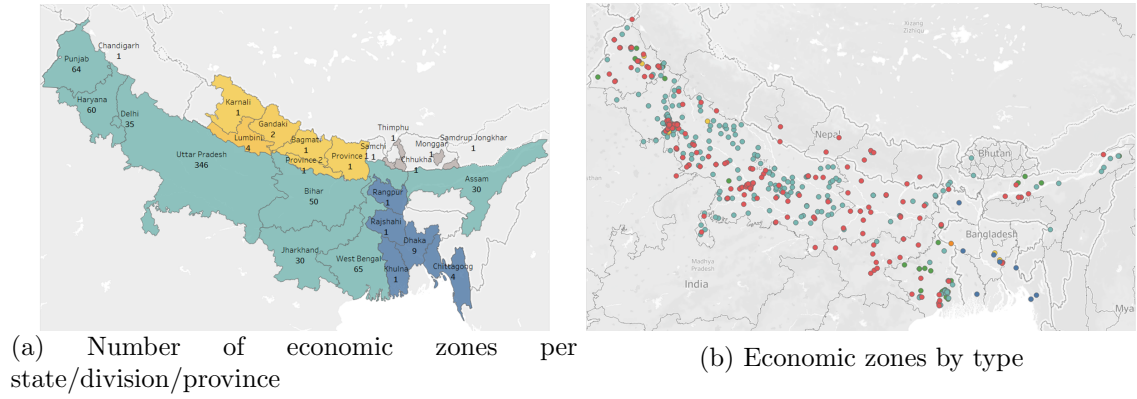
However, despite the growing prevalence of these programs, a lack of data has obstructed their systematic assessment. This paper is able to do so thanks to a unique World Bank survey designed to provide detailed information on firms within and outside zones. The survey covered 1,201 firms inside different types of zones and 1,166 firms outside zones in Bangladesh, Bhutan, India, and Nepal. For data collection, the sample frame for firms outside zones was based on administrative data from government sources.¹ The sample frame for firms inside zones relied on a database collected from zone operators. The same process was followed in all four countries. Fieldwork was conducted between September 2020 and January 2021 and successfully surveyed 2,367 of the 2,400 target enterprises. Maps of the number and types of zones are presented in Figure 1. For the sake of simplification, the term zone is used in the rest of the paper as a generic umbrella to cover all zone types, but when necessary, the specific zone type will be mentioned explicitly.

Table 1 presents sample descriptives for firms inside and outside zones. The survey was designed to ensure that firms outside the zones were from the same districts as the zones and representative of their district. Within each district, on average 52% of firms were located inside zones. Most firms in the survey are located in India, followed by Bangladesh, Nepal, and Bhutan. The largest sectors represented among the firms are in the food sector, followed by plastics, and metals. Firms inside zones tend to be slightly younger, have more employees, and less capital than those outside zones.

Table 2 presents additional descriptives for firms within zones by the type of zone.

¹The administrative data were drawn from the following sources: India - The Annual Survey of Industries, 2015; Bangladesh - The Bangladesh Economic Census, 2013; Bhutan - An establishment census obtained from the Ministry of Economic Affairs; and for Nepal - an establishment census obtained from the Ministry of Industry, Commerce, and Supplies.

Figure 1: Maps of economic zones in the sample



Source: World Bank Industrial Infrastructure and Firm Survey, 2019 ([Garcia et al., 2022](#))

The types of zones covered were wide ranging, including industrial areas, estates, parks, centers, and export processing zones (EPZs). The largest share of firms within zones are based in industrial areas (44%), followed by industrial estates (39%) and EPZs (10%). EPZs stand out as having a greater sectoral focus on textiles and garments than other zone types, as well as having much larger numbers of full-time employees at 919, compared to between 33 and 67 for firms in other zone types.

The survey also included information on the availability of public support services to firms both within and outside zones. These include a range of services under governance facilities, trade and connectivity support services, infrastructure support, and fiscal incentives as detailed in Table 3. Comparison of the availability of public support services within and outside zones is presented in Figure 2. Overall, firms inside zones enjoy two to three times more governance, trade and connectivity, and infrastructure support than those outside zones. Fiscal incentives are used by firms equally frequently within and outside, though we do not have data available on their value.

Table 1: Sample descriptives of firms within and outside zones

	Inside zones (Share)	Outside zones (Share)	Inside zones (No. of firms)	Outside zones (No. of firms)	Total
<i>Geographic characteristics</i>					
Bangladesh	52%	48%	118	110	228
Bhutan	49%	51%	60	62	122
India	51%	49%	925	892	1,817
Nepal	49%	51%	98	102	200
<i>Sectoral distribution</i>					
Food	45%	55%	191	233	424
Tobacco	14%	86%	4	25	29
Textiles	46%	54%	60	71	131
Garments	48%	52%	73	79	152
Leather	43%	57%	26	35	61
Wood	30%	70%	26	62	88
Paper	39%	61%	32	51	83
Publishing & printing	65%	35%	30	16	46
Refined petroleum prod.	50%	50%	3	3	6
Chemicals	53%	47%	58	52	110
Plastics & rubber	69%	31%	139	63	202
Non-metallic mineral	24%	76%	31	99	130
Basic metals	54%	46%	73	63	136
Fabricated metal prod.	65%	35%	130	70	200
Machinery and equipment	63%	37%	77	45	122
Electronics	78%	22%	40	11	51
Precision instruments	75%	25%	3	1	4
Transport machines	33%	67%	1	2	3
Furniture	57%	43%	12	9	21
Recycling	84%	16%	16	3	19
Other	50%	50%	176	173	349
Total	52%	48%	1,201	1,166	2,367
<i>Additional firm characteristics</i>					
Capital, average INR			38,800,000	58,500,000	
Age, average years			19	23	
Full-time employees, average			120	80	

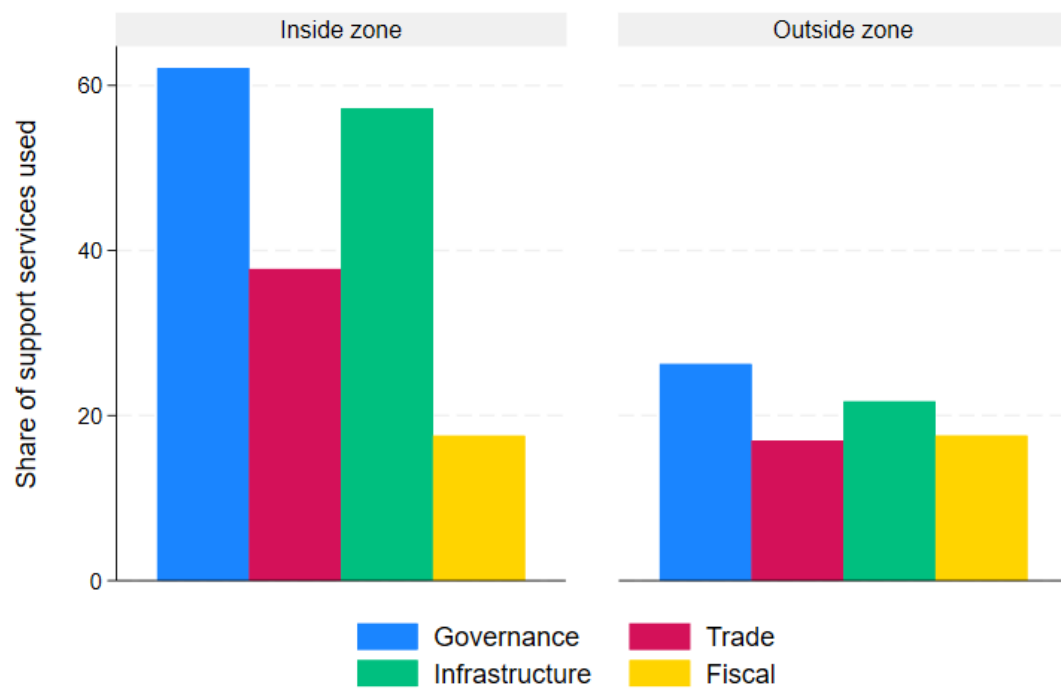
Table 2: Sample descriptives across zone types

	Industrial areas	Industrial estates	Industrial parks	EPZs	Industrial Centers
No. of firms	533	472	47	116	30
Share by type	44%	39%	4%	10%	2%
<i>Firms by sector</i>					
Food	60	105	16	3	7
Tobacco	0	3	0	1	0
Textiles	18	15	0	23	0
Garments	10	12	4	44	0
Leather	12	8	0	6	0
Wood	9	17	0	0	0
Paper	18	11	0	3	0
Publishing & printing	16	12	0	0	2
Refined petroleum prod.	1	1	0	1	0
Chemicals	37	18	1	2	0
Plastics & rubber	45	69	13	7	3
Non-metallic mineral	8	22	0	0	1
Basic metals	46	21	1	4	1
Fabricated metal prod.	61	58	3	0	8
Machinery and equipment	39	34	1	0	3
Electronics	22	15	1	2	0
Precision instruments	0	3	0	0	0
Transport machines	0	0	0	1	0
Furniture	7	5	0	0	0
Recycling	8	5	1	2	0
Other	116	38	6	9	5
<i>Additional firm characteristics</i>					
Capital, average INR	37,300,000	44,400,000	14,500,000	41,900,000	11,600,000
Age, average years	19	20	11	12	11
Full-time employees, average	33	35	67	919	40

Table 3: Support services potentially available to firms

Governance facilities	Trade and connectivity support services	Infrastructure support	Fiscal incentives
Online systems	Rail head/railway station	Boundary wall and fencing	Tax holidays / reduced corporate taxes
Single window clearance	Ports and port-related	Roads with Street lighting & signals	Allowances / credits
Investment facilitation	Airport	Pedestrian walkways & bicycle lanes	GST exemption and/or remission
Investment promotion	Inland Container Depot	Water supply, treatment, & storm water	VAT exemption / remission
Investor after care	Go-downs and warehousing	Sewage & garbage disposal infra	Customs duty exemption / remission
Grievance redressal mechanism	On-site customs clearance	Electrical, gas and PNG infra	Gov. cash and matching grants schemes
Approvals committee		Security	Gov. equity / capital
Development commissioner's office		Effluent treatment systems	Reduced land, utilities, & transportation rates
		Factory shells	
		Office spaces	
		Training and incubation facilities	
		Common data centre	
		Power (including back-up)	
		Telecom	

Figure 2: The use of support services within and outside zones



To identify the effect of zone status on firms' performance, this paper begins by using a linear panel data model with district-level fixed effects. We estimate the following equation:

$$y_{id} = \alpha + \beta_i Z_i + \pi_i + \epsilon \quad (1)$$

where y is the relevant measure of firm performance (exports, FDI, employment, and output per worker) observed for firm i belonging to district d , Z is a dummy variable indicating whether the firm is inside a zone, π is a set of firm-level controls (sector, age, and capital) and ϵ is an error term. We consider the firms' share of total sales abroad as exports, the firms' share of ownership by foreign individuals, companies, or organizations as FDI, the number of full-time employees as employment,² and sales over the number of employees as output per worker (OPW).

To examine the effect of specific zone types, we also estimate:

$$y_{id} = \alpha + \beta_i \zeta_i + \pi_i + \epsilon \quad (2)$$

where ζ is a vector for the specific type of zone: industrial area, estate, park, EPZ, and center.

The main challenge in capturing the effects of zones on firm performance is overcoming the endogeneity problem arising from selection bias because the performance effect can be attributed to the self-selection of more productive firms into zones. Estimates that do not control for this bias should be interpreted cautiously as they can yield results that can be interpreted causally to the extent that control variables and fixed effects rule out other drivers. For instance, one may conjecture that certain types of zones particularly target FDI. In the literature on firm performance in economic zones, the propensity-score matching method is widely used to address this selection bias (Wang, 2013; Song et al., 2020; Li et al., 2021).

This paper employs treatment indicators for being inside any zone, as well as pairwise comparisons for each zone type. We estimate the propensity-score matching estimator using a standard probit treatment model $p(z_i, t, \gamma)$, to model the conditional probability that observation i receives treatment t given covariates z_i . With a binary-treatment potential-

²Estimates using labor intensity were also carried out producing similar results.

outcome model y_1 is the potential outcome obtained by a firm given treatment-level 1, and y_0 is the potential outcome obtained by firm i given treatment-level 0. Specifically, we estimate:

$$(y_{id} = \Omega = 1) = \alpha + \beta_i \text{capital} + \beta_i \text{size} + \beta_i \text{age} + \beta_i \text{age}^2 + \beta_i \text{sector} + \epsilon \quad (3)$$

We then construct a control group after the matching process composed of firms outside zones with similar characteristics to those inside zones.

The average treatment-effect for the treated (ATET) is then denoted by:

$$\delta_1 = E(y_1 - y_0 | t = 1) \quad (4)$$

While propensity score matching is frequently employed in attempt to correct for selection bias of firms into zones, it does so under certain assumptions. These include the assumption of conditional independence, which requires that potential outcomes be independent of the treatment assignment after conditioning on covariates. This means that with observational data, the assumption is met to the extent that treatment can be modeled on a sufficient number of observable covariates. The sufficient overlap assumption requires that each firm have a sufficiently positive probability of being assigned to the treatment.

To be less susceptible to violating these assumptions, we employ the ATET, which has less restrictive assumptions compared to the average treatment effect (ATE) estimator. The ATET estimator assumes a weak version of conditional independence, which allows for the gains from treatment to be related to the treatment assignment, conditional on the covariates, while the ATE estimator assumes the presence of no unobserved factors increasing or decreasing the likelihood of assignment to the treatment. The ATET also requires a weaker version of the sufficient overlap assumption, particularly that each observation has a positive probability of not getting the treatment, compared to the ATE estimator which requires that each firm in the sample have a positive probability of getting the treatment. This means that we can estimate the ATET when some firms have a zero probability of receiving the treatment, which would not be possible for the ATE

estimation. Nonetheless, while employing ATET reduces the risk of selection bias, it does not fully eliminate the risk that results reflect some level of selection into zones and not the impact of zones.

For matching the estimated propensity score, the nearest-neighbor indices for observation i , $i = 1, \dots, n$ is

$$\Omega_m^p(i) = \{j_1, j_2, \dots, j_{m_i} | t_{j_k} = 1 - t_i, |\hat{p}_i(t) - \hat{p}_{i_k}(t)| < |\hat{p}_i(t) - \hat{p}_l(t)|, t_l = 1 - t_i, l_k\} \quad (5)$$

where $\hat{p}_i = p(z_i, t, \hat{\gamma})$.

After estimating the effect of zone status on firm performance, we explore the role of public support services on the same set of firm performance measures. Support services are measured as the share of services used by each firm under the four categories presented in Table 3 of governance facilities, trade and connectivity support, infrastructure, and fiscal incentives. Specifically, we estimate:

$$y_{id} = \alpha + \beta_i \text{governance} + \beta_i \text{trade} + \beta_i \text{infrastructure} + \beta_i \text{fiscal} + \beta_i \text{zonestatus} + \pi_i + \epsilon \quad (6)$$

Finally, to explore whether firms inside zones grow faster than those outside, we estimate the effects of zone status on firm age and employment growth. Employment growth is measured as the net change in employees over the previous six months. In particular, we estimate:

$$\text{age}_{id} = \alpha + \beta_i \text{zonestatus} + \pi_i + \epsilon \quad (7)$$

$$\text{empgrowth}_{id} = \alpha + \beta_i \text{zonestatus} + \pi_i + \epsilon \quad (8)$$

3 Results

Table 4 presents the results on the effect of zone status on exports, FDI, employment, and output per worker relative to being outside a zone, before correcting for selection bias. Overall, these results confirm expectations that being inside a zone can have positive effects on firm performance. In particular, the results from our first set of regressions show a positive and significant effect of zone status on exports, FDI and employment.

However, there is no discernible effect on output per worker.

Table 4: The effect of zone status on exports, FDI, employment, and output per worker

	Exports	FDI	Emp	OPW	Exports	FDI	Emp	OPW
Inside zone	2.276*	5.000***	49.47***	2015.3				
	(2.24)	(7.07)	(3.34)	(0.44)				
Industrial area					-3.818**	0.737	-10.65	-8477.4
					(-2.78)	(0.82)	(-0.53)	(-1.33)
Industrial estate					-0.0195	-0.335	-3.503	-6224.8
					(-0.01)	(-0.35)	(-0.16)	(-0.92)
Industrial park					2.783	6.793**	32.96	27675.1
					(0.73)	(2.72)	(0.59)	(1.55)
EPZ					39.70***	46.91***	558.8***	73894.5***
					(12.87)	(23.26)	(12.36)	(5.14)
Industrial Center					2.610	0.213	20.11	1272.0
					(0.52)	(0.07)	(0.27)	(0.05)
N	2355	2355	2355	2355	2355	2355	2355	2355
Note: All equations include district-level fixed effects and controls for firm-level characteristics and the availability of public services.								
* p<0.05, ** p<0.01, *** p<0.001								

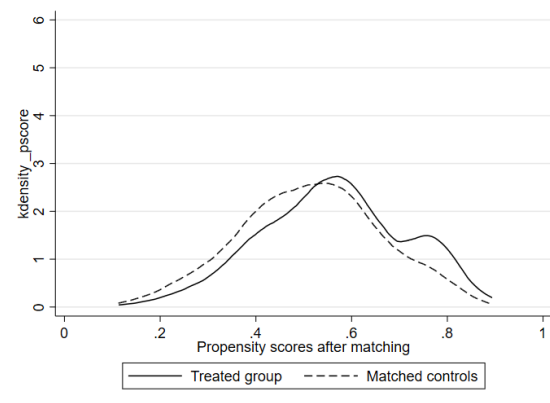
The initial results from our regressions on the impact of specific zone types on firm performance presented in Table 4 are more mixed. Being inside an industrial area is negatively associated with exports while being in an industrial park is positively associated with FDI. The most consistent results across different outcomes are those for EPZs, which are positively associated with all measures of firm performance. The results from industrial estates and centers are insignificant.

Before turning to the propensity score matching results, Figure 3 shows how the estimated propensity scores are spread among the treated and matched control groups. Post-matching, the density distributions of the treated groups and their matched controls display significant overlap, indicating that the matching process enhances comparability between the two.

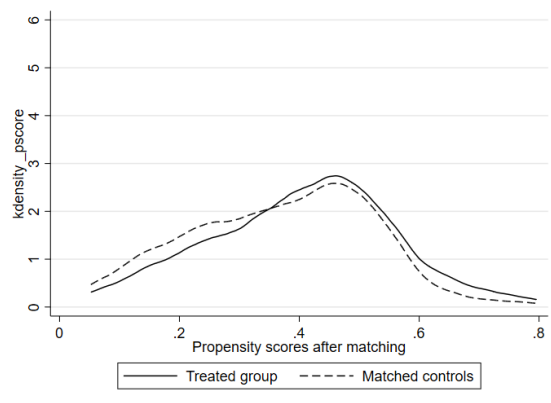
The results from the propensity score matching approach are presented in Table 5, showing the ATET of being inside any zone, followed by the pairwise comparisons for specific zone types. Overall, the results corroborate the notion that zone programs can indeed have positive effects on firm performance. The results on the effect of zone status are positive and significant for FDI and employment. However, the effects on exports and output per worker are insignificant.

The results on the effect of specific zone types reveal stark differences. Industrial areas and estates have significant negative effects on exports and employment. Meanwhile,

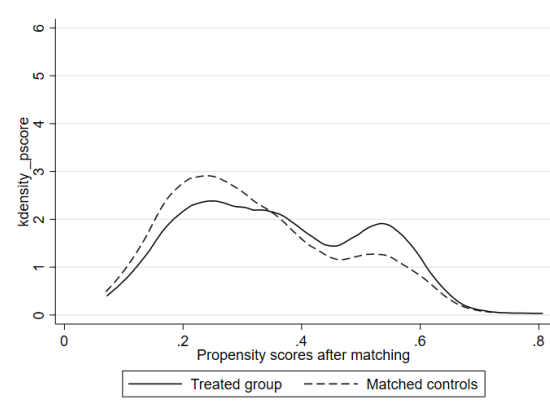
Figure 3: Density distributions of estimated propensity scores among the treated groups and matched controls



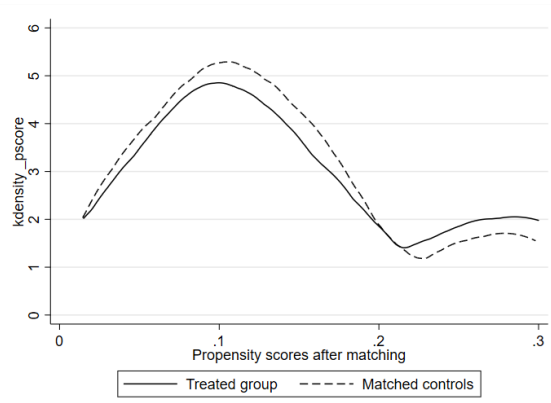
(a) All zones



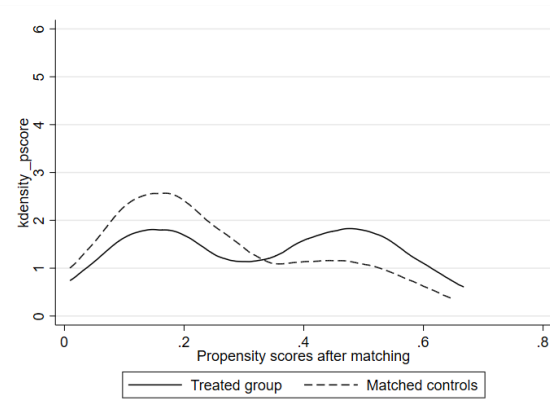
(b) Industrial areas



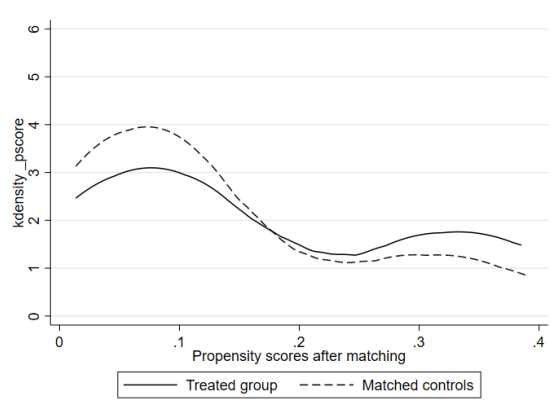
(c) Industrial estates



(d) Industrial parks



(e) EPZs



(f) Industrial centers

industrial parks have a significant positive effect on FDI and employment. EPZs have positive effects on all measures of firm performance. These significant differences in firm performance by zone type suggests that zone design and implementation arrangements are highly consequential on their success. Given that public support services are an integral element of zone programs, we next explore their effect on firm performance.

Table 5: Effects of zone status on firm performance based on propensity-score matching

	Exports	FDI	Emp	OPW
Inside zone	1.653 (1.07)	4.907*** (5.97)	47.70** (3.08)	3642.3 (0.84)
Industrial area	-6.437*** (-4.10)	0.272 (0.48)	-35.79*** (-3.57)	-6327.8 (-1.93)
Industrial estate	-5.482** (-2.58)	1.379 (1.80)	-55.69** (-3.10)	-12080.2* (-2.29)
Industrial park	0.717 (0.14)	6.957* (2.34)	36.97*** (3.36)	36028.1 (1.12)
EPZ	67.43*** (14.85)	46.93*** (10.36)	819.2*** (5.84)	87537.7** (2.70)
Industrial Center	-1.733 (-0.40)	0 (.)	-17.04 (-0.92)	-6332.1 (-1.03)
Note: All equations include district-level fixed effects and controls for firm-level characteristics.				
* p<0.05, ** p<0.01, *** p<0.001				

The results on the impact of specific public support services on firm performance controlling for zone status are shown in Table 6. The most consistent positive impact is from infrastructure, which has a significant and positive effect on all measures of firm performance. Trade and connectivity support also has a significant positive effect on exports, FDI, and employment. Meanwhile, governance facilities and fiscal incentives show a more limited impact, with significant and positive effects on employment and exports, respectively.

Finally, we explore whether firms inside zones grow faster. Table 7 shows the relationship between firm age and employment growth. The results suggest that overall, firms inside zones are younger and do grow faster. Across zone types, the positive effect on employment growth is significant for EPZs, while the effect of zone age is significant and negative for all zone types. The measure of hiring workers in the previous six months is indeed susceptible to idiosyncratic shocks and would not capture employment growth

Table 6: Effects of support services on firm performance

	Exports	FDI	Emp	OPW
Governance	-2.254 (-1.39)	0.972 (0.87)	58.89* (2.50)	-6796.5 (-0.92)
Trade	4.607** (2.83)	6.056*** (5.39)	57.36* (2.42)	10296.1 (1.39)
Infrastructure	6.392*** (4.05)	4.985*** (4.58)	52.55* (2.29)	15996.4* (2.23)
Fiscal	5.483**	0.500	9.603	6362.0
N	2355	2355	2355	2355

Note: All equations include district-level fixed effects and controls for firm-level characteristics and zone status.
* p<0.05, ** p<0.01, *** p<0.001

before that. However, the significant and positive effect in EPZs corroborates the positive employment effects of EPZs found in the earlier results.

Table 7: Effects of zone status on employee turnover and firm age

	Employment growth	Firm age	Employment growth	Firm age
Inside zone	4.813** (2.95)	-5.164*** (-10.12)		
Industrial area			1.500 (0.67)	-6.750*** (-9.53)
Industrial estate			0.176 (0.07)	-2.129** (-2.78)
Industrial park			-0.653 (-0.10)	-12.32*** (-6.17)
EPZ			42.20*** (8.35)	-5.049** (-3.12)
Industrial Center			1.410 (0.17)	-11.01*** (-4.20)
N	2355	2355	2355	2355

Note: All equations include district-level fixed effects and controls for firm-level characteristics and the availability and quality of public services.
* p<0.05, ** p<0.01, *** p<0.001

4 Conclusions and Policy Implications

This paper is concerned with finding the effects of zone programs on firm performance. Given the ubiquity and continuing expansion of zone programs in South Asia, combined

with a lack of evidence around their impact on firm performance, this paper contributes to a largely unexplored empirical literature. It does so thanks to a novel and unique dataset that includes detailed information on firms both within and outside economic zones across Bangladesh, Bhutan, India, and Nepal. It employs standard econometric techniques in the empirical literature on estimating the impact of zones on firm performance.

The first main finding of the paper is that being inside a zone has a positive and significant effect on FDI and employment. This lends support to the idea that when governments are unable to rectify constraints at an economy-wide level, addressing challenges within discrete areas can be a viable alternative to support firm performance.

The second main finding is that the effect of zones is mixed across zone types. Industrial areas and estates show significant and negative effects on exports and employment. Conversely, industrial parks have positive effects on FDI and employment, while EPZs demonstrate the most consistent positive effects across all measures of firm performance.

The third main finding is that controlling for zone status, public support services have significant impacts on firm performance. In particular, infrastructure support and trade and connectivity facilities have the most consistent positive effects across measures of firm performance. Governance and fiscal incentives have positive effects only on the measures of employment and exports, respectively. These findings further underscore the notion that policymakers need to worry about the design and implementation arrangements of zone programs.

Finally, we explore the effects of zone status on firm growth. Zone status is positively and significantly associated with younger firms and EPZs have a positive effect on employment generation.

In terms of future research, the heterogeneous performance of zones raises questions about why EPZs overall seem to improve firms' competitiveness and efficiency, and why some zone types produce negative or no discernible effects on firm performance. Given the range of possible government interventions delivered through such programs, and the relative importance of infrastructure and trade facilitation, it seems that the success of zone programs depends largely on providing the "right" support services that address legitimate obstacles to firm operation and growth. This has merit whether inside the walls of a zone or outside. Additionally, the question arises whether localized programs might hinder the

broader implementation of national reforms. While zones can offer insights into which policies are effective and could be scaled up, they might also reduce the urgency for wider reform. Finally, this paper has considered only the direct impacts on firm performance from a partial equilibrium standpoint. However, place-based policies have broader effects, some of which are beneficial on a net basis, while others may simply redistribute activities. Understanding these broader impacts is crucial before further expansion of zone programs. Given the political momentum behind the expansion of zone programs in the region, thoroughly exploring these issues is essential for informed policy guidance.

References

- Akinci, G., Crittle, J., 2008. Special economic zone: performance, lessons learned, and implication for zone development. Technical Report. The World Bank.
- Aritenang, A.F., Chandramidi, A.N., 2020. The impact of special economic zones and government intervention on firm productivity: The case of batam, indonesia. Bulletin of Indonesian Economic Studies 56, 225–249. URL: <https://doi.org/10.1080/00074918.2019.1643005>.
- Bartlett, W., Krasniqi, B., Ahmetbašić, J., 2019. Attracting fdi to the western balkans: special economic zones and smart specialisation strategies. Croatian Economic Survey 21, 5–35. URL: <https://hrcak.srce.hr/file/332986>.
- Boyenge, J.P.S., 2007. ILO database on export processing zones (Revised). Technical Report. International Labour Organization.
- Brussevich, M., 2023. The socioeconomic impact of special economic zones: Evidence from cambodia. The World Economy URL: <https://doi.org/10.1111/twec.13526>.
- Davies, R.B., Mazhikeyev, A., 2019. The impact of special economic zones on exporting behavior. Review of Economic Analysis 11, 145–174. URL: <https://ssrn.com/abstract=3406372>.
- Duranton, G., Puga, D., 2004. Micro-foundations of urban agglomeration economies, in: Handbook of regional and urban economics. Elsevier. volume 4, pp. 2063–2117.
- Duranton, G., Venables, A.J., 2018. Place-based policies for development. Technical Report. National Bureau of Economic Research. URL: https://www.nber.org/system/files/working_papers/w24562/w24562.pdf.
- Farole, T., Akinci, G., et al., 2011. Special economic zones: progress, emerging challenges, and future directions. World Bank Publications.
- Galal, R., 2021. Special economic zones and industrial parks in south asia URL: <http://hdl.handle.net/10986/36585>.

- Garcia, A.F., Bacani, J., Nagulapalli, M., 2022. Bangladesh, bhutan, india, and nepal: How can economic zones contribute to the 200 million job challenge? .
- Kolko, J., Neumark, D., 2010. Do some enterprise zones create jobs? *Journal of Policy Analysis and management* 29, 5–38.
- Li, X., Wu, X., Tan, Y., 2021. Impact of special economic zones on firm performance. *Research in International Business and Finance* 58, 101463. URL: <https://doi.org/10.1016/j.ribaf.2021.101463>.
- Liu, Y., Jin, Y., 2022. Special economic zones, export status, and firms' productivity: theory and evidence from china. *Review of Development Economics* 26, 1338–1360. URL: <https://doi.org/10.1111/rode.12883>.
- Lu, Y., Wang, J., Zhu, L., 2019. Place-based policies, creation, and agglomeration economies: Evidence from china's economic zone program. *American Economic Journal: Economic Policy* 11, 325–360.
- Moretti, E., 2010. Local labor markets. Technical Report. National Bureau of Economic Research.
- Neumark, D., Simpson, H., 2015. Place-based policies, in: *Handbook of regional and urban economics*. Elsevier. volume 5, pp. 1197–1287.
- Song, Y., Deng, R., Liu, R., Peng, Q., 2020. Effects of special economic zones on fdi in emerging economies: Does institutional quality matter? *Sustainability* 12, 8409. URL: [DOI:10.3390/su12208409](https://doi.org/10.3390/su12208409).
- UNCTAD, 2019. World investment report 2019: Special economic zones URL: https://unctad.org/system/files/official-document/wir2019_en.pdf.
- Wang, J., 2013. The economic impact of special economic zones: Evidence from chinese municipalities. *Journal of development economics* 101, 133–147.
- Zeng, D.Z., 2021. The dos and don'ts of special economic zones. *SSRN Electronic Journal* URL: <http://dx.doi.org/10.2139/ssrn.4007621>, doi:10.2139/ssrn.4007621.

Zheng, S., Sun, W., Wu, J., Kahn, M.E., 2017. The birth of edge cities in china: Measuring the effects of industrial parks policy. *Journal of Urban Economics* 100, 80–103.