Land Acquisition and Sectoral Composition: Evidence from India*

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Abstract

In many emerging economies, compulsory land acquisition has become a critical instrument for industrial policy, with the aim of facilitating manufacturing activity and bringing about increased economic growth. This paper is the first to study whether compulsory acquisition stimulates large-scale industrial development, both in terms of set-up and employment, in the context of Special Economic Zones (SEZs) in India. I exploit an unexpected increase in the cost of compulsory acquisition, and compare the effects on SEZs across Indian states depending on their take-up of this instrument, arguing that states with specific compulsory acquisition policies are more impacted by the reform than states where expropriation was not officially used. In the first analysis, I study the effect of this shock on SEZ set-up and find that the share of manufacturing decreases by almost 50 percent. Second, I study the effect of restricting compulsory acquisition on entrant quality. I compare how pre- and post-reform SEZs affect local non-agricultural employment using a spatial difference-in-differences design. I find that manufacturing SEZs after the reform are associated with significantly higher local employment than their older counterparts. Together, these findings suggests that "too much" compulsory acquisition can act as a subsidy for less productive developers.

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I. INTRODUCTION

In most developing countries, land acquisition is one of to largest obstacles in the transition from agriculture to manufacturing (Deininger, 2003). Fragmented land ownership means that investors need to negotiate with multiple landowners, increasing bargaining costs and the risk of holdout (Miceli and Sirmans, 2007). Alternatively, stringent property rights preclude industrialists from obtaining large parcels of contiguous land, as no landowner can be forced to part with their land (Haghpanah et al., 2024). To overcome these barriers to private investment, policymakers have increasingly adopted compulsory acquisition, or eminent domain, as an integral part of industrial policy in the last two decades (Lindsay et al., 2017).[1] An example is the Chinese government, which acquired five percent of all arable land for the purposes of non-agricultural activity between 1998 and 2004 (Kahn, 2006). While compulsory acquisition certainly reduces land acquisition costs for private investors, the broader implications of this practice are as of yet unclear.

This paper provides novel evidence on the impact of land acquisition costs on industrial development in the context of Special Economic Zones (SEZs) in India. SEZs are large areas where business and trade laws are different from the rest of the country. While the exact benefits vary across borders, firms locating in SEZs can profit from duty-free imports and exports, reduced taxation and more streamlined procedures. SEZs are one of the most popular industrial policies in the developing world (Frick et al., 2019): in 2006, the 3,500 SEZs across the globe employed more than 60 million people and were responsible for more than 20 percent of all exports. This is no different in India: in 2012, the total exports from the then 158 operational SEZs equalled 87.45 billion dollars, which was a growth of 31 percent compared to the previous year and amounted to almost 20 percent of India's total exports.[2] What is different in India is that while SEZs are generally public property, India exceptionally decided to allow private developers to set up SEZs. To attract private investment in frictional land markets, seven out of 39 State Governments committed to expropriating land for both public and private developers upon introduction of the SEZ Act (Levien, 2012). Thus, these State Governments shielded SEZ developers, and any firms locating in the SEZ, from the normally high negotiation costs involved in private land acquisition.

To pin down the effect of an increase in land acquisition costs on SEZ development, I exploit an unexpected reform in 2007. In that year, a large protest against a SEZ in West Bengal was violently shut down by the state police, resulting in at least fourteen casualties (Patra, 2019).

[1] According to Land Matrix (2023), a global initiative aimed at creating a cohesive dataset about large-scale land acquisitions, land deals to facilitate non-agricultural activity more than quintupled in the last twenty years, amounting to 464,265.74 square kilometres, which is almost equivalent to Spain's total land area.

[2] Retrieved from http://sezindia.nic.in/cms/export-performances.php.

As a consequence, the Central Government prohibited compulsory acquisition for SEZs; State Governments could still aid private developers in land acquisition, but only under general consent of all landowners (SEZ Board of Approval, 2007). Moreover, policies were instated to ensure suitable compensation for said landowners. Altogether, this increased the costs of government land acquisition, and especially in those states that mandated compulsory acquisition for SEZ developers. A virtue of my study is that I can analyse the effect of the reform on the entry and performance of SEZ developers separately. Existing research on the effects of SEZs uses publicly available data on notified – meaning that the Central Government changed the land use of the plot to industrial – or operational SEZs (Hyun and Ravi, 2018; Görg and Mulyukova, 2022; Gallé et al., 2023). To capture whether the reform changed *participation* in the industrial policy, I have created a unique dataset of the universe of official SEZ proposals between 2006-2022. The proposal, which is submitted to the SEZ Board of Approval, is the first step in the official SEZ development process. I have scraped the Minutes from all SEZ Board of Approval meetings, and used text analysis to compile a dataset of 1,439 proposals for 1,119 distinct SEZs, with information on the developer, its proposed location, proposed size and planned sector of operation. I supplement this with the aforementioned publicly available data on SEZ notification and operation such that I can track SEZ development over time. Finally, I merge this novel village-level dataset with the SHRUG dataset, using their rich open source data to track economic development and sectoral composition at the village-level (Asher et al., 2021).

To guide the empirical analysis, I analyse the problem of the SEZ developer in light of existing theories on firm entry and behavior. A developer will enter if the expected profits from an SEZ are sufficiently high: beyond the firm's profitability under the more business-friendly regime, these potentially include benefits from spatial agglomeration as more firms locate in said SEZ. I argue that land acquisition costs act as an entry barrier for potential SEZ developers, and that this barrier is especially high for the more land-intensive manufacturing sectors (Batista e Silva et al., 2014). Besides a tendency for SEZs to become smaller to save on costs, canonical models such as Hopenhayn (1992) would predict that an increase in land acquisition costs following the reform reduces entry, and especially for those larger-scale SEZs. Moreover, this would induce positive selection of developers as recouping the increased cost of entry requires a higher revenue and therefore higher productivity. Thus, the reform will affect SEZ-led industrial development as especially manufacturing developers are less inclined to set up an SEZ, but the developers that do enter are of higher quality than their older counterparts.

I first study whether the reform indeed affected participation in the industrial policy, and specifically the size of SEZs and their sectoral composition. Methodologically, I employ a shift-share design, comparing the effects on SEZs across Indian states depending on their take-up of this

instrument, arguing that states with specific compulsory acquisition policies are more impacted by the reform than states where expropriation was not officially used. As states might adopt compulsory acquisition policy especially because they are otherwise unattractive for SEZs, I control for both aggregate fixed effects and local trends to limit endogeneity concerns. The results highlight that the proposed sectoral composition of SEZs changes dramatically: the share of manufacturing SEZ proposals in states that committed to compulsory acquisition is around eighteen percentage points lower. With a baseline manufacturing share of 35.7 percent, this implies a reduction in intentions to enter of almost 50 percent. This effect persists across all stages of SEZ development, as the share of operational manufacturing SEZs, conditional on entry, is 23 percentage points lower. I furthermore show that after the reform, proposed SEZs are slightly smaller but those SEZs that eventually become operational are significantly larger. This result is not driven by any specific state or industry and the parallel trends assumption is substantiated using a placebo test. I furthermore provide evidence that the land acquisition channel is responsible to the observed change in SEZ sectoral composition. First, I obtain the same pattern for more disaggregated industrial composition, with larger-scale industries being significantly less likely after the reform. Second, I show that SEZs after the reform locate in areas with less land fragmentation, which is consistent with the mandate for increased compensation to landowners. My results thus show that an increase in land acquisition costs reduces the share of manufacturing in both proposed and ultimately developed SEZs.

The second analysis investigates whether the compulsory acquisition reform impacted local labor markets surrounding SEZs. I use two rounds of the Economic Census (2005-2013), which is a full count of nonagricultural employment for both formal and informal enterprises. As the last wave of the Economic Census was in 2013, I restrict my sample to the 139 SEZs that became operational before this year. I follow a recent paper by Gallé et al. (2023) and employ a spatial difference-in-differences strategy: I create bins of five kilometres around each SEZ, and compare the villages in which an SEZ became operational between 2005 and 2013 to those nearby villages that do not have an SEZ. This specification, which includes directly treated, presumably indirectly treated and villages that were not affected, facilitates unbiased estimation of the direct treatment effect (Butts, 2023). I then extend their analysis by studying this difference between SEZs that were proposed before the reform versus those that were proposed afterwards. I find a positive but insignificant effect on for the full sample. As the entry barrier increased relatively more for developers of large-scale SEZs, I once again analyse manufacturing and services separately. Services SEZs proposed after the reform do not generate significantly different effects on their surroundings. However, manufacturing SEZs proposed after the reform are associated with significant employment growth up to ten kilometres away. I find that nonagricultural employment

in SEZ-hosting municipalities increases by 141 percentage points from an average of 2,845 people. Villages up to 5 and up to 10 kilometres away see an employment growth of 48 and 29 percentage points respectively; from 10 kilometres onwards, there is no significant change in employment. This provides suggestive evidence that manufacturing SEZs proposed after the reform generate more local employment, which is consistent with the hypothesis that the reform increased entry costs and thereby induced selection.

My paper contributes to the literature in three distinct ways. It is the first to analyse how land acquisition costs, and more specifically its transaction costs, affect entry. There is extensive evidence that land market frictions, such as fragmented ownership and weak property rights, have a negative effect on agricultural productivity and output (e.g. Adamopoulos and Restuccia (2014); Britos et al. (2022); Foster and Rosenzweig (2022)), manufacturing output and employment (Duranton et al., 2016; Pal et al., 2022; Sood, 2022), but not on services output and employment (Mehta, 2022). A virtue of my study is that I not only investigate its effect on actual sectoral composition, as in Mehta (2022), but that my unique dataset allows me to understand how *entry* into manufacturing and services is affected differently by land market frictions. This complementary finding adds a new dimension in which manufacturing and services behave differently in frictional land markets.

Second, it is the first to analyze the impact of compulsory acquisition on the effects of industrial policy. I complement existing research on compulsory land acquisition, which mainly involves careful documentation of the negative welfare effects of those who are expropriated, as in e.g. Cernea and Mathur (2007); Gironde and Senties Portilla (2016), the regulatory process governments engaged in compulsory acquisition should adhere to (Keith et al., 2009; Lindsay et al., 2017), or explore in which settings compulsory acquisition, if compensation is fair, could foster economic development in general (Miceli and Sirmans, 2007; Sarkar, 2007; Ghatak and Mookherjee, 2014). The closest related paper to my study, Blakeslee et al. (2021), found that a land-rezoning program in Karnataka increased firm entry and employment. The results in my paper suggest that there is a quality-quantity tradeoff for policymakers: while high land acquisition costs limit private investment, those developers that do enter generate more local employment. In other words, this is suggestive evidence that compulsory acquisition can act as a subsidy for less productive developers.

In this result, it provides a new lens through which to examine the Indian SEZ experience. The literature finds mixed evidence on economic activity (Hyun and Ravi, 2018; Görg and Mulyukova, 2022; Gallé et al., 2023), and no effect on development outcomes such as education and infrastructure (Aggarwal, 2007; Alkon, 2018). Those papers that found negative effects on economic developments have rationalized this through the strict regulatory environment and the potential for corruption by local politicians (e.g. Levien (2012)). This paper proposes a complementary

explanation, showing that the intensity of compulsory acquisition, and thereby the opportunity of private firms to avoid the land acquisition process, influences the sectoral composition and the performance of these SEZs.

Finally, its discussion of sectoral composition naturally relates to a set of papers describing India's growth puzzle and India's atypical structural transformation, characterised by services-led growth with a still-growing manufacturing sector.[3] Competing explanations for this phenomenon include costly skill accumulation (Chari et al., 2016), informality of the workforce (Djidonou and Foster-McGregor, 2022), or a combination of productivity shocks and income effects (Fan et al., 2023). This paper asserts that, at least for SEZs, land acquisition costs impact manufacturing and services differently. This might then contribute to differences in factor reallocation from agriculture to these respective sectors and thereby influence structural transformation.

The next section discusses the related literature in more detail and highlights the contributions of this paper. In Section III, the institutional environment for SEZs, their tenuous relationship with land and the protest and subsequent policy changes will be elaborated upon. Section IV discusses the conceptual framework, Section V the data and Section VI the empirical methodology. Results on SEZ entry and employment are discussed in Section VII and Section VIII respectively. Finally, section IX will provide a conclusion and suggestions for future research.

II. LITERATURE REVIEW

As outlined above, this paper contributes to multiple strands of literature, which will be elaborated on below.

I. Compulsory acquisition

Large-scale land acquisition by the government has been a documented practice at least since 3000 BC, with records on the expropriation of villages to create large public estates in the Old Kingdom of Egypt (Roudart and Mazoyer, 2016). For as long, it has been a tenuous and delicate strategy, with dispute on the tradeoff between investments for public purpose and the consequence of dispossession (Keith et al., 2009). This tension in turn has spurred an economic literature that mainly focuses on documenting the consequences of compulsory acquisition for those dispossessed. Often based on detailed case studies, this research highlights the long-term negative welfare effects on citizens whose land is expropriated (Cernea and Mathur, 2007). Moreover, Gironde and Senties Portilla (2016) showed that there are important spillovers to other villagers, as the

[3] As noted in Fan et al. (2023), this pattern of structural transformation is not unique to India, as the combination of growth in services with limited industrialization is observed in other developing countries.

investments following land expropriation improved access to nearby villages, but also dramatically reduced job security, especially for farmers. Relatedly, Ghatak and Mookherjee (2014) argued that not compensating the farmers that do not own but work on the land that is acquired means that the landowner does not internalize the farmers' losses upon sale of said land. They showed that in fact farmers need to be overcompensated to curb the owner's socially excessive incentive to sell. Understanding how and who should be compensated, especially in contexts with weak property rights and tenure security, remains a complicated but important issue (Lindsay et al., 2017).

Even though improving allocative efficiency is often used as an economic justification for this practice, there is little research on what the actual implications of compulsory acquisition are on industrialisation. The closest paper to this one is Blakeslee et al. (2021), who studied the impact of land-zoning laws on economic activity in the context of the Industrial Areas policy in Karnataka. They argued that their findings -– Industrial Areas stimulate firm entry and employment -– demonstrate the burden of strict land zoning laws that hinder land use conversion, and that the act of providing industrial land at market rates is an effective enough place-based policy for emerging economies. This important result can however not distinguish between the barriers to land acquisition and the barrier to land use conversion, two barriers that are present in varying degrees across both developed and developing countries.[4] In contrast, my paper can inform on the degree to which access to land is the main constraint private firms face.

II. Impact of land market frictions on economic outcomes

My paper also relates to the literature that describes the impact of land market imperfections, such as land fragmentation or weak property rights, on economic outcomes. As discussed before, these imperfections are used to justify compulsory acquisition. The bulk of evidence on this relationship is for the agricultural sector, showing that land barriers are an important factor in explaining the agricultural productivity gap between developed and developing countries (Adamopoulos and Restuccia, 2014). First, it has been shown that land imperfections hinders farms from achieving their optimal scale (Britos et al., 2022). Furthermore, the inefficiently small plot sizes generate underutilization of labour or disguised employment: in the case of India, Foster and Rosenzweig (2022) showed that if all farms were at optimal size, output per worker would increase by 68% while reducing the total agricultural labour force by 16%. Finally, Kitamura (2022) showed how land market frictions and credit frictions interact: using a large land redistribution policy in Japan, he found that increased access to land and increases credit access through higher collateral. This incentivizes farmers to invest in technology, thereby increasing agricultural productivity.

[4] Strict land zoning regulation is an especially important barrier in developed countries: Herkenhoff et al. (2018) show how state-level land use regulations have depressed macroeconomic activity in the US.

More recently, the effect of land market frictions on the manufacturing sector has been investigated. Duranton et al. (2016) established that in India, land misallocation is the main driver for output misallocation in manufacturing. This has been corroborrated more formally by Sood (2022), who found that manufacturing firms in regions with higher land fragmentation acquire additional land slowly over time rather than buying a sufficiently large plot before starting production. These manufacturing firms are 22 percent smaller than their counterparts in regions with more concentrated land ownership; this lack of expansion equates to a reduction in lifetime producer profits of 6.5%. Pal et al. (2022) developed a model that shows that stricter land ceilings, which cap the amount of land a landowner can hold, reduce both capital investment and industrial output.

The only other study – that I am aware of – that describes the impact of land market frictions on both manufacturing and services is Mehta (2022). In his paper, he investigated whether firms perform worse in states with more land fragmentation, finding that only manufacturing firms have significantly lower output and employment in such states. Furthermore, the effect size is higher for states that also exhibit more land disputes or an ill-functioning land rental market, suggesting that it is differences in land requirements that drive this phenomenon. A virtue of my study is that I can not only investigate the impact of the policy environment on firm-level outcomes, but that I can analyse entry directly. Understanding how land policy affects selection is of the utmost importance to contextualize the findings that already-established firms perform worse.

III. Impact of SEZs in developing countries

Third, my paper contributes to the stream of literature on the (socio-)economic impact of place-based policies in general and SEZs in India specifically. Research on spatial policies initially focused on developed countries due to data availability, showing mixed effects (e.g. Greenstone et al. (2010), Brachert et al. (2019) and Criscuolo et al. (2022)). Koster et al. (2019) pointed out the the impact of place-based interventions might well play out differently in developing countries, as these are generally focused on well-performing firms or areas. This reduces the chance that the local benefits such agglomeration effects are dwarfed by firm and job displacement in surrounding areas. In their paper, they found large increases in firm productivity and local wages in industrial parks in Shenzen, China. Partly because of this success, SEZs have become one of the more prominent development strategies (Frick et al., 2019).

However, the Indian SEZ experience has generally been less impressive: Görg and Mulyukova (2022) showed, based on PROWESS data, how the productivity of firms in close proximity of SEZs is actually negatively affected. He showed that this effect is most pronounced for state-owned

SEZs. In a complementary paper, Gallé et al. (2023) found positive employment effects of SEZs, mainly driven by small informal firms. Alkon (2018) investigated the oft-made claim that SEZs not only bring economic but also developmental benefits, such as improvements in human capital or infrastructure, finding no effect. This is complementary to Aggarwal (2007), who finds that SEZs create jobs but have limited impact on human development. Finally, Hyun and Ravi (2018) used night light data to show that SEZs boosted economic activity. They further provided evidence that SEZs draws workers out of informality, such that the formal sector grew in size and productivity. My paper is complementary to this existing literature by considering land as an input in the production function, and attempting to catalogue the opportunity costs of these SEZs.

IV. India's atypical structural transformation

Finally, since my paper discusses reallocation within non-manufacturing in India, it naturally relates to a set of papers exploring India's atypical structural transformation. In general, structural transformation relates to factor reallocation across the three broad sectors: agriculture, manufacturing and services (McMillan and Rodrik, 2011; Herrendorf et al., 2014). This phenomenon differs significantly from India's factor reallocation in the last decades, which is characterised by services-led growth with a still-growing manufacturing sector.[5] Chari et al. (2016) argued that this is due to costly skill accumulation rather than limited labour mobility. Relatedly, Djidonou and Foster-McGregor (2022) contended that the relative underperformance of the manufacturing sector in India is driven by informality, as labour reallocates from agriculture to the informal sector. According to Dehejia and Panagariya (2014), the growth puzzle can partly be explained by intersectoral linkages: they showed that the large growth in services in India is partly generated by the growth in manufacturing, which created a stronger internal market for services. Finally, Fan et al. (2023) analysed the growth of services in India, stating that the development process led to a productivity increase in services, and the growth was reinforced by increased demand due to income effects. My paper is the first to assert that compulsory acquisition, due to their differing impact on manufacturing and services, might contribute to differences in factor reallocation from agriculture to these respective sectors and thereby influence structural transformation.

[5] As noted in Fan et al. (2023), this pattern of structural transformation is not unique to India, as the combination of growth in services with limited industrialization is observed in other developing countries.

III. INSTITUTIONAL FRAMEWORK

I. The Indian SEZ Act

Starting with industrial estates and townships from the late forties to establishing the first ever Export Processing Zone (EPZ) in 1965, the Indian Central Government was in some sense ahead of the curve when it came to implementing place-based policies (Levien, 2012). The objective for these EPZs was to manufacture commodities for export to obtain foreign exchange, in exchange for tax breaks and smoother trade procedures. In 2000, inspired by the success of Chinese SEZs in the Guangdong province, the EPZs were converted to SEZs, could process imports duty-free and did not need any license to import (Hyun and Ravi, 2018). At the same time, the focus shifted from exports to general processing, as evidenced by SEZ developments inland instead of close to the port. Several states, including "economically backward" states, introduced specific SEZ legislation. Nevertheless, it was not until after the ratification of the 2005 Special Economic Zone Act that the popularity and prevalence of SEZs fully materialized (Tewari, 2020). The Act centralized the development of SEZs and the benefits for firms locating inside an SEZ – those being duty-free imports, less stringent regulations around doing business and 15-year income tax benefits.[6] They can also set up a joint venture with up to 100% FDI with automatic approval, instead of the 49% threshold applicable for other Indian companies. Notably, the Indian Act differs from most other SEZ policies by allowing both public and private developers to set up a SEZ (Central Government of India, 2005).[7] Public developers are generally state-owned investment companies, responsible for building infrastructure, managing land banks and providing incentives to local firms. Private developers are large Indian firms or, less frequently, foreign firms wishing to establish themselves in the Indian market.

The development of an SEZ proceeds through four stages. First, the developer submits a proposal to the State Government of the proposed location. The proposal must indicate the developer, the location, the sector it will be operating in, land ownership and the proposed investment and development activities, including construction of buildings and infrastructure. The developer also submits a Project Report detailing the economic and commercial feasibility of the proposed SEZ (Central Government of India, 2006).

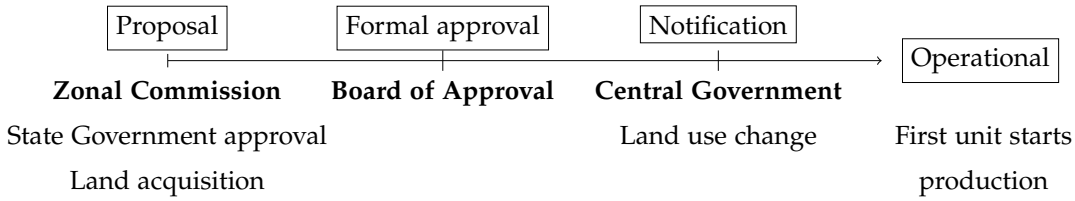
[6] It is important to note that imports from, or exports to, the Domestic Tariff Area (DTA), or the rest of India excluding other Special Economic Zones, fall under the same regulations. However, SEZs are not allowed to sell goods imported from the DTA *as is*; a developer can thus not propose a SEZ and have it function as nothing more but a warehouse for within-India sales (Central Government of India, 2005).

[7] Another notable difference is the minimal size requirement, which varies across industries and is lower than in for example China (Hyun and Ravi, 2018).

In the second stage, the proposal is forwarded to the SEZ Board of Approval (BoA). The Board of Approval is appointed *ex officio* by the Central Government, meaning that they are nominated for the BoA by virtue of the office they hold (Central Government of India, 2005).[8] The BoA meets multiple times a year to judge whether proposals are of sufficient quality.[9] There are three elements to this judgement: the State Government must approve the proposal; the plan for the SEZ must meet the requirements and, importantly, the developer should own the land (Central Government of India, 2005).[10] All decisions on proposals are to be made with general consensus. If the developer (be it private or public) does not own the land, only in-principle approval can be granted; if there are multiple unfulfilled requirements the proposal is deferred. In the latter two cases, the proposal can be resubmitted to the BoA to be discussed again at a later time.

After the formal approval is received, the SEZ moves to the notification stage, which involves the Central Government changing the land use designation on the SEZ plot to industrial land. The Government does so if it believes that the SEZ will bring about economic development and will be for the greater good (Central Government of India, 2005). Finally, after notification, the first unit can be constructed and eventually start operating. The developer then sets up their own SEZ Board of Approval, which then decides which firms to allow into the SEZ. The schematic development of a SEZ is given in Figure 1 below:

Figure 1: *Schematic overview of the development stages of a SEZ*



Within three years after the law was instated, more than 500 SEZs in a variety of sectoral specializations in manufacturing and services were approved. In 2012, the total exports from the then operational SEZs equalled 87.45 billion dollars, which was a growth of 31 percent compared

[8] The BoA always consists of four high-level officers from the Ministry of Commerce and Industry, the Ministry of Home Affairs and the Ministry of Finance; the Director General of Foreign Trade; at most ten officers from relevant ministries including the Ministry of Law and Justice and the Ministry of Science and Technology; and a Professor in the Indian Institute of Management or the Indian Institute of Foreign Trade (Central Government of India, 2005). This board is, based on the proposals to be discussed, then supplemented with a representative from each relevant State Government and the local Special Economic Zone Development Commissioner.

[9] These proposals are, based on the subsample of proposals for which I have the actual submission date, discussed in the order in which they were submitted.

[10] Alternatively, the developer must have a twenty-year lease on the land.

to the previous year and amounted to almost 20 percent of India's total imports.[11] In total, as of 29 October 2022, the Board of Approval has considered 1,459 proposals, of which more than 700 were approved.

II. Land in SEZs

Land acquisition in India is a costly and complex process. First, land in India is extremely fragmented, with an average parcel size of 2.9 acres compared to 19.8 acres in rural China or 234 acres in the United States (Zheng et al., 2023; Sood, 2022). Second, land ownership in India is presumptive, meaning that it is characterized by possession and that titles are subject to challenge (Mishra and Suhag, 2017). Indeed, land conflicts in India constitute 25 percent of cases at the Supreme Court, with land disputes in general threatening investments worth 200 billion dollars (Wahi, 2020). Establishing rightful ownership is further complicated by the poor maintenance of land records and inaccuracies in land registration (Prabhakar et al., 2020). These factors generate huge land transaction costs; Sood (2022) estimated these to be on average 119 percent of the parcel market value.

It is this state of affairs that led the Central and State Governments to worry about private involvement – or rather, the lack thereof – in Special Economic Zones(Levien, 2012). As land is a state subject, the 2005 SEZ Act is silent on the issue of land acquisition for SEZs (Public Accounts Committee, 2018). However, the States could and did engage in land provision for both public and private SEZ developers through a variety of strategies often before their proposal was to be discussed in the Board of Approval meetings.[12] The most immediate of these is compulsory acquisition, when states would invoke the colonial Land Acquisition Act (LAA, 1894). This law allows government to forcibly acquire land for "public purposes" , and was amended in 1984 to also include expropriation on behalf of private investors (Singh, 2020). Landowners, or as explained before, those in possession of the land to be expropriated, received a compensation proportional to the nominal agricultural land rate based on local land transactions in the previous five years (Kapoor and Upadhyay). The state then transfers this land to the developer at its nominal value, rather than the value of the commercial or industrial land to which it will soon be converted (Levien, 2012). Thus, the State Governments shielded private developers, and any firms locating in the SEZ, from the normally high transaction costs.

[11] Retrieved from http://sezindia.nic.in/cms/export-performances.php.

[12] For example, Adani Group requested 13,000 hectares of land from the Gujarat State Government to set up a conglomerate of SEZs in Mundra. By October 2007, 3,868 hectares of land, including grazing land in use by local communities, was allotted; the Government furthermore facilitated the acquisition of private land in 14 villages (Kapoor and Upadhyay).

Actual data on the use and intensity of compulsory acquisition is not public, but one indication on states' propensity to engage in land expropriation is reflected in state-specific SEZ policies. Seven states have instated policy that declares the government can provide land to both public and private SEZ developers. Of these states – Chandigarh (2005), Gujarat (2004), Haryana (2006), Madhya Pradesh (2003), Maharashtra (2001), Tamil Nadu (2005) and West Bengal (2003) – the first four explicitly name the Land Acquisition Act as the appropriate method to do so.

III. Protests and land acquisition reforms

To understand the effect of land costs on sectoral composition, I exploit an unexpected policy change to land acquisition for SEZs. After the 2005 SEZ Act, the West Bengal Industrial Development Corporation and the Salim Group, a private firm, proposed to set up a chemical SEZ in Nandigram, close to Haldia port.[13] This proposal was accompanied by a notification of land acquisition for 4,047 hectares of land, directly affecting 29 villages and more than 100,000 people in Nandigram (Patra, 2019). When the land acquisition program started in January 2007, farmers and other locals began to barricade the area in protest. On March 14, 2007, the West Bengal State Government decided to intervene, by sending 3,000 police officers to suppress the 5,000 villagers participating in the protest. In the ensuing violence, 14 farmers were killed and more than a hundred farmers went, and remained, missing (Levien, 2012).

Protests against large-scale land acquisition are not uncommon, but this violent repression was exceptional. Consequently, the SEZ at Nandigram was cancelled; the West Bengal Industrial Development Corporation announced it would move the SEZ to Nayachar, an empty strip of land also close to Haldia. Moreover, the Central Government instated a Empowered Group of Ministers (EGoM) to revisit the SEZ policy (Singala et al., 2011). After three months, during which the BoA meetings were suspended, the Central Government announced that effective immediately, the Board of Approval would not approve any proposal for which the State Government had provided land using compulsory acquisition (SEZ Board of Approval, 2007). In other words, State Governments could no longer use invoke the "public purpose" clause in the LAA to facilitate land acquisition for industrial development in private SEZs (Public Accounts Committee, 2018). It furthermore promised to revise the rules on land acquisition and resettlement and rehabilitation more formally by passing new acts. A first step was the National Policy on Rehabilitation and Resettlement in October 2007, which advocates for land-for-land compensation, and preference to the landlosers for employment. An extended version of this bill, the Right to Fair Compensation and Transparency in Land Acquisition Resettlement and Rehabilitation Act, was finally ratified on

[13] Haldia is one of India's major ports, increasingly taking over traffic from Kolkata as Haldia is more easily accessible for ships.

27 September 2013, coming into effect on 1 January 2014 (Ministry of Law and Justice, 2013).[14] In the robustness checks, I show that the results are not driven by changes in SEZ investment after 2013.

As mentioned before, state governments had a larger set of strategies at their disposal to facilitate land for private SEZs, although these are more cumbersome and expensive to execute. First, governments could still acquire land on behalf of the private investors provided that the landowners agreed with the deal (SEZ Board of Approval, 2007). Another strategy, and one commended by the then-minister of Commerce, is for SEZ developers to draw upon land banks. These land banks manage and distribute land plots for industrial development; however, these are not always suitable for large projects such as SEZs (Singala et al., 2011). Finally, there is some evidence that states divert assigned land, which is land legally distributed to marginalized communities, for industrial purposes (Singala et al., 2011; Kapoor and Upadhyay).

IV. CONCEPTUAL FRAMEWORK

This section first describes how land fragmentation and other frictions affect land acquisition and thereby entry costs. Then, I will elaborate on the effect of the compulsory acquisition reform on land acquisition costs, and finally the implications for both SEZ development, or SEZ entry for short, and SEZ quality.

Land assembly models such as Miceli (2011) show how land fragmentation increases land acquisition costs. Private investors requiring a large plot of land will have to negotiate with a large number of landowners, and thereby run the risk of holdouts. The holdout problem arises when a owner of a valuable resource decides to "hold out" on selling to potentially obtain a larger payoff later, despite the existence of a positive surplus between buyer and seller (Menezes and Pitchford, 2004).[15] Besides this risk, land fragmentation generally implies larger bargaining costs, as there

[14] The aforementioned process eventually culminated in two new bills, introduced in Lok Sabha (Lower House) on 6 December 2007. The Resettlement and Rehabilitation Bill was a formalization of the existing National Policy, while the Land Acquisition (Amendment) Bill most notably redefines "public purpose" beyond strategic or military provisions and infrastructure investments. Specifically, the provision of land for any other project under the umbrella of public purchases is limited to thirty percent of the total area of land necessary, and conditional on the other seventy percent having been legally acquired by the developer (Ministry of Rural Development, 2007). The Land Acquisition (Amendment) Bill was passed in Lok Sabha on 25 February 2009, but both bills lapsed with the dissolution of the parliament on 1 June 2009. It was not until 2011 when both bills were introduced in the combined Land Acquisition, Resettlement and Rehabilition Bill, and finally passed in 2013.

[15] Empirical studies of speculative hold-out suggest that landowners that went to court during the land assembly process did obtain larger compensations (Pal et al., 2022). Kitchens (2014) investigated the prevalence of the speculative hold out problem under eminent domain in Tennessee, US, in the 1930s, finding that those that held out and went to

are many sellers to negotiate with. In the face of land market frictions, the land acquisition costs can be sufficiently high to preclude productive projects from realizing, thus acting as a barrier to entry (Miceli and Sirmans, 2007). To understand how the reform changed barriers to enter for SEZ developers, I follow Sood (2022), who in her study of land expansion by manufacturing firms, modelled the land acquisition cost of project i in state s as[16]:

$$LAC_{is} = \xi_s + m_i^{1+\gamma_s}, \tag{1}$$

where m_i is the total cost, or price times acreage, of the land. Here, ξ_s captures the fixed costs associated with land acquisition such as collecting land records and designating a suitable location. Finally, $\gamma_s \geq 0$ governs the convexity of the cost function, capturing the effect of land fragmentation on the risk of holdout and increased bargaining costs. Importantly, Sood (2022) found in her estimation of these cost parameters significant heterogeneity by state, positively correlated with the degree of land fragmentation.

Consider first the land acquisition costs in states with compulsory acquisition policies before the reform. First, Sood (2022) found that the fixed costs of land acquisition are significantly lower for government firms compared to private firms, such that $\xi_s^{CA} < \xi_s$. Furthermore, as compulsory acquisition by definition precludes any bargaining and therefore the holdout problem, we can assume that for any state, the cost function is less convex for compulsory than for private acquisition, or $\gamma_s^{CA} < \gamma_s$. This together implies that land acquisition costs are (1) on average lower and (2) increase less quickly in acreage in states that expropriate land for SEZs, provided they have similar land frictions.[17] We would not just expect SEZs in compulsory acquisition states to be larger on average; in terms of sectoral composition, we would expect more large-scale industries in these states.

After the 2007 reform, state-led acquisition was still allowed but only if all sellers agreed to the deal, increasing the bargaining costs and the risk of holdout. In the context of this framework, this implies an increase in γ_s^{CA} for those states engaging in compulsory acquisition. This means that land acquisition costs increased across the board, but especially for projects requiring larger plots. Connecting this hypothesis to industrialisation is straightforward, as industrial sectors are

court obtained on average about five percent higher compensations.

[16] Strictly speaking, her definition of the cost of land expansion also contains a land friction-induced wedge between the total price of the land and the land cost. However, this wedge parameter and γ_s cannot be estimated jointly; to facilitate interpretation, I assumed any non-price land frictions wedge is collapsed into the convexity parameter.

[17] Note that this does not necessarily mean that there are no SEZs in states without compulsory acquisition policy; the expected value of the project also differs across states (Miceli and Sirmans, 2007). This is also reflected in the Indian SEZ experience: of those SEZs in states without compulsory acquisition, a substantial share is located in states that are more developed and otherwise industrially progressive (Tewari, 2020).

generally more capital-intensive than services, and therefore require more land. As mentioned before, services need on average 6.7 times less land than industry to produce one monetary unit of gross value added in the Netherlands and Spain (Batista e Silva et al., 2014). Besides this empirical regularity of differences in land intensity, there is limited albeit convincing evidence that manufacturing firms are especially impacted by land market frictions (Duranton et al., 2016; Mehta, 2022; Sood, 2022). If manufacturing firms are relatively more constrained by land than services firms, the increase in entry costs after the reform will be relatively higher for manufacturing firms, such that there will be relatively fewer manufacturing SEZ proposals.

Nevertheless, if private developers are heterogeneous in quality, for example in their ability of bringing about agglomeration economies, studying changes in SEZ entry decisions is not sufficient to understand the impact of land acquisition costs on industrialisation. Stationary models of entry, exit and firm dynamics such as Hopenhayn (1992) and later Melitz (2003) offer insight on firm, or here SEZ, entry when productivity is heterogeneous and uncertain. In these models, it can be shown that the marginal entrant is the one for which the present discounted profits, as a function of their productivity, equals the entry costs. This means that an increase in entry costs acts as a higher barrier to entry, protecting incumbents and increasing selection (Hopenhayn, 1992).

In short, I formulate the following hypotheses. First, the share of manufacturing proposals decreases after the reform relative to services proposals in those states with compulsory acquisition policies, reflecting how the entry costs have increased more for manufacturing industries. Second, I predict that this reduction, especially right after the protest, persists in the following development stages: over time, the new manufacturing SEZ entrants will be of higher productivity, reflected in the quality of their proposals. Finally, for a more formal analysis of quality, I predict that SEZs after the reform generate more local employment.

V. DATA AND DESCRIPTIVES

This section provides an overview of the data that is used in analysing the effect of the eminent domain reform on SEZ characteristics, entry and local development.

I. SEZ data

The main dataset contains the universe of official Indian SEZ proposals. My principal data source are the BoA Meeting Minutes, which are scanned documents publicly available from SEZ India (2022b). From there, I scraped the minutes for the 112 BoA meetings between 17 March 2006 and 29 October 2022. After collecting the meeting minutes, I used text analysis to extract information about all SEZ proposals. The constructed dataset contains 1,459 proposals for 1,119 proposed

SEZs, with information on the SEZ developer, the proposed location, the size in hectares, the sector in which they plan to operate and the decision of the Board, including, if applicable, the reason for deferral. The number of proposals exceeds the number of SEZs as some proposals were initially deferred and later resubmitted. If an SEZ proposal did not provide a disaggregated enough location, I used data from Land Matrix (2023), OpenStreetMap or newspaper articles to georeference the SEZs at their exact location. Furthermore, I use the COSIDICI website, which lists all state Industrial Development Corporations, to identify public developers. Finally, I obtain information on the date of notification and whether the SEZ is operational from the Ministry of Commerce. Further details on the data collection are relegated to Section I of the Appendix.

It is important to note that while I do know exactly when which proposal was discussed, I have almost no information on when the proposal was submitted. This complicates matters because proposals could be submitted since the SEZ Act was ratified, on 23 June 2005, but the first BoA meeting did not take place until 17 March 2006. This generated an unusually large number of proposals to be discussed in the first few meetings. This is illustrated in Figure 2, which shows a substantial decline in the number of proposals discussed per meeting after the protest. However, because of censoring of proposal dates, this is partly a mechanical effect as the backlog of proposals is slowly cleared. This means that I cannot estimate any effect of the reform on SEZ entry in general.

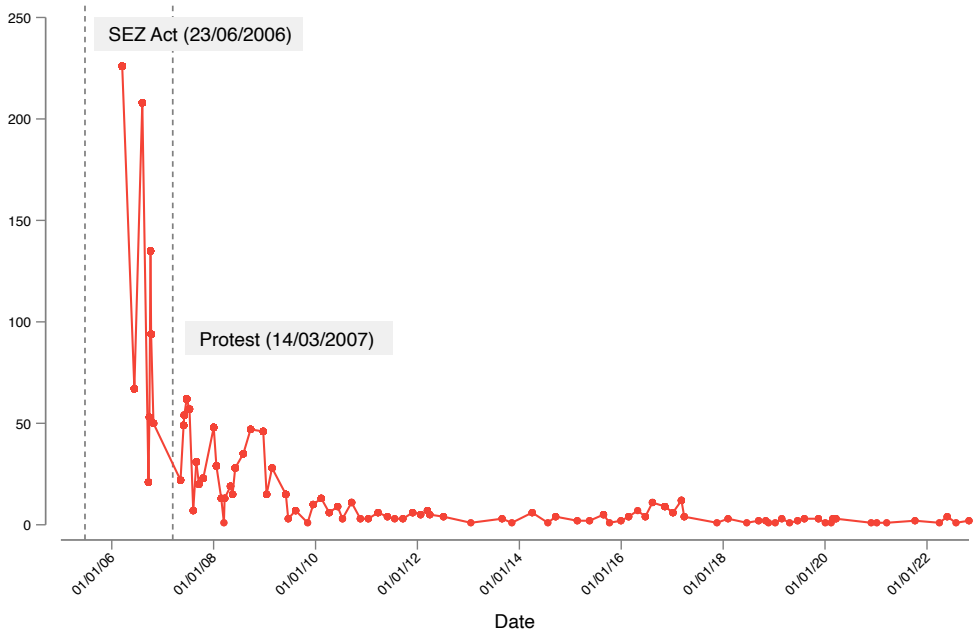


Figure 2: *Number of SEZ proposals per meeting*

I then spatially join the georeferenced SEZ data with the Socioeconomic High-resolution Rural-Urban Geographic Platform for India (SHRUG) (Asher et al., 2021). SHRUG provides consistent administrative boundaries for over 500,000 villages and 8,000 towns between 1991-2021. The unit of aggregation in the SHRUG is a shrid; this is a location-based identifier that contains at least one village or town.[18] Using their rich open source data, I can then add economic and socio-economic variables at the shrid-level. I use one round of the *Primary Census Abstract* (PCA, 2001) which contains information on municipality population, the labour force and agricultural employment. I also use the *Economic Census* (EC, 2005), which is a complete count of all non-agricultural economic units, to control for pre-SEZ manufacturing and service employment. To proxy for credit frictions, I compute the number of bank branches at the municipality level using Garg and Gupta (2020). Finally, I control for local land fragmentation, as this directly relates to both cost parameters in the land acquisition cost function. I computed the subdistrict-, district- and state-level land Gini coefficient based on detailed plot distribution information from the 2000 Agricultural Census. A subdistrict is the third administrative boundary in India; India consists of more than 6,000 subdistricts. Table 1 summarizes all variables in this dataset at the proposal-meeting level. The average SEZ is 321.4 hectares, or approximately 1.8 by 1.8 kilometers, and 12 percent of SEZs are proposed by a public developer. In terms of the sectoral composition of the proposed SEZs, around two-thirds of SEZs are in services, such as IT, Research and Development, or warehousing. Manufacturing SEZs, including those for chemicals, pharmaceuticals and apparel, amount to 30 percent; around 2 percent of SEZs are in utilities, and concerned with power generation or oil and gas.

Finally, I obtain information on state propensity to engage in eminent domain by parsing through all state-specific SEZ acts, rules and policies, as there is – to my knowledge – no publicly available information on actual land acquisitions by state governments, especially for private SEZs. Concretely, I classify a state as treated if they have an official pre-reform policy or act that specifies that the government can use the Land Acquisition Act (1894) or any other expropriation strategy to provide the land to SEZ developers. For example, clause 7.1 of the Haryana Special Economic Zone Act 2005 states: "The Government may transfer land owned, acquired or controlled by it to the Developer as per provisions of the Land Acquisition Act, 1894 (1 of 1894), and the rules made thereunder and as per State Government policy."[19] Figure 3 shows the variation across states in their commitment to eminent domain for SEZs, overlayed with the proposal data.

[18] A certain level of aggregation is unavoidable for panel data, as Indian villages are often subjected to changing boundaries. If a village does not experience any boundary changes, the shrid, which I will interchangably call municipality or village, is at the village-level; otherwise it includes multiple villages.

[19] The Haryana SEZ Act (2005) was retrieved from https://www.indiacode.nic.in.

Table 1: *Characteristics of SEZ proposals and their locations.*

	N	Mean	Median	SD
SEZ Characteristics				
SEZ size (ha.)	1,454	321.4	40	1250.2
Public developer (share)	1,458	0.12	0	0.32
Manufacturing SEZ (share)	1,457	0.30	0	0.46
Services SEZ (share)	1,457	0.67	1	0.47
Utilities SEZ (share)	1,457	0.021	0	0.14
Location Characteristics				
Size of subdistrict (ha.)	1,459	67,189	49,627	104,226
Population (2001)	1,459	1,142,840	409,994	2,076,261
Labour force (2001)	1,459	414,522	155,993	736,089
Agricultural employment (2001)	1,459	41,439	32,569	67,364
Manufacturing employment (2005)	1,459	58,382	11,645	218,547
Services employment (2005)	1,459	140,152	27,065	474,876
Distance to nearest airport (km)	1,459	28.5	19.0	26.7
Distance to nearest port (km)	1,459	212.3	215.9	177.3
Distance to nearest highway (km)	1,459	1.46	0.90	1.70
Distance to nearest railway (km)	1,459	6.09	4	7.22
Distance to nearest power plant (km)	1,459	16.0	12.5	14.8
Distance to nearest city (>500K, km)	1,459	41.3	20.5	56.0
At least one bank (2005, share)	1,459	0.35	0	0.48
Number of banks (2005)	1,425	57.6	13	153.3
Land concentration (Gini)	1,216	0.51	0.51	0.090

The unit of observation is a proposal-meeting-subdistrict combination. SEZ characteristics are obtained from the proposal dataset; all location characteristics are aggregated up to the subdistrict level. Data on agricultural employment, labour force, subdistrict size and population are from the 2001 Primary Census Abstract; manufacturing and services employment from the 2005 Economic Census, bank data is retrieved from the RBI dataset and the Gini coefficient on land concentration is computed using the 2000 Agricultural Census. Distances based on comparing the centroid of each georeferenced SEZ to all places of interest as entered in OpenStreetMap.

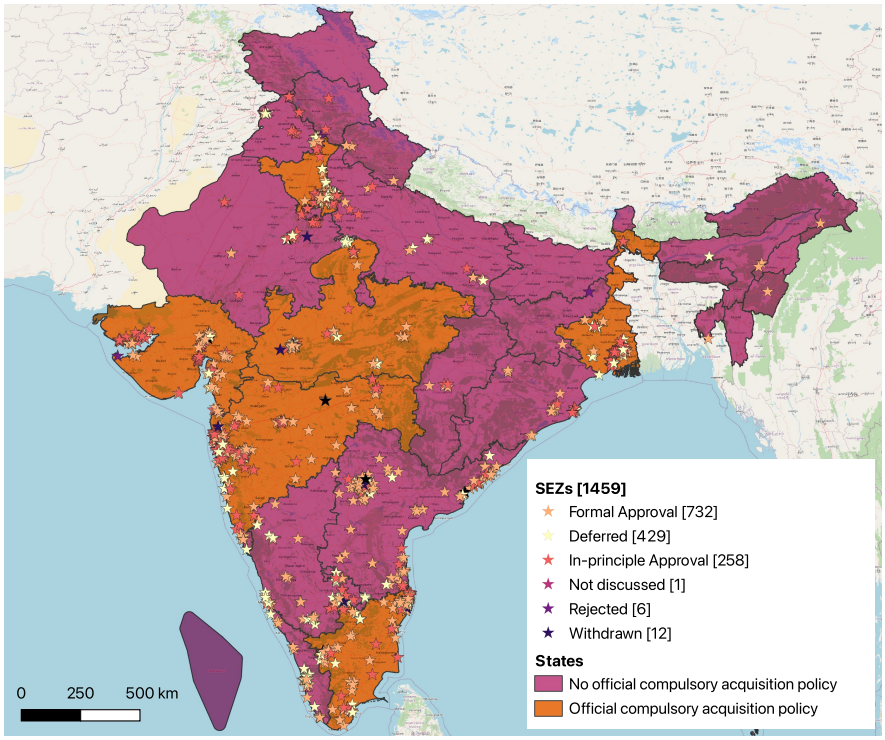
Based on the conceptual framework, one would, because of the convexity in the cost function, expect relatively larger SEZs and relatively more SEZs in large-scale industries in states with a compulsory acquisition policy. Table 2 shows how SEZs discussed before the protest differ between states with and states without a compulsory acquisition policy. First of all, SEZs in treated states are on average 68 percent larger than their counterparts in untreated states. All other SEZ characteristics in the first panel show no significant differences between treated and control states; the exception here is that states that engaged in eminent domain see significantly more proposals for oil and gas and power generation SEZs. However, these types of SEZs are a minority, with only 30 proposals in the whole sample. Turning to location characteristics of SEZs discussed before the protest, we see that they are balanced across the two treatment groups except for distance to the port, distance to a power plant and presence of banks. This is not surprising: Figure 4 showed, there is a mass of SEZs in states that are more inland and engage in compulsory acquisition, explaining why these are further away from the port. All in all, this shows the need to control for certain location characteristics that would otherwise threaten our identification, but is reassuring because the main outcomes – manufacturing and services – are not significantly different across treatment and control states. Even at a more disaggregate industry level, as in Table 12 in Section I of the Appendix, I confirm that sectoral composition is generally not significantly different across states with and without compulsory acquisition.

II. Municipality data

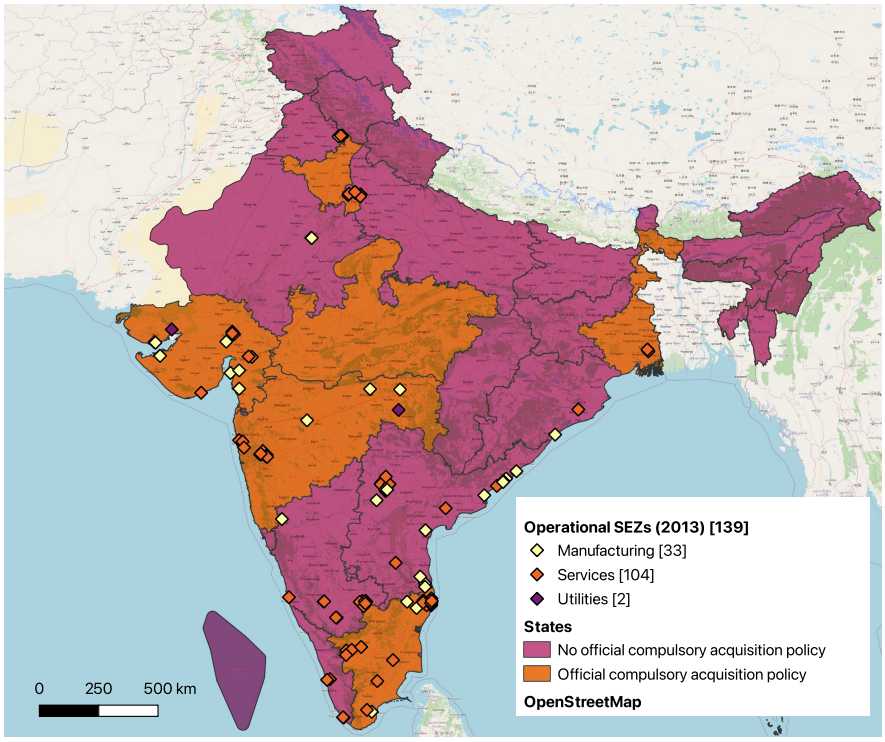
The second set of hypotheses concerns an increase in quality or productivity of new SEZ entrants. I investigate whether these SEZs engendered different changes in local labour market conditions using two rounds of the Economic Census (2005-2013), which as mentioned before contains the universe of firms in the non-agricultural sector. Because the last wave of the EC is in 2013, I have to restrict my SEZ sample to the SEZs that became operational beforehand. As the exact dates of operation are not publicly available, I obtained an official list of all operational SEZs at 12 October 2012 that was published by the Ministry of Commerce and Industry.[20] I crossreference this list with an updated version published on 18 March 2013 to confirm that no other SEZs became operational in the last three months of 2012. After removing the 19 SEZs that became operational before the introduction of the SEZ Act, I am left with 139 operational SEZs. These are displayed in Figure 3.

To identify the local labour market effects of SEZs before and after the reform, I first need to classify which municipalities are sufficiently close to the SEZ to experience any spillovers. In constructing this dataset, I adopt a similar GIS strategy as Gallé et al. (2023); Görg and Mulyukova

[20] This was retrieved from http://www.sezindia.nic.in.



(a) *All SEZ proposals up to 2022*



(b) *Operational SEZs up to 2013*

Figure 3: *Location of proposed SEZs and states' CA policy*

Table 2: *Characteristics of pre-reform proposals by state's compulsory acquisition policy*

	No CA policy		CA policy		Difference	
SEZ Characteristics						
Log size (ha.)	3.995	(1.682)	4.507	(1.846)	0.512**	(0.197)
Public developer	0.110	(0.314)	0.142	(0.349)	0.031	(0.036)
Manufacturing SEZ (share)	0.330	(0.471)	0.376	(0.485)	0.046	(0.068)
Services SEZ (share)	0.667	(0.472)	0.590	(0.493)	-0.077	(0.070)
Utilities SEZ (share)	0.003	(0.057)	0.035	(0.183)	0.031**	(0.013)
Location Characteristics						
Log population (2001)	13.105	(1.385)	13.218	(1.162)	0.113	(0.113)
Log labour force (2001)	12.136	(1.338)	12.252	(1.116)	0.116	(0.094)
Log agricultural employment (2001)	10.040	(1.104)	10.248	(0.984)	0.207	(0.136)
Log manufacturing employment (2005)	9.599	(1.836)	9.767	(1.402)	0.168	(0.141)
Log services employment (2005)	10.642	(1.742)	10.600	(1.367)	-0.042	(0.150)
Log distance to airport (km)	2.900	(0.928)	3.049	(0.824)	0.149	(0.087)
Log distance to port (km)	5.247	(1.139)	4.474	(1.365)	-0.773***	(0.093)
Log distance to power plant (km)	2.468	(0.800)	2.620	(0.801)	0.152**	(0.057)
Log distance to city (>500K, km)	3.221	(0.959)	3.113	(0.905)	-0.108	(0.075)
Log distance to highway (km)	0.795	(0.578)	0.674	(0.491)	-0.121	(0.067)
Log distance to railway (km)	1.506	(0.784)	1.567	(0.891)	0.062	(0.035)
At least one bank (2005)	0.334	(0.473)	0.410	(0.493)	0.076**	(0.026)
Log number of banks (2005)	2.252	(1.465)	3.156	(1.504)	0.904***	(0.116)
Land concentration (Gini)	0.524	(0.088)	0.501	(0.086)	-0.022	(0.013)
Observations	308		346		654	

The unit of observation is a proposal-meeting-subdistrict combination; the sample is restricted to proposals discussed before the protest. SEZ characteristics are obtained from the proposal dataset. All location characteristics are aggregated up to the subdistrict level and are presented as they enter the regression – in logs. Data on agricultural employment, labour force, subdistrict size and population are from the 2001 Primary Census Abstract; manufacturing and services employment from the 2005 Economic Census, bank data is retrieved from the RBI dataset and the Gini coefficient on land concentration is computed using the 2000 Agricultural Census. Distances are based on comparing the centroid of each georeferenced SEZ to all places of interest as entered in OpenStreetMap.

(2022). As there is no data on exact SEZ boundaries, I assume all SEZs are circular around the precisely georeferenced location. Then, using the exact size of the SEZ, I computed the radius and drew a buffer around the central point to approximate the size of the SEZ. After I confirmed that the villages covered by the buffer were indeed SEZ-hosting municipalities, I drew 10 distance bins of five kilometres each around each SEZ and restricted the municipality sample to those that

were within these bins. The final sample contains 60,137 distinct municipalities, which I classify into these distance bins based on their nearest SEZ. I merge these villages with three rounds of the *Economic Census* (1998, 2005, 2013), the Population Census Abstract (2001) and the land fragmentation data. Finally, I add night lights data (2000-2020) at the shrid level from Li et al. (2021). Table 3 reports the mean and standard deviation of several location characteristics for municipalities at different distance bins to their nearest SEZ, with the last column showing the difference between the preferred control, which is 20-25 kilometres from an SEZ, and the directly treated villages. The balancing table clearly shows that SEZ-hosting villages are closer to virtually all amenities listed, and are characterised by higher formal employment and population.

VI. Empirical methodology

I. *SEZ analysis*

I estimate variants of the following shift-share equation to identify the impact of the compulsory acquisition reform on SEZ entry decisions regarding sectoral choice or size:

$$Y_{i(rst)} = \beta Post_{it} \cdot CA_s + \alpha_r + \alpha_t + \epsilon_{i(rst)}, \tag{2}$$

where $Y_{i(rst)}$ refers to the characteristic of a proposal for SEZ i in region r in state s discussed at a meeting at date t. To understand how the reform affect proposal quality, I repeat this exercise with the probability of an SEZ achieving formal approval, notification or operation as an outcome variable. $Post_{it}$ is a dummy designating whether the proposal whether the proposal i was discussed before or after the protest and CA_s equals 1 if the state s ex ante committed to providing land to SEZ developers. I also include meeting fixed effects α_t and economic region fixed effects α_r. India has 78 economic regions, which partition states into regions that are economically similar. This allows me to control for any state-level regulation beyond compulsory acquisition policy that might affect the sectoral choice of SEZs locating in that state, as well as local commonalities at a more disaggregate level. Finally, $\epsilon_{i(rst)}$ captures any remaining unobserved region-year specific variables that also affect in which sectors SEZs are proposed. Since treatment, or at least the treatment intensity, is assigned at the state level, that is how I cluster my standard errors. The coefficient of interest is β: together with its estimated standard error, it shows whether states that engaged in compulsory acquisition policy observe significantly different proposals after the protest. For example, if the outcome variable is whether a proposal is for a manufacturing SEZ, I would expect $\beta < 0$, or that a relatively large increase in land acquisition costs is associated with a larger reduction in manufacturing proposals. If the outcome variable is a dummy variable, I use a Linear Probability Model; Section II in the Appendix contains robustness checks using a logit

Table 3: *Pre-reform location characteristics*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variable	0km	0-5km	5-10km	10-15km	15-20km	20-25km	25-30km	30-35km	35-40km	40-45km	45-50km	(6)-(1)
Log distance to	3.075	3.130	3.242	3.355	3.468	3.540	3.625	3.727	3.812	3.873	3.937	0.465***
airport (km)	(0.826)	(0.792)	(0.737)	(0.700)	(0.633)	(0.592)	(0.534)	(0.500)	(0.496)	(0.528)	(0.504)	(0.093)
Log distance to	4.308	4.652	4.784	4.823	4.871	4.973	5.064	5.098	5.099	5.090	5.133	0.665***
port (km)	(1.350)	(1.206)	(1.142)	(1.084)	(1.052)	(1.001)	(0.946)	(0.913)	(0.902)	(0.898)	(0.887)	(0.163)
Log distance to	0.812	0.998	1.119	1.162	1.185	1.196	1.201	1.215	1.214	1.269	1.329	0.384***
highway (km)	(0.533)	(0.596)	(0.623)	(0.636)	(0.640)	(0.647)	(0.633)	(0.638)	(0.656)	(0.684)	(0.689)	(0.056)
Log distance to	3.529	3.478	3.525	3.636	3.729	3.764	3.828	3.907	4.001	4.062	4.113	0.235***
city (>500K, km)	(0.907)	(0.816)	(0.786)	(0.741)	(0.699)	(0.647)	(0.613)	(0.558)	(0.520)	(0.495)	(0.493)	(0.085)
Log distance to	1.655	1.681	1.820	1.920	1.983	2.077	2.178	2.257	2.308	2.337	2.392	0.422***
railway (km)	(0.803)	(0.759)	(0.742)	(0.762)	(0.812)	(0.842)	(0.842)	(0.856)	(0.881)	(0.896)	(0.913)	(0.105)
Log distance to	2.490	2.651	2.749	2.822	2.868	2.922	3.027	3.101	3.143	3.180	3.205	0.431***
power plant (km)	(0.967)	(0.794)	(0.755)	(0.750)	(0.745)	(0.733)	(0.703)	(0.690)	(0.696)	(0.713)	(0.693)	(0.119)
Log formal	4.552	3.564	3.106	2.966	2.873	2.763	2.633	2.685	2.632	2.576	2.568	-1.789***
employment	(3.008)	(2.318)	(1.988)	(1.893)	(1.870)	(1.850)	(1.727)	(1.788)	(1.729)	(1.711)	(1.726)	(0.306)
Log municipality	8.128	7.412	7.132	7.074	7.020	6.961	6.867	6.821	6.842	6.787	6.777	-1.166***
population	(1.950)	(1.423)	(1.214)	(1.161)	(1.197)	(1.266)	(1.262)	(1.293)	(1.256)	(1.258)	(1.274)	(0.206)
Observations	430	3,122	5,986	8,026	10,226	12,294	14,306	15,526	16,552	17,312	16,478	12,724

This table reports the mean and standard deviation of several location characteristics for municipalities at different distance bins to their nearest SEZ. Column (12) shows the difference-in-means between villages 20-25 kilometres from an SEZ (column (6)) and SEZ-hosting villages (column (1)). Distances are based on comparing the centroid of each village to all places of interest as entered in OpenStreetMap, population is retrieved from the 2001 Primary Census Abstract and formal employment is taken from the 2005 Economic Census. Standard errors are clustered at the respective SEZ level.

model instead.

The unexpected nature of the protest and the subsequent reform generate experimental variation in the treatment variable and thereby helps subside concerns of reverse causality. The main concern, as with shift-share designs in general, is that $\epsilon_{i(rst)}$ contains omitted variables that are correlated with the decision of a state to allow for compulsory acquisition of land for SEZs. Specifically, if a state's initial conditions both affect its likelihood to adopt compulsory acquisition policy and the sectoral composition of SEZs proposed to locate in that state, I cannot disentangle this from the impact of an increase in land acquisition costs. An obvious potential confounder is economic activity: assume for example that states whose manufacturing activity is on a downward trajectory before the reform are more likely to adopt compulsory acquisition policy. Then, as I assign a larger treatment exposure to states with such policies, I obtain a negative correlation between the reform and the incidence of manufacturing proposals. However, this coefficient is biased downward as these states were already becoming less attractive for manufacturing SEZ developers, and I cannot differentiate between the increase in land acquisition costs and the decrease in the expected profits from a manufacturing SEZ. To account for these potential differences in outcome trends I follow McCaig (2011) and control for local linear trends in the broad industries of pre-SEZ agriculture, manufacturing and services employment. More broadly, states that are industrially more backward or otherwise characterised as less desirable for (manufacturing) SEZs might be more inclined to facilitate compulsory acquisition, biasing the coefficient after the reform downward. Beyond industry employment, I control for several location characteristics that plausibly affect expected SEZ profitability: I include linear trends for pre-SEZ subdistrict-level population, labor force, the number of banks, the size of the subdistrict and distances to the nearest port, airport, highway, railway, power plant and large city (Gallé et al., 2023). In the Appendix, I show that the probability of a state adopting compulsory acquisition policy is indeed related to the pre-SEZ Act levels of these variables, but not to their pre-SEZ Act trends, highlighting that controlling for these trends is highly important. Finally, I control for local land fragmentation. This leads to the main estimating equation in this paper:

$$Y_{i(rst)} = \beta Post_{it} \cdot CA_s + \mathbb{X}^t_{rs,2005}\gamma + \alpha_r + \alpha_t + \epsilon_{i(rst)}, \tag{3}$$

where $\mathbb{X}^t_{rs,2005}$ includes a linear trend at the subdistrict level across meeting dates for all controls described above.

There are several other potential threads to identification, which I now discuss in turn. For example, the reform could have instigated a dramatic change in the Board of Approval's strategy, implying that the observed effect is coming from the BoA treating proposals differently based on whether the state used eminent domain for SEZs. The fact that the Board is appointed by the

Central Government and that the members are there *ex officio* means there is no change in board composition that could suggest a different strategy. Moreover, as the Board contains a variety of members from different political parties – and even some without official political affiliation – and all decisions need to be reached with general consensus, it is unlikely that members can start favouring certain states after the reform. Alternatively, the effect I find might not be driven by the reform, but instead an increase in uncertainty for specific industries, as the protesters also lamented the expected pollution from the Nandigram SEZ (Levien, 2012). I verify whether the effect is driven by chemical SEZs or those involved with oil, gas or petroleum in the robustness checks.

Another concern is measurement error in the treatment variable. Because I cannot observe directly how much State Governments engage in eminent domain, I have to proxy with officially declared intentions of compulsory acquisition, complemented with anecdotal evidence on eminent domain use for SEZs. There are two main concerns: (1) some states might, despite the policy, only infrequently use compulsory acquisition for SEZs and (2) some states without an official policy might engage in compulsory acquisition regardless. In defense of the first point I draw on Levien (2012), who did extensive work on understanding why SEZs and land have such a tenuous relationship. His interviews with officials at the Indian Chamber of Commerce (ASSOCHAM), industry consultants, high-level state bureaucrats, and industrial development corporation officials in Gujarat and West Bengal documented that these governments rely on land provision to attract large investments to their state. This is especially relevant for investors looking to develop an SEZ in West Bengal, which is characterised by the highest degree of land fragmentation in India (Sarkar, 2007). The second concern is more difficult to assuage – it should however be noted that this kind of misclassification would bias the estimate towards zero, so that the coefficient should be seen as a lower bound on the actual effect of the reform. In a robustness check, I verify this directly by comparing the effect of the reform on the states with compulsory acquisition policy to two states that explicitly prohibited land provision for private SEZs: Uttar Pradesh and Kerala.[21]

I.i. Municipality analysis

In the second analysis, I aim to understand whether the change in SEZ entry decisions after the eminent domain reform also impacted SEZs' effects on local employment. I use two rounds of the Economic Census (2005-2013), which contains the universe of firms, and is therefore especially suited to analyze both formal and informal employment in and around SEZs. As mentioned

[21] Uttar Pradesh published an amendment to their SEZ policy on July 17, 2007, stating that the government will not engage in compulsory acquisition for private SEZ developers; instead, they will have to acquire the land on their own. Kerala confirmed their stance against land provision for private SEZ developers in their 2008 SEZ policy.

before, I only consider villages within 50 kilometers of an SEZ and drop all municipalities with a population larger than 500,000; descriptive statistics for the full baseline sample are provided in Section iii of the Appendix.[22] Another important note is that due to data restrictions, I can only consider the 139 SEZs that were operational before 2013. I can apply a difference-in-differences strategy, where one compares the employment growth in SEZ-hosting villages to a control group of similar villages located (just) outside the SEZ. Then, one compares this growth differential for pre- and post-reform SEZs, yielding the following parsimonious two-way fixed-effects specification:

$$Y_{mt} = \beta_1 Post_t + \beta_2 SEZ_m + \beta_3 Post_t \cdot SEZ_m + \alpha_m + \alpha_t + \epsilon_{mt}, \tag{4}$$

where Y_{mt} is employment or any other outcome variable in village m at time t, $Post_t$ equals 1 if the nearby SEZ was proposed after the protest, and SEZ_m indicates whether a village is located inside an SEZ. Finally, α_m and α_t are fixed effects at the municipality and year level respectively.

This specification is however likely to lead to biased estimates; even though the treatment is assigned to the villages in which the SEZ is actually located, the shock to the labor market can affect the neighborhood beyond the SEZ boundaries. For example, the new firms entering the SEZ might contribute to an increase in local demand for services, generating new employment in villages around the SEZ. In this case, β_3 will be biased downward, as the control group of nearby villages is also treated, albeit to a lesser extent. Another possibility, which is more relevant for place-based policies in developed economies, is that SEZs start competing with nearby firms, thereby inducing employment to relocate to these SEZ villages. Now β_4 will be biased upward, as the nearby villages experience a negative local labor market shock upon realisation of the SEZ.

In the case where the nature of spatial spillovers is not immediately obvious, one can apply a spatial difference-in-differences method. Specifically, I employ a concentric ring approach, where villages are classified in different distance bins and compared to the baseline distance bin, where the spatial spillovers are assumed to no longer play a role. This semi-parametric specification flexibly captures any spillovers and allows for unbiased estimation of the direct treatment effect (Butts, 2023).[23] I follow Gallé et al. (2023) and set the width of each ring to five kilometers, creating ten rings around the treated villages. I compare the villages close to a pre-reform SEZ to those close to a post-reform SEZ, using the villages at 20-25 kilometres from the nearest SEZ as a baseline.

[22] All results are robust to inclusion of these villages, or cities rather.

[23] Unbiased estimation of the spatial spillovers requires them to be modelled correctly, i.e. as defined by the closest treated unit or them being additive depending on the number of treated units in the vicinity.

Specifically, my regression equation is:

$$Y_{mt} = \sum_{d=0, d\neq 5}^{10} \beta_d (D_{[d_m=d]} \times Post_{mt}) + \gamma'(\mathbb{X}_m \times Post_{mt}) + Post_{mt} + \alpha_m + \alpha_t + \epsilon_{mt}, \tag{5}$$

where Y_{mt} is any outcome at municipality m at time t. $D_{[d_m=d]}$ indicates whether municipality m is in distance bin d to an operational SEZ in the post-treatment year, where $d_m = 0$ indicates municipalities that host an SEZ, $d_m = 1$ reflects municipalities up to five kilometres from an SEZ, until $d_m = 10$ which contains municipalities 50 kilometres away from an SEZ. This is multiplied with the treatment dummy $Post_{mt}$, which equals one if municipality m is near to an operational SEZ that was proposed after the protest. The model further includes municipality and year fixed effects, and, to capture any outcome trends that are correlated to baseline characteristics, the controls listed in Table 3 and those used in the SEZ entry analysis at the municipality level $\mathbb{X}_m$ interacted with the treatment dummy. Finally, I cluster the standard errors ϵ_{mt} at the district level; I show in the Appendix that the result is robust to different clustering strategies including clustering at the closest SEZ and distance-based clustering following Conley (1999).

The main threat to identification in this analysis is violation of the conditional mean independence assumption. If, after the reform, SEZ developers consistently began locating in places where outcome trends differ from where developers located before, the parallel trends assumption for the treated and control group is violated. The inclusion of village-level fixed effects will absorb any difference in village-level baseline characteristics, but will not account for differing trends in these characteristics. To that end, I interact each of these controls with a treatment dummy to reduce the potential bias coming from time-varying heterogeneity. Moreover, I show in the Results section that the results are similar when estimated without controls, which helps to subside concerns that differences across distance bins cause a bias (Altonji et al., 2005). Finally, I undertake a placebo test, by estimating Equation 5 using the Economic Census in 1998 and 2005. This supports the parallel trends assumption if the results do not show any significant pattern.

To further help mitigate any concerns about violation of the conditional mean independence assumption, I will undertake an event study analysis using annual night lights data, which is a good proxy for economic activity (Hyun and Ravi, 2018). Taking the date of notification as the reference point, as from that moment onwards one can start building, this will allow me to track economic activity in treated villages over time. This thus allows me to test more formally for different pre-trends between SEZ villages and their control group before and after the reform.

VII. Results on entry

I. SEZ proposals

In this section, I provide evidence that the reform affected entry of SEZ developers as well as characteristics of their proposals. First, Table 4 displays the results of estimating Equation 2 and 3 with the dependent variable indicating whether the proposed SEZ is in manufacturing or services respectively. The first three columns consider the manufacturing indicator, and consistently show a significant reduction. Column 1 only includes region and meeting fixed effects; subdistrict-level location controls are added to the model in column 2 and column 3 contains the most stringent specification controlling for linear location trends. In column 3, the reduction in the share of manufacturing proposals is 18.3 percentage points, or slightly more than a 50 percent decrease compared to the baseline share of 35 percent. The opposite pattern is detected for services, with the share of proposed SEZs increasing by 19.3 percentage points or about a third of the baseline value. Note that these figures do not sum up to one, as services proposals are also replacing proposals for SEZs in utilities. However, since this is but two percent of all proposals, I will exclude the Utilities sector from now on, unless indicated otherwise.

The next question is whether the reform also affected the quality of the proposals. First, I study whether the Board of Approval changed their strategy in formally approving proposals after the reform, as the reduction in the share of manufacturing SEZs could be driven by the BoA being stricter in their judgement of these industries. In Section II in the Appendix, I show that the probability of a proposal moving to the next stage of SEZ development is not significantly affected by the shock, both for proposals in general and manufacturing specifically. Together with the evidence in Table 4, this would imply that the sectoral composition of SEZs shifts to services not just in the pool of proposals but also along the development stages. Table 5 confirms this intuition. First, column 1 replicates the result from column (3) in Table 4, highlighting how dropping proposals in Utilities does not affect the coefficient of interest much. For the next three columns, which describe the sectoral composition of SEZs moving beyond the initial proposal stage, I drop all resubmitted proposals to ensure proper classification of SEZs before and after the reform.[24] Column (2) shows the result of estimating Equation 3 for the pool of formally approved SEZs, shows that, conditional on formal approval, the probability of a SEZ proposal being in manufacturing in 26.6 percentage points lower. In column 2, I repeat the analysis restricting the

[24] One could argue that resubmitting a pre-reform proposal after the reform is also subject to treatment, since the developer could decide to not resubmit the proposal after the circumstances changed so drastically. Including all proposals does reduce the effect size slightly but otherwise not change the results; these results are available upon request.

Table 4: *Relatively fewer manufacturing SEZs are proposed after the reform*

	Manufacturing			Services		
	(1)	(2)	(3)	(4)	(5)	(6)
After protest	-0.192**	-0.175**	-0.183**	0.209***	0.187***	0.193***
× State CA	(0.0826)	(0.0698)	(0.0706)	(0.0730)	(0.0604)	(0.0611)
Location controls	No	Yes	No	No	Yes	No
Location trends	No	No	Yes	No	No	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Meeting FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1177	1177	1177	1177	1177	1177
R-squared	0.290	0.381	0.379	0.312	0.400	0.398

The dependent variable is a dummy that equals one if the SEZ is for *Manufacturing* or *Services*, respectively. Note that *Utilities* is the third category. *PostProtest* is a dummy that takes the value 1 if the meeting in which the proposal is discussed happens after 17 March 2007. The controls include measures of subdistrict-level log population, labor force and agricultural employment from the 2001 Primary Census Abstract, and data on log manufacturing and services employment, also at the subdistrict level, from the 2005 Economic Census. Log distances between the SEZ and the nearest airport, port, power plant, highway, railway and large city (>500K inhabitants) are also included. Finally, the controls include the Gini coefficient on land concentration computed using the 2000 Agricultural Census and the log number of banks in the subdistrict from Asher et al. (2021). Standard errors, clustered at the state level, are in parentheses.

$^{*}p < 0.1$,$^{**}p < 0.05$,$^{***}p < 0.01$.

sample to notified proposals, finding a significant decrease in the share of manufacturing as well. Finally, column 3 suggests that this shift in sectoral composition persists until the operations stage, as the negative effect of the reform on manufacturing is of similar size, albeit borderline significant.

Table 5: *Relative decrease in share manufacturing SEZs persists across development stages*

	(1) All	(2) Formal Approval	(3) Notification	(4) Operational
After protest	-0.189**	-0.268***	-0.246**	-0.230*
× State CA	(0.0677)	(0.0864)	(0.0899)	(0.124)
Location trends	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Meeting FE	Yes	Yes	Yes	Yes
Observations	754	562	356	174
R-squared	0.447	0.428	0.489	0.668

The dependent variable is a dummy that equals one if the proposed SEZ is in *Manufacturing*. Each observation is a SEZ-meeting-subdistrict combination, excluding all Utilities and resubmitted proposals. After the first column, the sample is restricted to include only proposals for SEZs that were formally approved, notified and operational respectively. See the notes under Table 4 for details on the included location trends. Standard errors, clustered at the state level, are in parentheses.

$^{*}p < 0.1$,** $p < 0.05$,*** $p < 0.01$.

If the treatment captures a change in land acquisition costs, and specifically a change in the convexity of the cost function, one would expect SEZs to become smaller on average. Estimating Equation 3 with the log proposed SEZ size as the outcome variable, Table 6 shows how size changed after the reform in compulsory acquisition states. In column 1 and 2, I consider the full sample of proposals: column 1 shows that proposed SEZs on average are about 22.8% smaller, for manufacturing SEZs this is more than doubled at 59.3%. SEZs proposed after the reform that are formally approved are significantly smaller, at around 35.6%, while the size of formally approved manufacturing proposals tends to be slightly larger. The third group of estimates follows from the proposals for SEZs that have been notified, where, again, those SEZs proposed after the protest seem slightly smaller. However, column 6 provides tentative evidence that notified manufacturing SEZs proposed after the reform tend to be larger than their older counterparts. Note that the coefficient is conditional on the location trends, and its size is sensitive to the controls included, implying perhaps a different location strategy after the reform. Nevertheless, this direction is

confirmed in column 7, which shows that operational SEZs proposed after the reform are on average 71.2% larger. Note that I do not have sufficient degrees of freedom to estimate the change in size for operational manufacturing zones proposed after the reform. Thus, while there is a tendency for all, and manufacturing, SEZ proposals to feature a smaller size after the reform, those that are actually notified and become operational tend to be larger. Further, even though there is no change in the probability that a proposal for a manufacturing SEZ is formally approved or notified, there seems to be a shift in the composition of SEZ developers, or at least those that are developed.

Table 6: *Manufacturing SEZs that become more developed tend to be larger*

	All proposals		Formal approval		Notification		Operational
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All	Man.	All	Man.	All	Man.	All
After protest	-0.228	-0.593*	-0.356*	0.675	-0.385	3.787***	0.712**
× State CA	(0.199)	(0.307)	(0.197)	(0.510)	(0.289)	(0.315)	(0.304)
Location trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Meeting FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1154	336	562	97	355	51	172
R-squared	0.561	0.554	0.566	0.796	0.618	0.908	0.788

The dependent variable is the approved log SEZ size in hectares. Each observation is a SEZ-meeting-subdistrict combination, excluding all Utilities and resubmitted proposals. Across model groups, the sample is restricted to include all proposals, then only proposals for SEZs that were formally approved, notified and operational respectively. Each second column is further restricted to only include manufacturing proposals. See the notes under Table 4 for details on the included location trends. Standard errors, clustered at the state level, are in parentheses.

$^{*}p < 0.1$,$^{**}p < 0.05$,$^{***}p < 0.01$.

II. Mechanism

The above results are consistent with the reform leading to an increase in land acquisition costs in states that engage in compulsory acquisition; in this subsection, I will present more direct evidence for this channel. First, Table 7 shows that SEZs proposed after the reform tend to be located in areas with less land fragmentation, as indicated by the subdistrict-level Gini coefficient. In the first three columns, I restrict the sample to only proposals in manufacturing and services; the last three columns pertain to the universe of proposals. Note that I now use state rather than region fixed

effects, as the variation in land ownership patterns within regions is not very substantial; including region fixed effects instead does not change the size of the coefficient of interest but increases the standard errors dramatically. Column 1 shows that after the reform, SEZs are proposed to be located in subdistricts with a Gini coefficient that is 0.023 higher. In my sample, the average Gini coefficient is 0.508, and 0.023 is almost a third of a standard deviation. Alternatively, an increase in the Gini coefficient from the median by 0.023 implies a move from the 50th to 75th percentile in terms of land concentration. Column 2 and 3 confirm this result for SEZs that eventually become formally approved or notified. I do not have sufficient degrees of freedom to estimate the change in the Gini coefficient associated with SEZs that become operational. The last three columns repeat this analysis, but then including proposal for utilities as well; a similar pattern emerges. In conclusion, SEZ developers tend to propose SEZs in locations that are more unequal in terms of land ownership after the reform. This can be interpreted as SEZ developers trying to mitigate the bargaining costs now that states are not allowed anymore to facilitate compulsory acquisition.

Table 7: *SEZs after the reform proposed in areas with higher land concentration*

	Excluding utilities			All proposals		
	(1)	(2)	(3)	(4)	(5)	(6)
	All	Approval	Not.	All	Approval	Not.
After protest	0.0230**	0.0291***	0.0400***	0.0220**	0.0281***	0.0377***
× State CA	(0.00974)	(0.00962)	(0.0116)	(0.00939)	(0.00971)	(0.0116)
Location trends	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Meeting FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1161	571	363	1180	578	366
R-squared	0.660	0.723	0.731	0.654	0.720	0.725

The dependent variable is the Gini coefficient on land concentration in the subdistrict where the SEZ is to be located. Each observation is a SEZ-meeting-subdistrict combination. For each group of equations, including or excluding Utitities proposal, the first column contains all proposals, while the second and third column restrict the sample to those SEZs that were formally approved or notified respectively. See the notes under Table 4 for details on the included location trends. Standard errors, clustered at the state level, are in parentheses.
$^{*}p < 0.1$,$^{**}p < 0.05$,$^{***}p < 0.01$.

A second supporting fact derives from industrial variation within the broad sectors of manufacturing and services. While some services industries are persistently small-scale, such as IT and related services, other services industries, such as SEZs for supporting transport activities built around trade hubs, do not differ much in size from relatively smaller-scale manufacturing

industries, such as textiles. In Table 8, I estimate Equation 3 with an industry indicator as outcome. Specifically, I create a categorical variable which ranks all industries on median size before the reform from small to large. Thus, a positive coefficient on the treatment variable suggests that SEZs in larger-scale industries are more likely to be proposed after the reform. In column (1), only region and date fixed effects are included; the coefficient indicates that on average, the proposed SEZ industries after the reform are significantly smaller in terms of rank as well as actual size. On average, the drop in rank is around two Adding location controls as in column (2) or location trends, in column (3), does not affect the results dramatically. I verify in Table 16 that this result is robust to a nonlinear estimation. The last three columns instead take the pre-reform industry average SEZ size as a dependent variable. Again, I find that SEZs after the reform are more likely to be in smaller-scale industries than before the reform. Thus, the shift in sectoral composition is not just between the broad sectors manufacturing and services, but also within these sectors there is a reallocation from relatively large-scale to relatively smaller-scale industries.

Table 8: *Post-reform, large-scale industries are less likely*

	Industry rank			Average industry size		
	(1)	(2)	(3)	(4)	(5)	(6)
After protest	-2.058**	-1.856**	-1.986***	-0.351	-0.323*	-0.363*
× State CA	(0.937)	(0.705)	(0.690)	(0.231)	(0.178)	(0.174)
Location controls	No	Yes	No	No	Yes	No
Location trends	No	No	Yes	No	No	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Meeting FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1174	1174	1174	1174	1174	1174
R-squared	0.295	0.436	0.433	0.291	0.463	0.460

In the first three columns, the dependent variable is a categorical variable indicating the proposed industry, ordered from low to high based on the average SEZ size before the reform. In the last three columns, the dependent variable is the average SEZ at the industry level before the reform. See the notes under Table 4 for details on the included location trends. Standard errors, clustered at the state level, are in parentheses.

$^{*}p < 0.1$,** $p < 0.05$,*** $p < 0.01$.

III. Robustness

My results show that the compulsory acquisition reform reduced the share of manufacturing SEZs, or more broadly larger-scale industries, in states that engaged in compulsory acquisition. I further

provide evidence that the mechanism is increased land acquisition costs, as developers started proposing SEZs in areas with higher land concentration, and thus lower bargaining costs.

A primary concern is that this effect is driven by certain states, rather than a consistent pattern across states with and without compulsory acquisition policy. In Table 9, I explore several such sample restrictions and show they do not yield significantly different effect sizes. The first column excludes SEZs proposed in West Bengal; besides being one of the states engaging in compulsory acquisition, it also has the highest land fragmentation in India (Sarkar, 2007). Furthermore, the ruling party in the State Government, lost the 2011 election to a party that was vehemently against land grabs for industrialisation (Patra, 2019).[25] Indeed, after this party came into office, only 2 SEZ proposals were submitted in West Bengal. This together means that while the expected change in land acquisition costs after the reform must be especially large due to the high land fragmentation, the increased stigma on SEZs would additionally drag the coefficient of interest down. The result in column (1) shows that the effect remains robust to the exclusion of West Bengal; the slightly smaller coefficient and smaller standard errors can signify that the unrest in West Bengal affected SEZ developers in any industry. In column (2), I verify the robustness of the result to excluding Goa. Starting in 2007, citizens felt that its nine SEZ projects were a land grab and not appropriate investments for the Goan government, especially since Goa is one of the smallest Indian states. After continued protests, the Goan State Government ultimately retracted the SEZ policy in 2009 and all SEZ projects were denotified. The coefficient is now slightly higher, suggesting that Goa responded more to the reform than other control states, albeit not significantly so. In column (3), I exclude Andhra Pradesh, since it has no explicit compulsory acquisition policy but is one of the most popular states for SEZ developers.[26] Again, I obtain a significant and negative coefficient on the effect of the reform in compulsory acquisition. In the fourth column, I exclude Kerala and Uttar Pradesh, which both explicitly prohibited compulsory acquisition for private SEZs in 2008 and 2007 respectively. The coefficient is now smaller, implying that manufacturing decreased more in these states than in other control states. I directly verify this in column (5), where I compare the share of manufacturing proposals after the reform in treated states and Kerala and Uttar Pradesh, obtaining a similar coefficient.

As mentioned before, a second concern is that my effect size does not capture the effect of the protest and subsequent reform on land acquisition costs, but simply signifies a pivot away from more polluting SEZs, as the proposed Nandigram SEZ was for chemicals. In Table 10, I show how

[25] This election ended a 34 year reign of the Left Front; Trinamool Congress became the new ruling party platforming on "Maa, Maati, Manush" or "Mother, Land, People".

[26] In my sample, Andhra Pradesh and Telangana, which split from Andhra Pradesh in 2014, received proposals for 172 distinct SEZs.

Table 9: *Relative decrease of manufacturing share consistent across samples*

	Excluding states				Control
	(1)	(2)	(3)	(4)	(5)
	West Bengal	Goa	Andhra Pradesh	No LA	No LA
After protest	-0.193***	-0.172**	-0.175**	-0.197**	-0.181*
× State CA	(0.0628)	(0.0644)	(0.0641)	(0.0701)	(0.0894)
Location trends	Yes	Yes	Yes	Yes	Yes
Subdistrict FE	Yes	Yes	Yes	Yes	Yes
Meeting FE	Yes	Yes	Yes	Yes	Yes
Observations	1105	1148	969	1044	701
R-squared	0.406	0.392	0.390	0.383	0.377

The dependent variable is a dummy that equals one if the proposed SEZ is in *Manufacturing*. The model title describes which states are excluded; *No LA* refers to Kerala and Uttar Pradesh, which both prohibit land provision for private SEZs. Note that column 4 excludes these states from the analysis, while column 5 uses only Kerala and Uttar Pradesh as a control group. See the notes under Table 4 for details on the included location trends. Standard errors, clustered at the state level, are in parentheses.
$^{*}p < 0.1$,$^{**}p < 0.05$,$^{***}p < 0.01$.

the coefficient changes upon excluding certain industries. Column (1) shows that the coefficient is larger when chemical SEZs are excluded, suggesting that these potential developers indeed reacted more to the reform than other industries. The coefficient does not however not change much if I exclude either petroleum and refineries or oil and gas, as in columns (2) and (3). Finally, when I exclude all polluting industries in column (4), I still obtain a significant negative coefficient.

Finally, the fact that I have grouped data, and – especially in the pre-reform period – a lot of bunching due to the large amount of proposals submitted before the protest makes it difficult to verify parallel trends. Instead, I conduct two placebo tests, each around halfway through the pre-reform period; the results of which are in Table 11. In the first three columns, I classify any proposal discussed after August 9, 2006, or the third meeting out of eight before the protest, as treated; the last three columns repeat this for any proposal after the fourth meeting on 24 September 2006. In both cases, also when controlling for local characteristics or trends, I obtain a small insignificant effect on the share of manufacturing.

Table 10: *Relative decrease of manufacturing share consistent across samples*

	Excluding industries			
	(1) Chemicals	(2) Petroleum	(3) Oil	(4) Polluting
After protest	-0.168**	-0.182**	-0.180**	-0.165**
× State CA	(0.0705)	(0.0694)	(0.0697)	(0.0699)
Location trends	Yes	Yes	Yes	Yes
Subdistrict FE	Yes	Yes	Yes	Yes
Meeting FE	Yes	Yes	Yes	Yes
Observations	1142	1175	1174	1139
R-squared	0.380	0.377	0.376	0.381

The dependent variable is a dummy that equals one if the proposed SEZ is in *Manufacturing*. The title of each column refers the industry which is excluded; the final column excludes all aforementioned industries. See the notes under Table 4 for details on the included location trends. Standard errors, clustered at the state level, are in parentheses.

*$p < 0.1$,** $p < 0.05$,*** $p < 0.01$.

Table 11: *Placebo tests pre-reform yield no significant effect on sectoral composition*

	Placebo: 09/08/2006			Placebo: 25/09/2006		
	(1)	(2)	(3)	(4)	(5)	(6)
After placebo	-0.0825	-0.0180	-0.0186	-0.0662	-0.0256	-0.0260
× State CA	(0.106)	(0.0987)	(0.0989)	(0.156)	(0.141)	(0.141)
Location controls	No	Yes	No	No	Yes	No
Location trends	No	No	Yes	No	No	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Meeting FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	513	513	513	513	513	513
R-squared	0.310	0.449	0.449	0.310	0.449	0.449

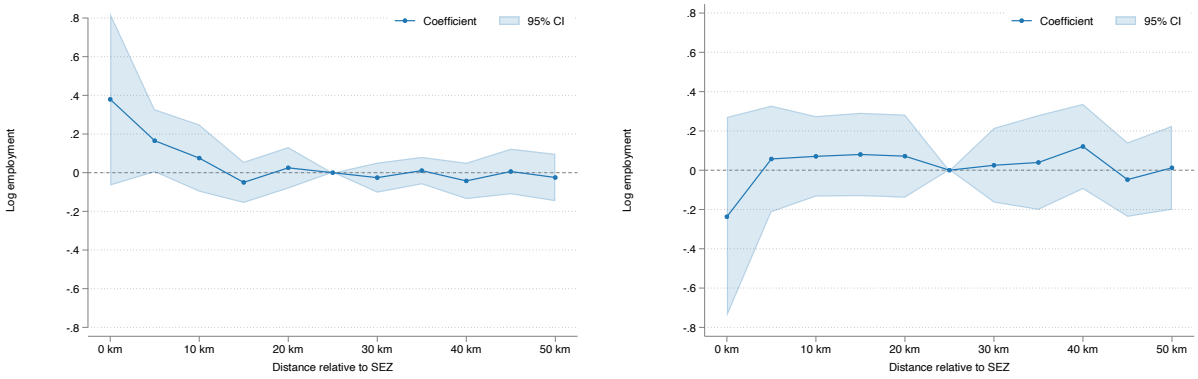
The dependent variable is a dummy that equals one if the SEZ is for *Manufacturing*. See the notes under Table 4 for details on included location trends. Standard errors, clustered at the state level, are in parentheses.

*$p < 0.1$,** $p < 0.05$,*** $p < 0.01$.

VIII. RESULTS ON EMPLOYMENT

I. *Main results*

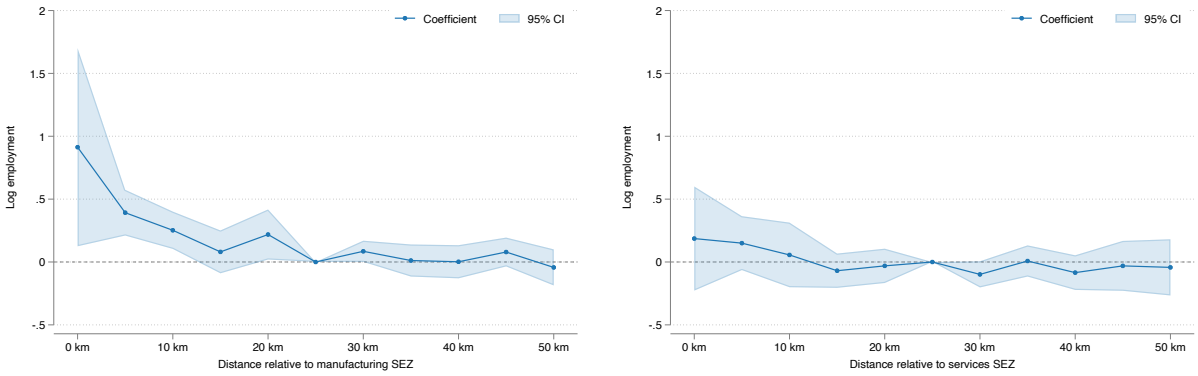
This section describes the results from estimating Equation 5 with log employment as outcome. As in Gallé et al. (2023), I compare the villages in which an SEZ became operational between 2005 and 2013 to those nearby villages that do not have an SEZ to identify the spatial spillovers of SEZs on local development. I however extend their analysis by computing the difference between operational SEZs that were first proposed before the reform versus those that were proposed afterwards. Figure 4 shows the result of estimating Equation 5 for the full sample; I find a positive coefficient for villages up to 10 kilometres from an SEZ but none of the results are significant. The right-hand figure shows the result of a placebo exercise, where I run the same regression for with employment growth between 1998 and 2005 as an outcome. Reassuringly, I do not obtain any significant effects, providing suggestive evidence that the parallel trends assumption is satisfied.



(a) *Treatment* **(b)** *Placebo*

Figure 4: *Employment effects on nearby villages from operational SEZs*

However, given that manufacturing and services were affected differently by the reform, they should be analysed separately. These results are displayed in Figure 5. Operational manufacturing SEZs that were proposed after the protest generated significantly more employment in the SEZ-hosting municipalities and nearby villages up to 10 kilometres away, with no differing effects at distances beyond that. These coefficients are substantial: for SEZ-hosting villages, the coefficient is 0.91, implying an increase in employment by more than 141 percentage points. This sizable relative increase is not as outrageous in absolute numbers: in the baseline sample, the average SEZ-hosting municipality has 2,845 non-agricultural employees. For villages between 0 and 5 and 5 and 10 kilometres from the SEZ, the increase in non-agricultural employment is 48 percentage



(a) *Manufacturing SEZs* **(b)** *Services SEZs*

Figure 5: *Employment effects on nearby villages from operational SEZs*

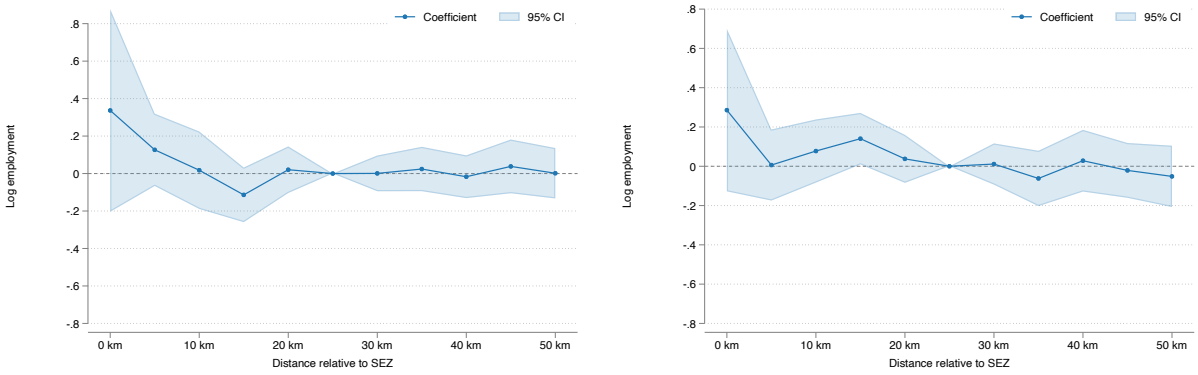
points and 28.6 percentage points respectively. For services however, there is also a positive coefficient for these nearby villages, albeit insignificant and at half the size of the corresponding estimates for manufacturing SEZs. Specifically, the increase in employment in a SEZ-hosting municipality that saw an SEZ proposed after the protest is 20.5 percentage points. Thus, this analysis provides tentative evidence that the compulsory acquisition reform might have reduced entry for manufacturing SEZs, but that those who do enter generate more local employment.

One concern is that this increase in employment reflects relocation rather than creation of new jobs, as is often the case with place-based policies in developed countries (Criscuolo et al., 2022). This is however not reflected in the results I obtain, which is that for municipalities close to manufacturing SEZs that were proposed after the protest employment increases significantly, while municipalities more than 10 kilometres away see no significant change in employment growth. While my analysis is restricted in the sense that I do not check for relocation effects from villages further than 50 kilometres away, it is important to note that migration costs in India are sizable (Topalova, 2010; Munshi and Rosenzweig, 2016). As Gallé et al. (2023) argue, this is inconsistent with relocation effects to only show up in villages very far away from the SEZs; given the barriers to migration or travel it is more reasonable to expect relocation from villages relatively close to the SEZ. I will test for this more explicitly by increasing the sample to villages up to a 100 kilometres away in a future version.

II. Robustness

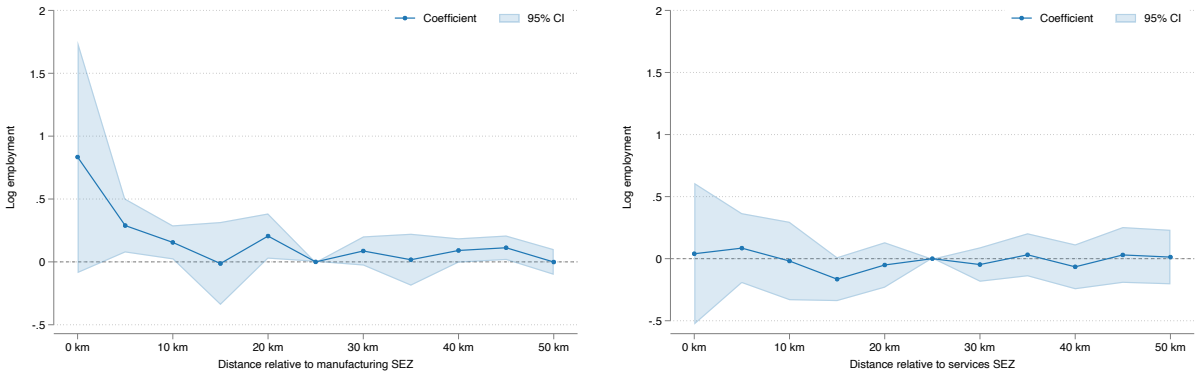
As mentioned before, if the specification without controls provides similar results as the preferred specification, this supports the claim that locational differences do not add significant bias to the

estimates. Figures 6 and 7 show the results of this exercise: even though the estimates are slightly less robust, the general pattern is comparable to the main results.



(a) *Treatment* **(b)** *Placebo*

Figure 6: *Employment effects on nearby villages from operational SEZs without controls*



(a) *Manufacturing SEZs* **(b)** *Services SEZs*

Figure 7: *Employment effects on nearby villages from operational SEZs without controls*

IX. Conclusion

Compulsory land acquisition by the government, also known as expropriation or use of eminent domain, has been a long-standing practice for governments across the world and levels of development. In the last few decades, we have observed an increasing number of transition economies utilizing compulsory acquisition as an integral part of industrial policy. The rationale for this is that the land markets are sufficiently imperfect that prohibitively high land transaction costs dissuade private investment. In that setting, it might be efficient for the government to leverage

eminent domain to stimulate economic activity.

This paper is the first to provide quasi-experimental evidence on the impact of compulsory acquisition, or rather, a restriction in compulsory land acquisition, on industrialisation. Based on the fact that manufacturing requires vastly more land than services, I separate the factor reallocation from agriculture to non-agriculture into manufacturing and services to investigate how compulsory acquisition affects structural transformation.

I exploit an unexpected reform in 2007 that placed restrictions on compulsory land acquisition for Special Economic Zones (SEZs) in India. In that year, a large protest against a SEZ in West Bengal was violently shut down by state police, with fourteen farmers being killed and more than a hundred missing. In response, the Central Government announced that from then on, *forced* land acquisition was prohibited, and that landlosers must be compensated properly in terms of rehabilitation and resettlement (SEZ Board of Approval, 2007). Importantly, SEZs that were already approved were exempt from this policy; only new developers were exposed to this dramatic increase in land acquisition costs.

I obtain causal estimates by comparing states that officially committed to compulsory acquisition for SEZs to those that did not have such policies. The idea is that the former State Governments shielded private developers, and any firms locating in the SEZ, from the normally high transaction costs due to India's imperfect land markets. This allows me to directly relate *government* land acquisition to *private* economic activity.

Based on the stationary version of the Hopenhayn (1992) model, I predict that the reform reduced the share of manufacturing proposals in those states that introduced compulsory acquisition policies for SEZs, as the entry barrier increased relatively more for manufacturing these states. However, the increased entry barrier also has a selection effect, suggesting that new entrants are on average of higher productivity or quality. This implies that separating the entry decision and ultimate productivity are important. My hand-collected dataset on SEZ proposals, complemented with information on operation and firm activity, is uniquely suited for this exercise. In the results, I show that the increase in land acquisition costs results in a decrease in the share of proposals for manufacturing by thirteen percentage points, while the corresponding share for services increases by twelve percentage points. The effect sign and size are consistent across all stages of SEZ development, although the results are not significant for notified and operational SEZs.

Finally, I employ a spatial difference-in-differences strategy to study whether this selection effect materializes in the form of local employment. By comparing villages that host an operational SEZ to nearby villages that do not host an SEZ, I find that in general, there is no significantly different effect on local employment for SEZs proposed before and those proposed after. However, when I split the sample by broad sector denomination, I find a positive significant effect on local

employment within 10 kilometres of manufacturing SEZs proposed after the reform, beyond the general employment increase following the opening of an SEZ. The corresponding estimates for services SEZs are not significant and smaller in size, suggesting that the increased land acquisition cost had more bite for the more land-intensive manufacturing sector. In conclusion: restricting eminent domain for SEZs may reduce entry of more land-intensive sectors, but also induces selection and thereby engenders more local employment.

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APPENDIX

I. Data

This appendix complements Section V, and discusses how I obtained the data on SEZ proposals, the control variables and the municipality dataset.

I.i. SEZ proposal data

This dataset is based on the agendas and minutes of the 112 meetings held by the SEZ Board of Approval between 17 March 2006 and 29 October 2022, which were retrieved from the SEZ India website.[27] I used OCR to transform the scanned meeting minutes into searchable text, and then used text analysis techniques to create the dataset. Using the structure of these minutes, and specifically how information about the proposal was relayed, allowed me to extract the features listed of each proposal. This resulted in 1,459 unique proposals, with information on date on which the proposal is discussed, the developer and location of the proposed SEZ, the sector of the zone, the proposed size and the final decision. I then merged this with information from the meeting agendas, which provided an overview of all proposals and whether they were new or had been deferred in an earlier meeting. This also listed, for proposals discussed in 2007, when the proposal was submitted, whether the land was already acquired and whether the State Government approved of the proposal (SEZ India, 2022a). To find out which SEZs were developed by public entities, I extracted a list of all state Industrial Development Corporations from the website of Council of State Industrial Development and Investment Corporations of India (COSIDICI), supplemented with ownership data from SEZ India (2014). Finally, I used GIS techniques to create a spatial layer containing the exact location, and specifically villages, that contain a SEZ. I relied on a personal map on Google Maps and OpenCage to obtain coordinates for each proposed SEZ. This left around 500 SEZs to be assigned coordinates by hand, which I did using OpenOSM, Google Maps and newspaper articles. I also manually corrected the geometries that represented large SEZs to accurately capture their size in relation to the villages they are located in.

The second source of data are lists of all notified and operational SEZs compiled and published published by SEZ India; these are updated approximately twice a year. For the main dataset, I used three lists of notified SEZs (published on 1st January 2012, 1st December 2017 and 31st December 2022) and the list of operational SEZs on 31st December 2023. With some new uploads,

[27] The minutes for the 5th and 11th meeting were never uploaded, but the notes from the fifth meeting were obtained from Yumpu.com. I used the agenda for the 11th meeting, combined with information on resubmitted proposals and SEZs in further stages of development to infer the decisions made in this meeting.

older versions are removed from the site; I therefore used the Wayback Machine to access the earlier documents. The list of notified SEZs provides information on the developer, the location, the sector, the size of the SEZ and the date of notification. The list with operational SEZs only provides the developer, location and sector of the SEZ. Note that these lists also contain the SEZs that were developed before the 2005 SEZ Act; I remove these from the dataset. To merge this data with the proposal dataset, I restrict my sample to those proposals that were formally approved. Then, I employed a fuzzy string match algorithm to match proposals to notifications and the indicator of operations and verified all matches by hand.

Figure 8 shows the breakdown of number of proposals by sector and timing. Both before and after the protest, most proposals were for IT SEZs. The second most popular category is multi-product and n.e.c., which refers to SEZs that allow firms in multiple different sectors and SEZs that are not elsewhere classified, such as SEZs for gems and jewellery. Strikingly, one observes more proposals in the services sector after the protest, whereas for manufacturing and utilities there is no consistent pattern.

Table 12 shows the industrial composition, subdivided across manufacturing, services and utilities, of SEZs before the protest across these states. First, the average SEZ is larger in compulsory acquisition states for almost all industries, with the exception of apparel, footwear and metals. As the standard errors are quite large, these differences are not statistically significant. Moreover, while the number of proposals is only slightly larger in states that engage in land provision, the sectoral breakdown is quite different. Specifically, these states tend to have relatively more proposals for large-scale industries, such as multi-product SEZs, chemicals, and large-scale power generation.

I.ii. Data on land fragmentation

To obtain a measure of land fragmentation, I scraped the *Agricultural Census* (AC, 2000), which provides me with the exact plot size distribution, crop types and irrigation in India's subdistricts. This dataset is publicly available, but one needs to download the data separately for each subdistrict-year combination.[28] I follow the literature and use the detailed plot size distribution data to calculate land concentration at the subdistrict, district and state level. As a proxy for land transaction costs, I compute the Gini coefficient on land concentration. Figure 9 shows how the Gini coefficient varies across India, with darker colors reflected a higher land concentration.

[28] I obtained these records from https://agcensus.dacnet.nic.in.

Table 12: *Characteristics of SEZ proposals and their locations.*

SEZ size (ha.)	No CA policy			CA policy			Difference		
By industry:	Mean	SD	N	Mean	SD	N	Diff.	SE	N
Manufacturing									
Apparel	116.528	(22.633)	5	79.005	(39.183)	6	-37.523*	(19.905)	11
Chemicals	146.708	(111.183)	9	434.759	(1,030.105)	14	288.051	(347.515)	23
Food processing	92.478	(60.197)	4	112.875	(72.137)	4	20.397	(46.977)	8
Footwear and leather	130.880	(74.662)	6	68.945	(29.200)	4	-61.935	(39.811)	10
Machinery	12.070	(0.100)	2	126.875	(74.682)	4	114.804	(56.011)	6
Metals	375.538	(358.729)	4	103.000	(2.739)	5	-272.538	(157.544)	9
Multi-product	1,780.689	(2,196.434)	45	2,550.583	(4,448.210)	68	769.893	(715.305)	113
Minerals	110.000	(14.142)	4	135.850	(49.285)	2	25.850	(23.832)	6
Transport equipment	110.702	(15.136)	2		()	0	0.000	(0.000)	2
Paper and printing	121.4	()	1		()	0	0.000	(0.000	1
Refineries		()	0	1,000	()	2	0.000	(0.000)	2
Textile	138.842	(84.706)	15	172.589	(102.804)	16	33.747	(33.963)	31
Vehicles	61.590	(45.639)	4	152.750	(60.472)	4	91.160*	(37.881)	8
Services									
IT	31.508	(54.783)	169	39.049	(74.863)	155	7.541	(7.247)	324
Other services	100.000	()	1	167.792	(108.143)	15	67.792	(111.690)	16
R& D	104.943	(95.354)	23	196.451	(314.747)	27	91.507	(68.235)	50
Warehousing	195.346	(174.291)	11	272.611	(658.081)	9	77.265	(205.654)	20
Utilities									
Power generation	11.900	()	1	453.750	(481.082)	12	441.850	(500.726)	13
Observations			309			349			658

The unit of observation is a proposal-meeting combination, excluding two proposals without a sector designation. Classification into manufacturing, services and utilities is based on India's National Industry Classification (NIC). Excluded are Education (services) and Oil and gas (utilities), as these sectors see no proposals before the reform. Standard errors in parentheses.

$^{*}p < 0.1$,$^{**}p < 0.05$,$^{***}p < 0.01$.

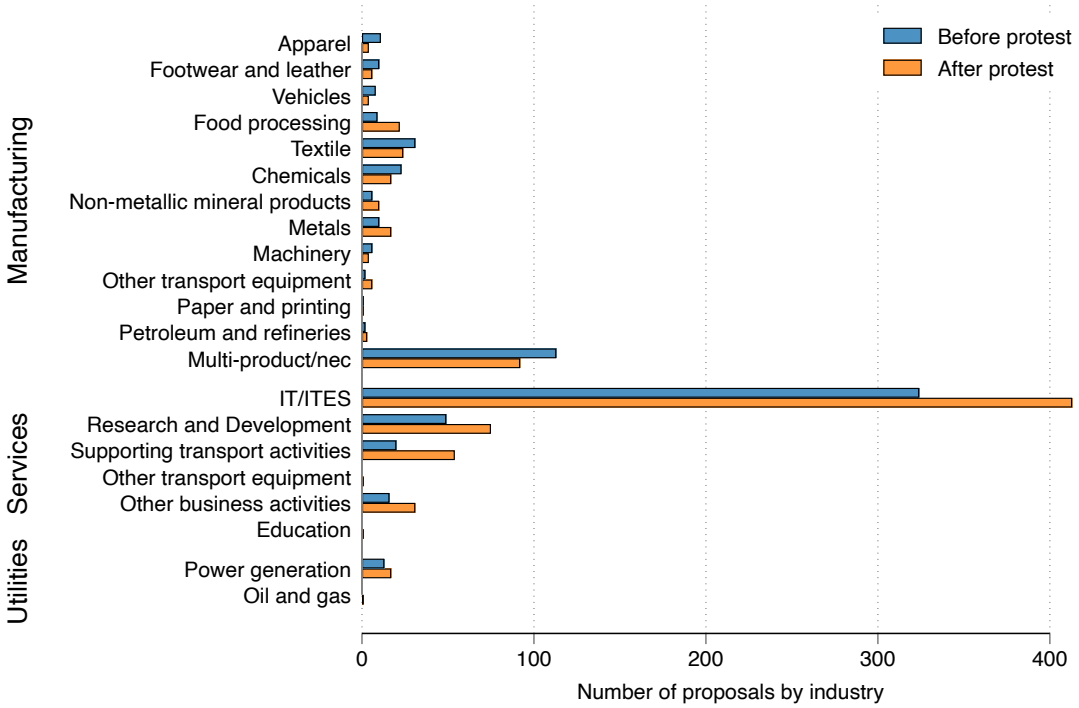

Figure 8: *Proposals by industry, before and after reform*

I.iii. Data on SEZ-neighboring municipalities

Having compiled a dataset of geocoded SEZs that were operational before 2013, I loaded this into QGIS 3.29. Using GIS techniques, I reprojected them to Coordinate Reference System EPSG:7755 - WGS 84, as this projection measures distances in meters instead of degrees. Then, assuming all SEZs are circular, I used the field calculator on this layer to compute the radius based on the area of the SEZ. I then created a buffer around each SEZ point, where the distance equals the implied radius. I then added ten multi-ring buffers with a distance of 5 kilometres around each SEZ to create the distance bins. I then map villages to these buffers, using the shapefile of villages in 2001 from Asher et al. (2021). Discarding any village that is further than 50 kilometres from any SEZ, the sample reduces to 66,096 villages. Then, I assign each village to their closest SEZ based on whether their administrative boundaries overlap with the distance buffers. Figure 10 displays the villages within 50 kilometres of the E. Complex SEZ in Amreli, next to Pipapav port, in Gujarat; villages in darker colors are further away from the SEZ. Further, Table 13 describes the baseline sample.

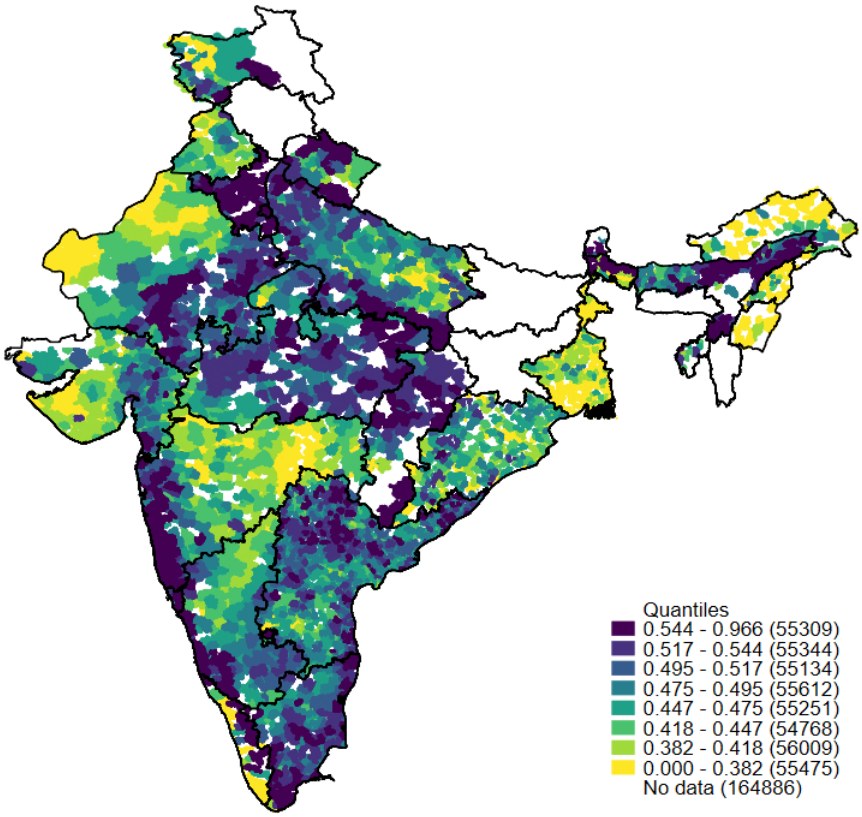

Figure 9: *Gini coefficient on land concentration*

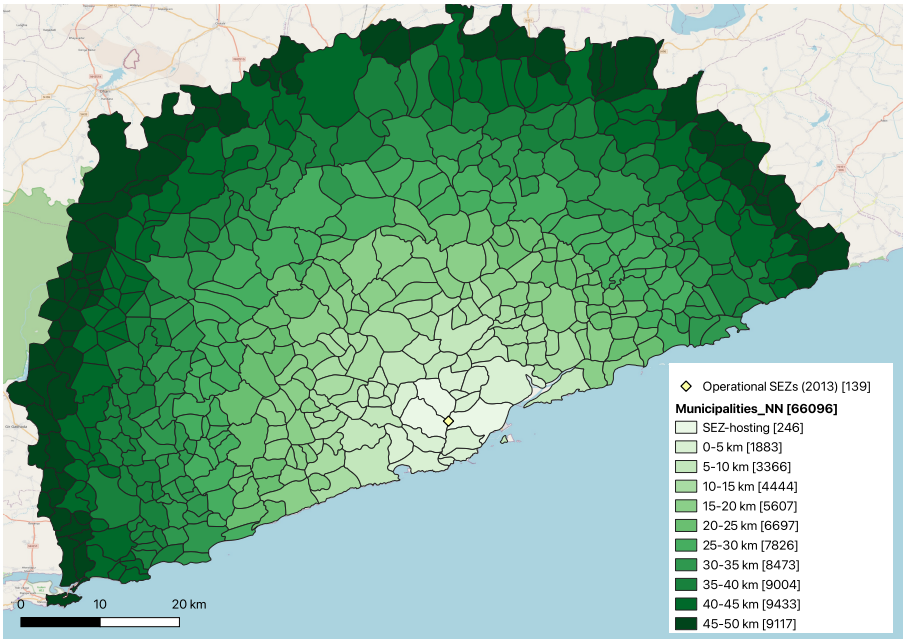

Figure 10: *Villages neighbouring the E. Complex SEZ in Amreli, Gujarat*

Table 13: *Descriptive statistics municipalities sample*

	N	Mean	Median	SD
Population Census (2001)				
Size of municipality (ha.)	118330	521.6	310.5	960.8
Population	119534	2399.2	1040	9564.1
Agricultural employment	119534	388.4	224	522.0
Economic census (2005)				
Non-agricultural employment	114026	266.7	41	2411.1
Manufacturing employment	114026	83.3	6	922.1
Services employment	114026	177.6	29	1623.3
Reserve Bank of India (2005)				
At least one bank	119534	0.062	0	0.24
Number of banks	119534	0.12	0	1.25
Agricultural Census (2000)				
Land concentration (Gini)	104324	0.48	0.49	0.076
OpenStreetMap (2023)				
Distance to nearest airport (km)	119534	45.5	40.9	27.8
Distance to nearest port (km)	119534	220.7	159.2	176.8
Distance to nearest city (>500K, km)	119534	57.9	46.7	38.4
Distance to nearest power plant (km)	119534	25.7	21.1	20.6
Distance to nearest railway (km)	119534	11.3	8.78	9.59
Distance to nearest highway (km)	119534	3.19	2.40	2.88

The unit of observation is a municipality, excluding those with a population over 500,000. The Gini coefficient is calculated based on the subdistrict plot size distribution in the Agricultural Census.

II. Additional results

This section contains supplementary results on entry. Table 14 estimates Equation 3, using a different outcome variable across each two columns. Specifically, it is an indicator that equals one if the proposal is eventually formally approved, notified or operational. This would highlight whether the Board of Approval or the Central Government judge proposals differently after the reform for formal approval or notification respectively. In the first column, I show that there is a positive but insignificant effect on the probability of a SEZ being formally approved in a compulsory acquisition state after the reform. Column (2) repeats this analysis, restricting the sample to manufacturing SEZs, again finding no significant effect. The third and fourth column study whether the probability of becoming notified is affected by the reform; I find no significant change there either. Finally, column (5) and (6) show the effect of the reform on the probability of becoming operational. Now, the coefficient is negative for manufacturing proposals, but it is very small and insignificant. Thus, I cannot find any evidence that the reform caused a significant change in the share of approved, notified or operational proposals.

Table 14: *Probability of moving to the next development stage is unaffected*

	Formal Approval		Notification		Operational	
	(1)	(2)	(3)	(4)	(5)	(6)
	All	Man.	All	Man.	All	Man.
After protest	0.0518	0.0820	0.0678	0.0136	0.0112	-0.00306
× State CA	(0.0932)	(0.135)	(0.0891)	(0.137)	(0.0522)	(0.0958)
Location trends	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Meeting FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	899	269	899	269	899	269
R-squared	0.343	0.528	0.298	0.445	0.250	0.403

The dependent variable is an indicator for the proposed SEZ being formally approved, notified or operational respectively. Each observation is a SEZ-meeting-subdistrict combination, excluding all Utilities and resubmitted proposals. See the notes under Table 4 for details on the included location trends. Standard errors, clustered at the state level, are in parentheses.

$^{*}p < 0.1$,** $p < 0.05$,*** $p < 0.01$.

III. Additional robustness checks

In this section, I provide additional robustness checks on the results from Section VII. First, Table 15 replicates the first three columns of Table 4. The first three columns consider all proposals; note that there are insufficient degrees of freedom to include time fixed effects. To take macroeconomic shocks in account, I restrict the sample to proposals discussed between 2006 and 2009, allowing me to include year fixed effects. The first three columns show that the odds of a manufacturing proposal were reduced after the protest, and that this decrease is more marked in compulsory acquisition states. The preferred specification in column (3) shows that after the protest, the odds of a proposal being for a manufacturing SEZ is 42% lower than before; in compulsory acquisition states, this is more than 70 percent lower than before the reform.[29] In the second three columns, I repeat the analysis for this subset of proposals and add year-fixed effects. The preferred specification in column (6) shows that after the reform in compulsory acquisition states, the odds of a proposal being for a manufacturing SEZ were 58% lower.

Table 15: *Odds of a manufacturing SEZ lower in CA states after reform*

	All proposals			Proposals (2006-2009)		
	(1)	(2)	(3)	(4)	(5)	(6)
After protest	0.650	0.652*	0.569**			
	(0.175)	(0.152)	(0.151)			
After protest	0.612	0.511*	0.508*	0.529*	0.430**	0.416**
× State CA	(0.222)	(0.181)	(0.183)	(0.196)	(0.149)	(0.144)
Location controls	No	Yes	No	No	Yes	No
Location trends	No	No	Yes	No	No	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes	Yes
Observations	1179	1179	1179	1020	1020	1020
Log conditional likelihood	-521.4	-443.7	-452.3	-459.9	-381.0	-381.9

The dependent variable is a dummy that equals one if the SEZ is for *Manufacturing*; the model specification is a conditional logit, the reported estimates are odds ratios. See the notes under Table 4 for details on the included location trends. Standard errors, clustered at the state level, are in parentheses.
$^{*}p < 0.1$,** $p < 0.05$,*** $p < 0.01$.

I adopt a similar approach in replicating the results on industry rank from Table 8. In the first three columns, I show the results for the full sample without time fixed effects; the dependent

[29] As $0.569 \times 0.508 \approx 0.29$.

variable is a categorical variable ordering industries from low to high pre-reform average size. The results show that the odds of a given proposal of being in a larger industry (ceteris paribus the value of the control variables) are lower after the reform, and especially in those states with compulsory acquisition policy. The preferred specification in column (3) shows that the odds of the highest category are 0.623 times greater than all other lower categories after the reform. In compulsory acquisition states, the odds of a proposal being in a larger-scale industry in terms of rank are 67% smaller after the reform.[30] Finally, the last three columns consider only the first three years and include year fixed effects. A similar pattern emerges, with the odds of a proposal being in a relatively larger industry being almost halved in compulsory acquisition states after the reform.

Table 16: *Odds of SEZs in large-scale industries lower in CA states after reform*

	All proposals			Proposals (2006-2009)		
	(1)	(2)	(3)	(4)	(5)	(6)
After protest	0.765	0.765	0.623**			
	(0.144)	(0.143)	(0.128)			
After protest	0.642	0.540**	0.534**	0.623	0.547*	0.509**
× State CA	(0.179)	(0.144)	(0.134)	(0.206)	(0.173)	(0.155)
Location controls	No	Yes	No	No	Yes	No
Location trends	No	No	Yes	No	No	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes	Yes
Observations	19559	19559	19559	16892	16892	16655
True observations	1191	1191	1191	1030	1030	1018
Log conditional likelihood	-8443.5	-7038.2	-7197.4	-7388.2	-6038.7	-5903.7

The dependent variable is a categorical variable indicating the proposed industry, ordered from low to high based on the average size before the reform. The model specification is a fixed-effects ordered logit, the reported estimates are odds ratios. See the notes under Table 4 for details on the included location trends; note that these specifications, for degrees of freedom consistency, do not include log number of banks in 2005 as a control. Standard errors, clustered at the state level, are in parentheses.

$^{*}p < 0.1$,** $p < 0.05$,*** $p < 0.01$.

[30] As $0.623 \times 0.534 \approx 0.33$.