# Local Economic Consequences of Foreign Direct Investment in Democracies and Autocracies

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**Abstract**

Governments in developing and emerging countries aim to attract FDI to generate growth. Yet, empirical studies on the country-level show no clear growth-effect. We argue that FDI induces concentrated benefits on the local level – in close proximity to MNCs – which leads to economic development in that area, but also amplifies inter-regional economic inequality. Both effects should be stronger in autocracies compared to democracies, because autocrats face fewer political constraints to create profitable investment environments. Empirically, we leverage geo-located data on FDI projects from 2003-2018, which we combine with nightlights using two approaches: concentric buffers around project locations and global 10x10km grid cells. Our estimator compares the effect of FDI on growth and inequality between areas that have already received FDI and areas that have not yet received FDI. We find strong evidence for FDI-induced local growth and regional inequality. Both effects are more pronounced in autocracies than democracies.

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# 1 Introduction

Even though governments around the globe, and especially in developing and emerging countries, strive to attract foreign direct investment (FDI) in order to generate economic growth (see, e.g., Jensen, 2003, 2006; Pandya, 2016), conclusive evidence on the growth-enhancing effect of FDI is "surprisingly hard to come by" (Nunnenkamp and Spatz, 2004, 54). Notwithstanding and even in light of critical voices that hold FDI responsible for rising inequality and social conflicts (see, e.g., Paczynska, 2016), the importance of this facet of economic globalization has been growing steadily in the past decades (OECD, 2018). Many developing and emerging countries are heavily reliant on external sources of finance to bolster their economies, rendering them dependent on foreign investors' decisions to implement projects (Pandya, 2016). Because creating favorable investment conditions often comes with considerable costs, this begs the question: what exactly are the economic consequences of FDI for host countries and communities?

The notion that FDI is economically beneficial ranks among the more important, if not *the* most important, reasons for governments to attract FDI. In line with that goal, Ram and Zhang (2002) and Blonigan and Wang (2005) indeed identify a direct positive effect of FDI on growth, which more recent comparative studies at the national level confirm (Emako, Nuru, and Menza, 2022; Iamsiraroj and Ulubaşoğlu, 2015). More than that, some studies even find that the effect of FDI on growth is either self-reinforcing (Li and Liu, 2005), or complements the positive effect of domestic investment (Tang, Selvanathan, and Selvanathan, 2008). Yet, other studies find a direct negative effect (Dutt, 1997), especially in environments that are not favorable for multinational companies (Nunnenkamp and Spatz, 2004), or find neither a growth-enhancing, nor a growth-deterring effect (Adams, 2009; Azman-Saini, Baharumshah, and Law, 2010; Carkovic and Levine, 2005). Recently Bergougui and Murshed (2023) sought to explain such heterogeneous findings by examining whether there are sectoral differences, particularly in developing and emerging markets.

Further research underscores the growth-potential of FDI, but stresses that FDI promotes economic growth not necessarily on its own, but only in conjunction with other factors. Borensztein, De Gregorio, and Lee (1998), for example, argue and find that FDI exhibits a growth-effect only in countries with a highly educated workforce. Yet, the debate about what exactly these conditioning factors are is still ongoing, since others stress the role that a sufficient level of economic wealth (Blomström, Lipsey, and Zejan, 1994), a functioning financial market (Alfaro et al., 2004; Hermes and Lensink, 2003), openness to international trade (Balasubramanyam, Salisu, and Sapsford, 1996), economic stability (Bengoa and Sanchez-Robles, 2003), or a small technological development gap (De Mello, 1999) have in facilitating growth induced by FDI. The growth effect of FDI is supposedly also contingent on domestic conditions and institutions in the host country (Forte and Moura, 2013; Iamsiraroj, 2016). Capitalizing on innovations in geo-coded data, recent research adds a spatial dimension to the growth effects of external investments, showing that positive impacts, such as additional investments (Bunte et al., 2018) and spillovers (Bluhm et al., 2025), occur mainly near the investment site, thus favoring the local economy (Benshaul-Tolonen et al., 2019).

In this article, we follow these state-of-the-art approaches that go away from national-level data and set out to provide a comprehensive account of the economic effects of FDI on the local level. Importantly, we focus not only on the effect of FDI on economic activity, but also investigate whether FDI produces asymmetric changes between areas that receive FDI and areas that do not. We do this because prominent theoretical arguments that facilitate our understanding of the political effects of FDI often rely on assumptions about the economic effects of FDI. Through its growth-effect, for instance, FDI supposedly affects regime trajectories (Bak and Moon, 2016; Escribà-Folch, 2017; Rommel, 2018), electoral outcomes (Owen, 2019), domestic policies (Blanton and Blanton, 2012; Li, 2006), and international openness (Elkins, Guzman, and Simmons, 2006).[1] A more nuanced picture of the economic consequences of FDI that un-

[1] Of course, most studies go further than assuming a growth-effect of FDI and leveraging it in their argumentation,

covers within-country geographical heterogeneity could therefore lead to different expectations with regards to the political implications of cross-border investment by multinational corporations (MNCs).

We aim at making three contributions: For one, we argue that FDI induces growth, but that this effect is spatially concentrated around the location of FDI projects. FDI primarily promotes more economic activity in its direct environment by increasing the local capital stock as well as through concentrated spillovers which manifest in close proximity to the multinational's investment location. This implies that FDI benefits business and the working-age population in the vicinity of projects, yet these growth-enhancing effects do not travel to areas farther away from the location of investment.

At the same time, investment by multinational corporations (MNCs) also affects the distribution of economic resources in the host economy. To assess FDI's impact on economic inequality, we combine insights from theories on agglomeration effects and firm-level theories of international openness. Highly productive multinational investors gain from openness through their superior productivity and, importantly, induce a local growth effect, predominantly through spatially concentrated backward linkages. As distance from the investment site increases, the positive direct and indirect effects on growth diminish, making foreign investors less influential in shaping growth trajectories in distant regions. However, the concentrated growth near the investment site exacerbates disparities, creating a widening divide in economic development between areas close to MNCs and those farther away, thereby increasing inter-regional inequality.

Lastly, we argue that political institutions determine the extent to which the economic consequences of FDI materialize. Autocratic leaders need foreign capital to bolster their output legitimacy and face fewer political obstacles to grant MNCs lucrative investment deals. Democracies are more constrained in offering, for instance, tax rebates or softer workplace regulations,

but also include FDI's distributional consequences. Nevertheless, the fact that FDI allegedly promotes growth plays a sufficiently large role in these theoretical arguments to warrant a closer inspection.

because citizens can hold their government to account via elections and a more equal access to the judiciary. MNC activity should thus lead to faster economic development on the local level as well as higher economic inequality in autocratic countries compared to democracies. Importantly, this implies that FDI produces more economic activity in autocracies only where MNCs actually invest; not necessarily country-wide.

Studies that rely on country-level aggregates discount FDI's geographically confined nature and neglect that some areas in host countries are much more likely to receive FDI. Consequently, our empirical strategy focuses on the local level. We leverage geo-located data on FDI projects to estimate the local economic effects of FDI between 2003-2018 in non-OECD countries and combine these with nightlight data using two different approaches: First, we create concentric buffers around each location that at some point in time will receive foreign investment. Second, we use global grid cells of 10x10km size. For each unit, we calculate average light intensity (measuring economic prosperity) and the difference in light intensity between each unit and its neighboring units (measuring inter-regional inequality). To mitigate endogeneity problems, we rely on difference-in-differences and treatment matching estimators where we compare the effect of FDI on growth and inequality between areas that have already received FDI in a given year and areas that have not yet received FDI, additionally controlling for lagged nightlights and population size. Using both approaches, we find that FDI has a spatially concentrated effect on economic growth, which in turn contributes to increased inter-regional inequality driven by foreign investment. Importantly, both the growth- and inequality-enhancing effect of FDI at the local level are more pronounced in authoritarian countries.

We proceed as follows: In the next section we provide a detailed theoretical account of the relationship between FDI and economic activity on the local level and elaborate how political institutions condition these economic consequences. Section 3 presents our research design and discusses how we leverage light emissions at night and geo-coded data on FDI projects to arrive

at a better understanding of its economic effects. Section 4 presents our findings on rising local growth and growing inter-regional inequality from FDI. Section 5 outlines the implications of this spatially confined growth effect for research in IPE and policy makers.

## 2 Theoretical Argument

In this section, we argue that FDI *directly* and *indirectly* generates more economic activity, but that this effect is spatially concentrated. In essence, the economic consequences of FDI are inherently *local*, which is important as investments are not evenly distributed within countries. Multinational companies invest in carefully selected locations for a very specific purpose: to increase their return on investment (Dunning, 1993, 2001). Governments allow multinational companies to enter the domestic market, because they count on economic gains in the form of economic growth and job creation (Owen, 2019; Pandya, 2014).[2] But we also argue that the concentrated, localized benefits of FDI exacerbate regional disparities. Inter-regional inequality arises from FDI-receiving regions, which experience disproportionately high growth while distant areas without FDI projects tend to grow little or at a slower rate. Lastly, we argue that both the growth- and inequality-enhancing effect of FDI depend on the regime type of the host country. Authoritarian regimes provide environments conducive for higher locally concentrated growth, which results in higher inter-regional inequality at the same time.

**Local Economic Growth, But Inter-Regional Inequality** The economic case for the relationship between foreign direct investment and economic growth is supposedly straight-forward. Entry of multinational companies increases the capital stock, which – according to neo-classical growth-models – directly contributes to economic growth (Romer, 1986), especially in developing countries where capital is scarce. This effect should be even more pronounced for FDI compared to other types of capital flows, because FDI is rather immobile after investment and

[2] Even if individual projects are not immediately profitable, their spillover effects often persist and drive indirect positive impacts on local growth.

aims at generating long-term returns (Jensen, 2006).

The direct growth effect of FDI is further amplified by indirect effects, which include public and private growth-enhancing activities that precede or accompany foreign investment. These measures often involve favorable investment regulations, subsidies aimed at attracting or retaining foreign investors, and infrastructure development (Khadaroo and Seetanah, 2009). Such public goods might even be provided by MNCs themselves, because governments mandate them as investment requirements (Bunte et al., 2018). At the same time, multinational companies and local suppliers increase labor demand, resulting in higher overall employment and often offer wage premiums. This rise in employment and wages boosts purchasing power and consumption (Benshaul-Tolonen et al., 2019), thereby benefiting sectors beyond those directly exposed to international capital (Görg and Strobl, 2002; Markusen and Venables, 1999).

However, there are two important aspects of FDI that warrant to take the local level, as opposed to the country-level, more seriously when thinking about the relationship between FDI and economic growth (for a similar plea, see Owen, 2019). First, FDI is neither evenly, nor randomly distributed within countries. To the contrary, the distribution of FDI within countries depends on a number of factors foreign investors carefully screen before selecting a specific site for their investment. These local characteristics determine which areas are more or less attractive to investors. FDI projects in the mining sector, for instance, can only be located in areas with extractable minerals, whereas successful FDI in the manufacturing industry often depends on the local infrastructure and supply of labor. This entails that some locations in countries are much more likely to host foreign investors, while others are not attractive for FDI projects. In addition to location-specific factors, local politics often plays a crucial role in fostering an environment conducive to foreign investment through public investment (Nielsen, Asmussen, and Weatherall, 2017). When investors choose a location, the local conditions are likely to already support growth, as public investment, locally available subsidies, and infrastructure

development in these areas make them attractive (Katitas and Pandya, 2024; Khadaroo and Seetanah, 2009) and create a foundation for further economic growth.

Second, when multinational enterprises invest in these specific locations, they increase the capital stock and produce spillover effects on the local level. Because multinational companies need complementary investment, the direct neighborhood of FDI projects should immediately start to develop as well. In areas attractive to investors with better public infrastructure, growth is amplified by backward linkages, as foreign investors rely on local goods and services to support their operations (Bunte et al., 2018; Speakman and Koivisto, 2013). Yet even though these benefits favor domestic business and the working-age population in the vicinity of FDI projects, the growth-enhancing effects do not travel to areas farther away from the location of investment (Merlevede and Purice, 2016; Caselli and Michaels, 2013; Benshaul-Tolonen et al., 2019).

This argument resonates well with findings in the literature on spillovers that showcase the importance of backward linkages between the foreign multinational and domestic business (Aitken and Harrison, 1999). Spillovers occur more frequently when they directly benefit multinational companies' business model (Görg and Greenaway, 2004; Godart and Görg, 2013). The benefits of domestic business by the presence of foreign multinationals and the possibility to become part of their supply chains is, however, contingent on spatial proximity, which is in line with growing evidence on positive geographically concentrated backward linkages (Merlevede and Purice, 2016; Krugman, 1991).[3] Thus, domestic firms close to the site of investment of foreign multinationals are far more likely to benefit from FDI, which exacerbates the local effect of FDI on economic development (Speakman and Koivisto, 2013).

FDI should, therefore, promote local growth both directly by increasing the capital stock and indirectly through local backward linkages. Additionally, conducive local conditions that

[3] Domestic companies that operate in the same sector, irrespective of whether they are located near or far from foreign investors, face heightened competition from market-seeking FDI (Helpman, Melitz, and Yeaple, 2004; Melitz, 2003). However, any potentially negative effect of FDI from competition can be offset by positive spillovers and growth effects in the vicinity of FDI projects (Gerschewski, 2013*b*).

attract investors further enhance FDI's growth potential, creating a favorable environment for economic expansion. This implies that the growth-enhancing effect of FDI should be concentrated around the site of investment.

*H1: The more FDI in a specific location, the higher the growth of economic activity in that area.*

*H2: The growth-inducing effect of FDI decreases in distance to the location of investment.*

Through its spatially concentrated growth effect, FDI also affects the distribution of economic resources within the host economy. The exact shape and form of the distributional consequences of FDI are, however, highly contested (Palmtag, Rommel, and Walter, 2020). Starting from the argument about the strong spatial concentration of positive growth-effects and contrasting this development with the overall distributive effects within countries (Lessmann, 2013), we argue that FDI contributes to rising levels of inter-regional inequality.

Rising inter-regional inequality results from FDI's concentrated growth effects near project sites, while more distant regions are left out from this specific boost to the economy. Domestic firms farther from FDI locations are less likely to become suppliers for foreign multinationals, limiting new employment opportunities to areas close to the project (Gerschewski, 2013*b*; Krugman, 1991). Consequently, FDI creates new employment opportunities and higher wages mainly around the project site, with regard to the foreign multinational and its suppliers, but does not change the demand in more distant labor markets. Additionally, positive backward linkages to other domestic businesses decrease with distance, as those benefiting from FDI tend to spend their income locally (Merlevede and Purice, 2016; Marchetti, 1994). Since people often live near their workplace, increased household income from new jobs or better wages boosts demand for non-tradable services and local goods, driving economic activity and wage growth near the FDI site (Benshaul-Tolonen et al., 2019). This leads to more intense economic activity and higher wage levels in both the sector of investment as well as other sectors located closely around the foreign investment compared to regions farther away from investors.

Potential negative effects of FDI on growth, particularly with regard to market-seeking investments, can occur both near and far from investors. These effects may displace domestic competitors of foreign multinationals (Owen, 2019). While this displacement doesn't necessarily hinder growth in other regions, negative horizontal linkages from FDI in areas farther away may not be offset or reversed by direct growth effects or positive vertical linkages (Gerschewski, 2013*b*). Hence, we argue that the locally concentrated growth effects of FDI drive rising inter-regional inequality. MNCs both directly and indirectly generate so much economic activity that the majority of economic entities in the immediate vicinity are better off compared to areas, in which foreign investors are not present. Because FDI-exposed areas benefit disproportionately, FDI contributes to a widening gap in economic development between these areas that gain from increased capital, accompanying public investment, positive spillover effects, and improved labor market conditions, and those that are too distant to share in these growth benefits.

*H3: FDI increases differences in economic activity between directly exposed areas and areas distant from MNCs investment sites, which produces regional inequality.*

**Differences Across Regime Types** In what follows, we argue that the effectiveness of FDI projects to generate economic activity differs between democracies and autocracies.[4] More specifically, we argue that the presence of multinational investors induces higher *local* growth rates in autocratic countries for three interrelated reasons: (1) Autocrats are more dependent on economic growth than leaders in democracies, (2) autocrats have to offer better investment conditions to attract international investors, and (3) autocrats are actually better able to do so, because of fewer political constraints. Importantly, this line of reasoning is on the local level and does not necessarily travel to overall differences in economic growth between democracies and

[4] We focus foremost on national-level political institutions, because regulations for entry of MNCs are usually set at the federal level. Research has increasingly illustrated that political institutions also vary on the local level. For example, Bill Chavez (2004) shows that access to justice can vary substantially within countries and Gibson (2024) presents evidence on sub-national authoritarianism in otherwise democratic countries. Tapping into such within-country variation in political institutions might be a fruitful avenue for further research. One recent attempt to explicitly include differences with regard to local electoral politics is by Palmtag, Paula, and Rommel (2024).

autocracies (Chandra and Rudra, 2015; Knutsen, 2021).

First, while no leader opposes higher economic growth, autocrats should be more dependent on economic prosperity compared to democratically elected fellow stateswomen. Because of the lack of input legitimacy, autocrats have to resort to other means to maintain their hold on power (Gerschewski, 2013*a*). Choosing from a menu of options, political leaders in dictatorships often rely on economic growth and FDI to boost their own, and consequently the regime's, popularity (Rommel, 2024; Treisman, 2011; Wintrobe, 1998). Autocratic leaders are thus interested in a mutually beneficial relationship between their own survival prospects, facilitated by the direct and indirect growth-effects of FDI, and multinational investors' return on investment.

Second, autocrats may not only be interested in giving special treatment to foreign multinationals, they may actually need to. This is due to the fact that foreign investors face a time-inconsistency problem. Policy flexibility is beneficial for multinational enterprises before investment takes place, but poses serious political risks afterwards (Büthe and Milner, 2008; Jensen, 2003).[5] In order to counter these perceived risks, autocrats are forced to pay a risk premium to foreign investors and offer even higher benefits. In line with this notion, research has shown that autocrats offer more tax incentives to foreign investors (Li, 2006) or that autocracies have lower labor standards (Messerschmidt and Janz, 2023). Hence, autocracies can only match the more secure investment environment that characterizes democratic regimes by creating an investment environment that increases the return on investment for multinational corporations.

Third, we argue that autocrats are less constrained in terms of their ability to make policy both with regard to vertical and horizontal constraints. This argument is in line with mounting evidence that regional favoritism in producing growth is higher in autocratic regimes (Hodler and Raschky, 2014) and that autocrats can induce political budget cycles more easily (Shi and Svensson, 2006; Shmuel, 2020). Whereas merely being interested in mutual gains does not

[5] This is one of the main reasons for why democracies should in principle attract more international investment (e.g., Büthe and Milner, 2008; Jensen, 2003, 2006; Li and Resnick, 2003), even though it is empirically unclear whether democracies are indeed more attractive for foreign multinationals (Li, Owen, and Mitchell, 2018).

guarantee that leaders actually offer more beneficial investment deals, autocrats have more room to maneuver and thus the ability to actually act on their promises.

Taken together, these three inter-related dynamics lead to the conclusion that FDI should generate higher economic growth in autocracies compared to democracies, on the local level where FDI projects are located. Because autocrats are dependent on economic prosperity and have the ability to provide private goods, they welcome foreign direct investment for its growth-potential. In addition, more autocratic settings make domestic political favoritism easier, which also increases complementary investment in the vicinity of FDI projects. The combination between an autocrat's interest in offering a mutually beneficial investment environment and investors' interest in taking advantage of such environments should thus bolster *local* economic activity more than it does in democratic regimes.

On the flip-side, fewer constraints and more flexibility to tailor policies towards the narrow interests of regime insiders and multinational companies comes at the cost of the interests of the larger public, thus elevating the risk of heightened economic inequality. In autocracies, the population has fewer means to challenge political favoritism by dictators. The public lacks the instrument of meaningfully challenging the incumbent via regularly held, free and fair elections and is oftentimes subjected to repressive measures if its members resort to protest to challenge the political distribution of economic resources. In addition, the lower independence of and higher obstacles to access the judicial system in autocratic regimes oftentimes works against the interests of the population and does not offer fair administration of justice in case of legal challenges to specific policies. Consequently, the institutional setup that is conducive to local economic growth in autocracies at the same time increases the asymmetric distribution of these economic gains within countries.

*H4: The local effect of FDI on both economic growth and economic inequality is stronger in more authoritarian countries.*

# 3 Empirical Strategy

## 3.1 Measuring Local Growth and Inequality

To assess the local economic consequences of foreign direct investment, we require disaggregated information on economic activity and inequality. Unfortunately, official national or subnational data is neither sufficiently spatially disaggregated, nor flexible enough to serve as a measure for our dependent variables of interest. Therefore, we focus on nighttime light emissions for several reasons:

First, nightlights have been frequently validated as a proxy for economic development and inequality (see, for example, Kuhn and Weidmann, 2015; Cederman, Weidmann, and Bormann, 2015; Keola, Andersson, and Hall, 2015; Perez-Sindin, Chen, and Prishchepov, 2021). They are more reliable than national accounts of economic activity and correlate closely with countries' aggregate economic output (Elvidge et al., 1997; Chen and Nordhaus, 2011; Proville, Zavala-Araiza, and Wagner, 2017). Official GDP figures can contain serious measurement errors and often vary significantly due to differing methodologies and motivations for data collection (Jerven, 2013).[6] Second, nightlights offer high resolution, allowing us to measure economic activity across various environments on the local level. They have also proven useful for measuring spatially detailed economic activity, e.g., at the subnational (Lessmann and Seidel, 2017; Henderson, Storeygard, and Weil, 2011; Sutton, Elvidge, and Ghosh, 2007) or neighborhood level (Weidmann and Schutte, 2017).

Nightlight emissions are collected by the National Oceanic and Atmospheric Administration (NOAA, National Geophysical Data Center, 2018*a*,*b*) and are available as a raster with a resolution of 30 arc-seconds, which is approximately one square kilometer at the equator, on a global scale. The illumination of these rasters is measured as a 'digital number' (DN), ranging

[6] While nightlights are a reliable proxy for economic activity, they can suffer from saturation (lack of differentiation in very bright areas), over-glow (geospatial displacement regarding the exact origin of light), and blooming (undetected isolated light spots in dark areas), see Mellander et al. (2015); Henderson, Storeygard, and Weil (2011); Chen and Nordhaus (2011).

from 0 to 63. A raster cell with the value of 0 DN is completely dark, which means no light was detected by satellites during nighttime, whereas 63 DN is a cell with maximum illumination. While NOAA provides the original data, we rely on a product by Li et al. (2020) that creates a harmonized and globally integrated measure of nightlights for the time period from 1998-2018 using NOAA's official data. Importantly, this data update resolves differences in average light intensity that might arise over time because of changes in the quality of satellites.

In what follows, we embed these lights emissions at night in two different approaches that determine the units of analysis: a buffer approach and a grid cell approach. For each approach, we create two different dependent variables. First, as a measure for economic activity, we simply use the average nightlight illumination within the respective unit of analysis. Second, in order to measure cross-unit (i.e., regional) inequality, we calculate the difference between the nightlight intensity of one unit and the average nightlight intensity of its neighboring units (that also lie within the borders of the same country). For every measure higher values imply more economic activity or higher inequality, respectively.

### 3.2 Analysis of Concentric Buffer Zones Around FDI Projects

To identify the activity of foreign multinational companies in host countries, we draw on geo-located FDI data from the 'fdimarkets' database, which is provided by the Financial Times. This database is a unique source of information on FDI at the project-level and records greenfield investments as well as expansions of existing projects on an ongoing basis since 2003 (The Financial Times Ltd., 2018). The Financial Times relies on multiple sources, news wires, various media sources, and information from industry organizations to collect this information. The database includes detailed project-related data, such as the date when the investment was announced, the estimated capital expenditure, and the estimated number of jobs created by the multinational company. Furthermore, it provides data on the home country of the investor, the

investing company, and the sector of the respective project.

Most importantly, the FDI data includes information on the location of each project. Using this information, we can illustrate how growth and inequality change over time in locations that are attractive for foreign investors by creating buffer zones around each FDI project. To do so, we identify all unique investment locations in non-OECD countries, where at least one project has been implemented between 2003 and 2018. Even though geo-located FDI data provides us with a unique opportunity to test the local effects of FDI, there are some drawbacks. According to Brazys and Kotsadam (2020), there is a slight over-representation of capital investments in comparison with the World Bank data. Another limitation is the missing coverage of mergers and acquisitions, which might be especially important in the context of developing markets (Jung, Owen, and Shim, 2021). The data also covers announcements of estimated capital expenditure only, which might deviate from actual capital invested. To mitigate these problems, we focus on several measures of MNC activity. For each unique project location, the 'fdimarkets' database allows us to code the year of the first MNC activity as a binary indicator. This measure should be less prone to measurement error, but also reduces the available information to a sizable degree. We thus also take more fine-gained measures of MNC activity into account, in which we sum up (over time) either the estimated capital expenditure or the number of jobs created.

In our main specification, we match the FDI data with nightlight data in a radius of 10km around each unique project location; an area that approaches a reasonable commuting distance (see, Figure A-1 in the Appendix for an illustration of this approach).[7] Our final dataset consists of 4,386 buffer zones around FDI project locations in 143 non-OECD countries, for which we have information on local growth and inter-regional inequality before and after projects were implemented. Light emissions and MNC activity thus vary within each buffer zone over a time period of 16 years. To investigate whether the local consequences of FDI vary as a function

[7] We use the difference in light intensity between the immediate surrounding of a project location (a small buffer zone of 10 km) and the larger region (a 25km radius around the project location, without the inner 10km buffer zone) as our baseline measure for regional inequality.

of distance to each project, we also use varying buffer zones ranging from 5km to 100km. All buffer zones are clipped at the borders of their respective country to account for the fact that national borders still constitute substantial barriers for economic activity as well as to avoid bias for FDI projects that are built at sea borders.

### 3.3 Analysis of Global Grid Cells

While the approach using buffer zone as the units of analysis has been applied in previous scholarly works (e.g., see Brazys and Kotsadam, 2020), there are potential problems. Focusing on concentric buffer zones around projects helps us to deal with selection bias as we only compare locations that are at some point in time attractive for multinational enterprises. Yet, due to the design of only choosing locations that already have or will receive FDI projects, the number of treated observations will equal the number of all units in the last year, i.e. 2018. Furthermore, buffer zones around unique project locations might overlap the more we increase the radius of the respective buffers.[8] Areas or parts of them that end up twice in the pool of observations might induce a systematic bias. In sum, we cannot conclusively rule out that we might overestimate the effect of FDI using the buffer approach.

Hence, we complement the buffer zone approach with an alternative empirical strategy: instead of drawing buffers around FDI projects, we partition the globe into 10x10km grids, which results in 942,592 cells in 156 non-OECD countries as the units of analysis. Compared to the buffer approach, the grid approach uses information on economic activity in grid cells that will at some point in time receive FDI as well as other grid cells that do not (and, for most of them, probably never will) host FDI projects. We clip grid cells at country borders and then match both nightlight emissions[9] and geo-located information on FDI projects. Of the 942,592 total grid cells, only 4,064 are treated between 2003 and 2018. Therefore, we test the robustness

[8] In the 10km buffer zone dataset, 8,890 out of 13,594 buffer zones overlap to some extent with another buffer.

[9] To measure the regional inequality in nightlight emission, we calculate the difference between the nightlight intensity in each grid cell and the average nightlight intensity in the maximum eight surrounding grids that also lie in the same country.

of this approach by limiting the available grid cells to the treated as well as the first neighbors of treated cells (see, Figure A-2 in the Appendix for an illustration).[10]

### 3.4 Estimation Strategy and Regime Types on the Country-Level

To uncover whether FDI has conducive economic effects in host localities we use a difference-in-differences approach (Christensen, 2019).[11] We estimate OLS regression models that contain project fixed effects (for buffers as the unit of analysis) or grid fixed effects (for grids as the unit of analysis), which control for time-invariant factors, such as mountainous terrain, deserts, etc., as well as year fixed effects, which control for common shocks in investors' investment decisions, such as the 2008/9 financial crisis (for similar approaches estimation strategies on the local level see (Bluhm et al., 2025; Christensen, 2019)). We cluster the standard errors on the buffer or grid level, respectively. Even though we can effectively rule out a lot of sources for potential bias using the difference-in-differences estimator on two different units of analysis, we are still left with one concern: light emissions in areas that receive investment might change not because of the presence of foreign multinationals, but because investors anticipate booming areas. For this reason, we additionally control for lagged nightlight intensity and population size in both the buffer and the grid approach.[12]

In addition, we investigate the mediating effect of the regime type on the country-level using split regression models. We divide our sample using three dichotomous indicators: First, we differentiate between different types of political regimes using a dichotomous measure. Based on raw data from the V-Dem project (Coppedge et al., 2020; Pemstein et al., 2020), Lührmann, Tannenberg, and Lindberg (2018) group countries in four regime categories[13] that we collapse

[10] In another robustness check, we use grid cells of the size 25x25km. Here, 3,552 out of a total of 159,651 grids have received at least one FDI project at some point in time.

[11] We substantiate the validity of this approach using treatment matching estimators as robustness checks.

[12] Population data is taken from the Hyde database (Klein Goldewijk et al., 2017), which provides a spatial estimate of population size and density based on harmonizing a variety of different sources and interpolation methods. We do not account for other geographical features within both buffers and grids, because bodies of water and mountainous terrain should be constant over time. Additionally, we clip buffers and grids at the land borders of each country and, thus, do not include geographical units that are fully covered by water.

[13] Liberal democracies, electoral democracies, electoral autocracies, and closed autocracies.

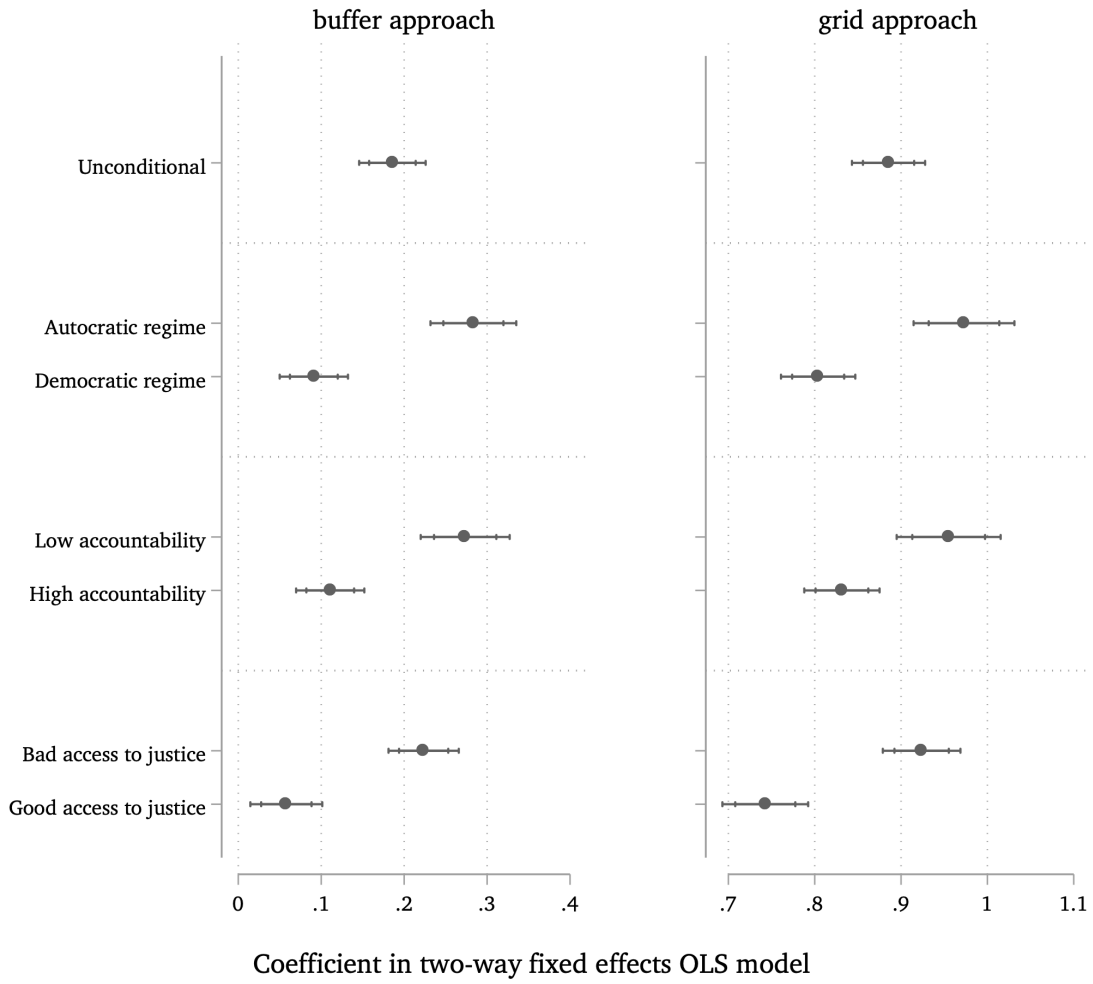
into a simple autocracy-democracy dichotomy. The other two measures focus more closely on the key components of liberal democracy. On the one hand, we use the extent to which citizens have the power to hold their government accountable using formal political participation in the form of free and fair elections (vertical accountability). On the other hand, we capture differences in legal institutions, i.e. to what extent citizens enjoy equal and secure access to the judicial system (access to judiciary). Both measures are continuous ranging from 0-1. We dichotomize by using a cut-off at .75, which corresponds with the coding instructions for V-Dem expert coders.

# 4 Empirical Evidence

How does FDI affect growth and inequality in developing countries? We expect that FDI directly and indirectly induces growth, but that this effect is geographically concentrated. We further expect that FDI increases inequality, especially when taking into consideration that the growth-inducing effect of FDI is spatially confined. On top of that, the local economic consequences of FDI should be more pronounced in autocratic compared to democratic regimes.

**FDI and Local Economic Activity** Figure 1 reports the first set of our findings focusing on the effect of FDI on economic growth using both buffers (on the left-hand side) and grids (on the right-hand side) as the unit of analysis. Economic development is operationalized by average nightlight intensity in a 10km radius around each FDI project or within a 10x10km grid cell, respectively. The unconditional effect of MNC activity is positive and statistically significant in both approaches. This means that compared to an area that will only be exposed to international investment in the future, areas where multinational companies have already invested in a given year experience increasing light emissions at night. The growth-effect is also substantial in size. A one standard deviation-increase in FDI leads to a growth rate of light emission of about 11% for the first year after a new project was built (for the grid analysis). In line with Hypothesis 1,

FIGURE 1
Effect of FDI Projects on Nightlight Intensity




*Note:* OLS regression models based on model specifications in Table A-1 and Table A-2, including 95% and 83% confidence intervals.

we thus conclude that FDI is conducive to economic growth on the local level.

The results in Figure 1 are based on Table A-1 and Table A-2 in the Appendix, which further show that the statistically significant effect of FDI on economic development is robust to different operationalizations of MNC activity. Models 1 and 2 use a simple treatment variable of the very first FDI project in each buffer or grid. This variable is 0 if in a given year investment in that area has not yet been made; in addition, it is also 0 for all grids cells that are never treated. The variable increases to 1 in the first year any MNC has invested in that locality.[14] In

[14] This variable simplifies a lot of information regarding the prevalence of FDI in specific areas. Given that each unique FDI location is on average exposed to only two FDI projects between 2003 and 2018, we think this variable still is a good indicator to capture overall exposure to international investment of subnational units.

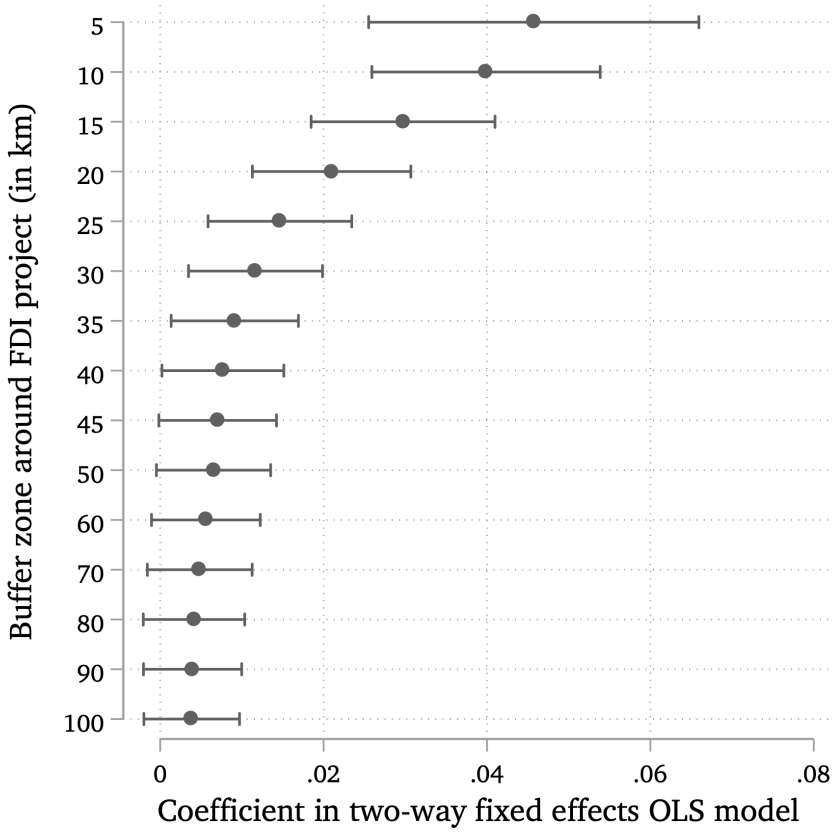
models 3 and 4, we switch to a more fine-grained operationalization using the cumulative sum of capital invested; logged because capital expenditures are highly skewed. This variable thus offers more variation in terms of the actual extent of MNC activity between buffers or grids as well as changes in investment behavior over time. Models 5 and 6 mirror these models, but use the estimated number of jobs created in a project-site or grid cell, respectively. The effect of FDI on growth is positive and statistically significant across all model specifications. The growth-enhancing effect of FDI is also robust to controlling for lagged nightlight intensity, which is a proxy for how well-off an area already is before (the initial or more) investment takes place, and population size, which proxies for the size of the local market. Lastly, the results from the grid approach also hold up when we restrict the number of grid cells used in the regression models to treated grid cells as well as direct neighbors of treated grids (see, Table A-3).

We additionally expect that the political regime type mediates the effect of FDI on economic growth. Figure 1 thus also focuses on the scope of the growth-effect of FDI across autocracies and democracies. We use model 4 from Table A-1 and Table A-2 as the preferred specification and interact exposure to FDI with a binary indicator for the type of political regime. In line with Hypothesis 4, we find that the growth-inducing effect of FDI is – albeit positive in every political regime – far greater in autocratic regimes and statistically significantly different from democracies.[15] We come to the same conclusion when focusing on two core components of liberal democracy. FDI induces higher growth rates on the local level when citizens are able to hold their government to account via free and fair elections (vertical accountability) and when citizens have equal access to the court system (access to justice). Note, however, that these are differences for local growth rates, which do not necessarily imply that FDI similarly leads to higher aggregate economic growth in authoritarian regimes overall. These results are also robust to excluding China from the analysis[16] and to excluding highly populated areas, such as

[15] Whereas we use 95% confidence intervals to compare an effect to the null hypothesis, here we focus on 83% confidence intervals. If 83% confidence intervals do not overlap, effects are statistically significantly different from each other approximately on the 5% level.

[16] Simply because of its size and importance in investment relationships, China might be driving the results on

FIGURE 2
Effect of FDI Projects on Nightlight Intensity, Depending on Distance




*Note:* OLS regression models based on model specification in Table A-1, including 95% confidence intervals.

national and regional capitals.[17]

Lastly, we leverage a key advantage of the buffer approach to explore the spatial concentration of the growth-inducing effect of FDI. Using the specification from model 4 in Table A-1, we vary the size of the buffer zone around each FDI project. As shown in Figure 2, the growth-enhancing effect of FDI is strongest in the immediate vicinity of multinational companies (within 5-10 km). While FDI continues to induce growth in more distant areas, the effect size steadily

differences between regime types. We re-run both the buffer and grid analysis on economic activity and exclude China from the sample. The differences between democracy and autocracy, between low and high accountability, and between bad and good access to justice remain statistically significant at the 1% level.

[17] We suspect urban-rural differences in FDI location decisions, especially in non-OECD countries. Yet, this must not mean that we should expect differences in the growth-effect of FDI between highly populated and more remote areas. To test this explicitly, we identify the 10 % most highly populated grid cells in each country. Hence, we focus on actual country-standardized population numbers and not the status of a city as a national or regional capital. The effect of FDI on local economic activity is slightly smaller in size, but remains positive and statistically significant. Additionally, the differences in the growth effect of FDI remain statistically significant between democracies and autocracies as well as between countries with good and bad access to the judicial system.

declines and is not statistically significantly different from zero anymore beyond 40 km.[18] This supports Hypothesis 2, suggesting the positive effect of FDI on economic growth – both directly and through indirect spillovers – is spatially concentrated around the site of investment.

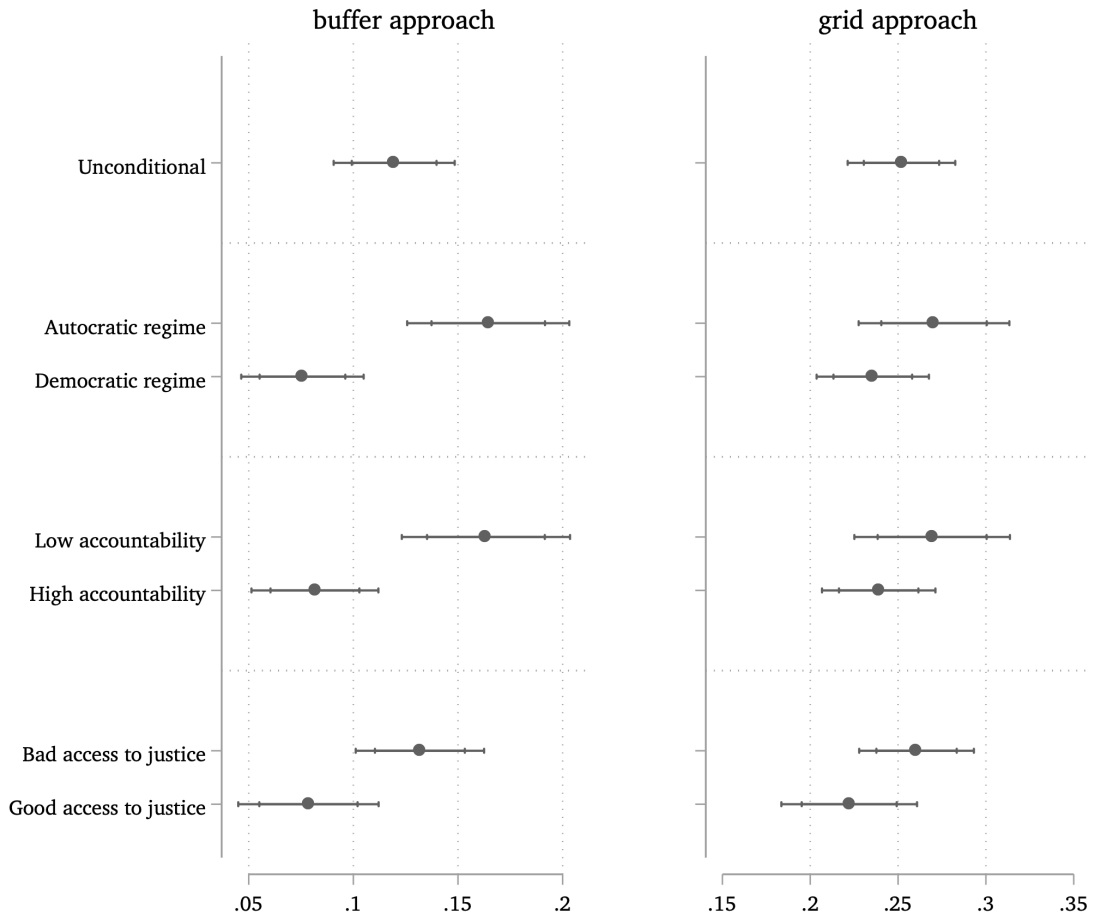
**FDI and Regional Economic Inequality** We now turn to investigating the effect of FDI on economic inequality. For the buffer approach, we operationalize regional inequality using the difference between average light intensity in a 10km buffer zone and the average light intensity in a ring including the area of 10 to 25km around each FDI project. As for the grid approach, we calculate the difference in light intensity between each cell and the average light intensity of its neighboring cells that lie within the same country. Figure 3 reports the results from two-way fixed effects model. Irrespective of whether we use buffers (on the left-hand side) or grids (on the right-hand side), the unconditional effect of FDI is positive and statistically significant. This implies that the presence of MNCs leads to a divergence of economic activity between areas in the immediate vicinity of FDI projects and the areas farther away, which support Hypothesis 3. Although we cannot rule out that some of the increase in economic activity may be attributed to complementary domestic investments, such as infrastructure development, our estimates specifically isolate the direct and indirect effects of FDI projects in the areas where MNCs choose to invest. In substantial terms, our results imply that the nightlights growth rate in treated grids is about double the growth rate in neighboring grids that are not exposed to FDI.[19]

Furthermore, Figure 3 showcases that there are again substantial differences between autocracies and democracies. The inequality-inducing effect of FDI is substantially larger in autocracies and statistically significantly different from democracies in the buffer as well as the grid approach. FDI also bolsters inequality in regimes where citizens have less say in politics

[18] Larger buffer sizes might at some point clash with the size of very small countries. This is to say that simply by design the size of a country could mediate the effect of FDI on economic activity in this analysis; a buffer cannot become larger than the country itself. Hence, already large buffers cannot become even larger if the buffer zone already covers the entire country. We re-run the buffer analysis and exclude the 20% (or, 31) smallest countries from the analysis. Our findings are robust to this change.

[19] Table A-4 and Table A-5 further highlight that the inequality-increasing effect of MNC activity is robust to different operationalizations of FDI exposure.

FIGURE 3
Effect of FDI Projects on Spatial Nightlight Inequality

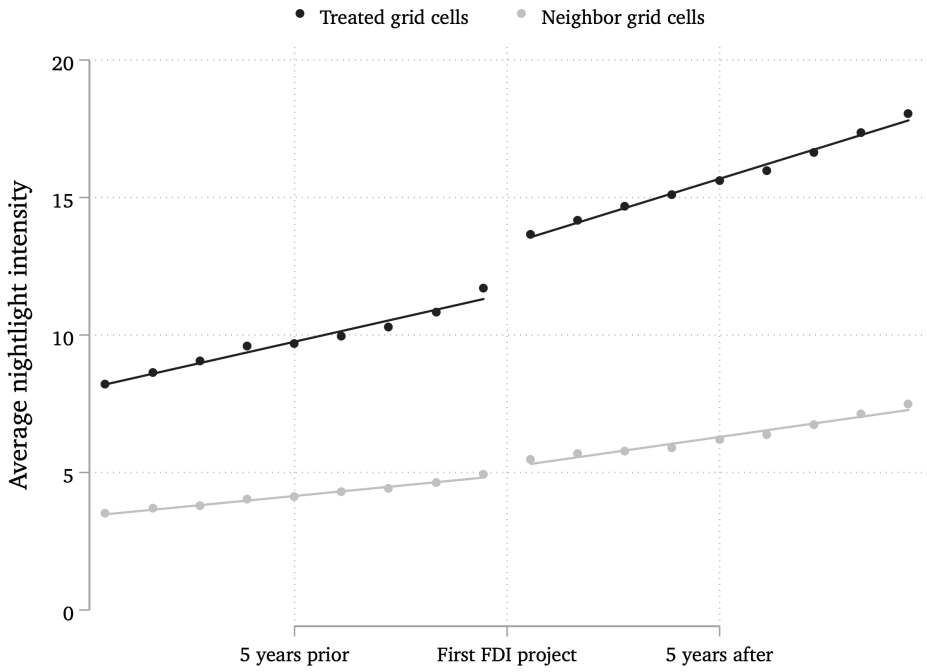



*Note:* OLS regression models based on model specifications in Table A-4 and Table A-5, including 95% and 83% confidence intervals.

via free and fair elections and when citizens do not have access to an impartial justice system. Our findings thus indicate that FDI fosters a more unequal distribution of economic resources in more authoritarian countries, which is again in line with Hypothesis 4.

Summing up, these findings provide strong evidence in favor of our argument. Through both direct and indirect linkages does FDI induce more economic activity, most notably in the area that is very close to multinational investment sites. At the same time, FDI amplifies regional economic inequality. Lastly, more authoritarian countries, in terms of their political as well as their legal institutions fare better when it comes to the local growth potential of FDI, but worse when it comes to FDI-induced reallocation of economic resources.

FIGURE 4
Development of Economic Activity in Treated and Neighbor Cells

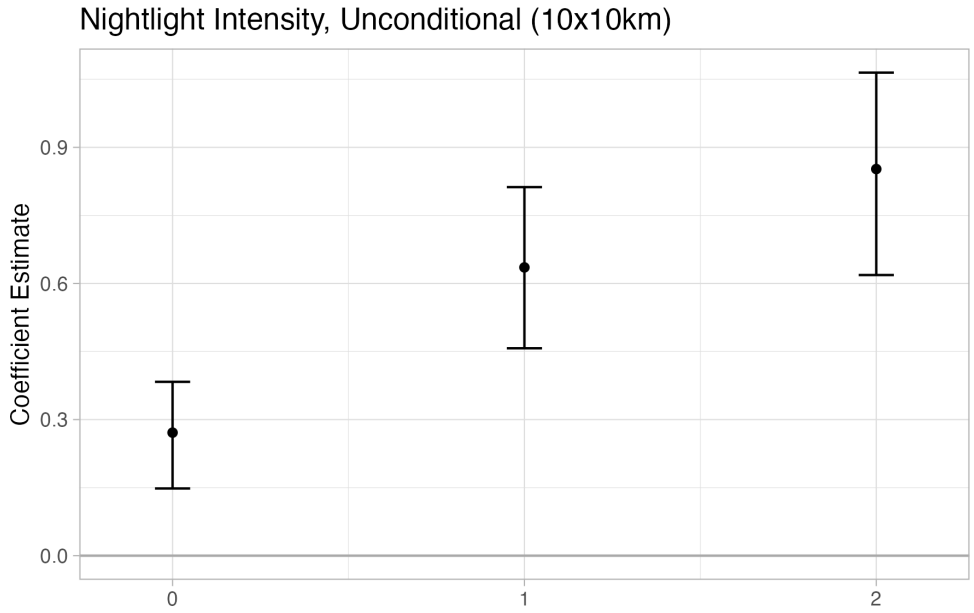



*Note:* Average nightlight intensity of treated and untreated grids before and after investment by MNCs.

Figure 4 portrays these patterns graphically. This graph shows that prospective investment locations (in black) have generally higher light emissions compared to neighboring, but untreated grid cells (in gray). Importantly, we clearly see a sharp increase in light intensity after investment by foreign multinationals, whereas we do not see any effect in neighboring untreated grid cells. Additionally, we do observe an anticipation effect of FDI in treated grids in the year before the first FDI project, which is likely due to public investment or accompanying infrastructure development. In contrast, what we do not detect is an overall decline in economic activity in unaffected areas, which implies that regional inequality does not emerge from crowding-out effects, but from large differences in asymmetric growth.

**Treatment Matching as a Robustness Check** One assumption of the difference-in-differences design is that treated and untreated grids show roughly equal light emissions trends before MNCs enter an area. Figure 4 shows that this assumption is slightly violated. Consequently, we find it important to employ an estimator that only compares similar units. Establishing a reliable

FIGURE 5
Effect of FDI Projects on Nightlight Intensity – Treatment Matching



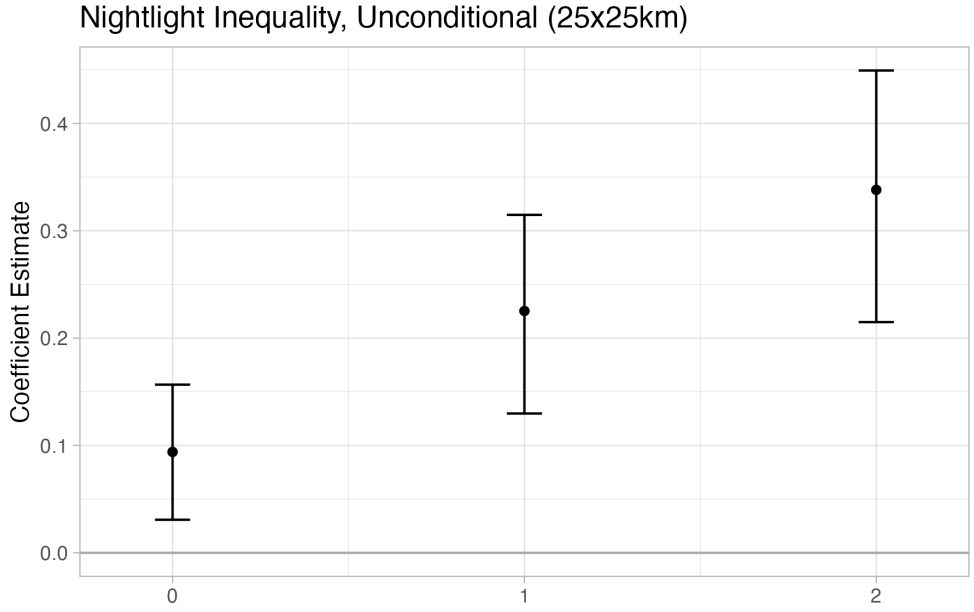

*Note:* ATT for 0–2 years after the first FDI project in 10x10km grid cells.

effect thus requires matching and weighting treated with untreated cells based on previous light developments and the treatment history.[20] To do so, we apply the estimation strategy by Imai, Kim, and Wang (2023) who established an identification strategy for cross-sectional time-series data that specifically takes the treatment history of previous years into account.

In terms of estimation, we rely on the R-package 'PanelMatch' (Kim et al., 2021), which contains three steps: First, we create a set of matched treated and control units for the 10x10km grid raster. Second, we apply the propensity score distance matching to refine the matched set based on country, the mean of light development as well as population size in the last two years. The five most similar control units will be used to estimate the average treatment effect on treated units (ATT) for the first 2 years after the FDI project has been announced. To calculate confidence intervals for the point estimates, we calculate bootstrap standard errors with 1000 iterations. Figure 5 shows the effect of FDI on local economic activity, based on average nightlight emission within 10x10km grid cells. The average treatment effects are positive and

[20] The grid cell design also does not take into account that investors invest several times in the same location. Around 2,291 out of 4,064 treated cells in the 10x10km raster have been treated multiple times.

FIGURE 6
Effect of FDI Projects on Spatial Nightlight Inequality – Treatment Matching




*Note:* ATT for 0–2 years after the first FDI project in 25x25km grid cells.

statistically significant, thus corroborating the findings from previous analyses. As expected by the long-term nature of FDI, the growth-effect of FDI also becomes bigger over time.[21] FDI again leads to higher local growth rates in autocratic countries compared to democracies (see Figure A-3 in the Appendix).

We run the same estimator for our second dependent variable: spatial economic inequality.[22] Figure 6 shows that FDI projects asymmetrically benefit the lights development of the inner versus the surrounding grid cells. The positive and statistically significantly positive effect implies a growing divergence in terms of economic activity between grids treated by FDI and untreated neighbor grids. We also find statistically significant differences between democratic and autocratic countries, whereas FDI increases regional inequality more in more authoritarian settings (see Figure A-4 in the Appendix).

[21] Some FDI projects are indeed just announcements and it might take some time for them to be fully built and running. The increasing effect of FDI on economic activity over time takes this into account and corresponds nicely with the nature of FDI as a long-term investment.

[22] Unfortunately, given that the refinement procedure is very memory-intensive, we need to rely on 25x25km grid cells for this analysis.

# 5 Conclusion

Foreign direct investments in many non-OECD countries are a growing source of capital and governments are eager to attract multinational enterprises in the hope of creating better economic conditions. However, the debate as to where and how foreign multinationals really contribute to economic prosperity and an equal distribution of economic resources in society is still open. In this article, we argue that the consequences of MNC activity should be heterogeneous within countries and between different political regimes. While FDI induces growth around the site of investment, it contributes to rising inter-regional inequality as growth trajectories of investment areas and places farther away diverge. The growth- and inequality-inducing effects of FDI on the local level are more pronounced in autocracies compared to democracies. We contend that the local growth-effect of FDI results from a combination of increased capital stocks from the multinational enterprise, accompanying public investment and infrastructure development, as well as spillover effects to domestic businesses and the working-age population that occur closely around the sites of investment. At the same time, disproportionate economic growth from FDI in close proximity to project locations increase disparities with those regions that are not attractive for foreign investors.

We find evidence in favor of these hypotheses using geo-located data on FDI, which we match with data on light emissions at night. Doing so allows us to investigate the economic consequences of FDI on a very fine-grained, sub-national level. This approach also enables us to differentiate between the local economic consequences of FDI in autocracies and democracies. By employing a dynamic buffer zone approach, we are able to test the effect of FDI in varying distances to the project location. In addition, we complement our analysis with a difference-in-differences design based on global grid cells. Both approaches support our argument: There is a sizable, positive growth effect in the vicinity of multinationals' sites of investment that decreases in distance to the project location. Because of this spatially concentrated effect on economic

development, FDI also heightens inter-regional inequality. Local economic inequality increases especially in authoritarian regimes.

Our paper thus speaks to the question whether a country's regime type makes a difference for multinational investors. We show that more authoritarian countries, both in terms of their political and legal institutions, fare better when it comes to the *local* growth potential of FDI, but fare worse regarding the FDI-induced polarization of economic activity. Democratic countries, on the other hand, seem to be more successful in generating a more equitable distribution of the benefits of FDI. Our paper further speaks to the general necessity of moving away from national cross-country analyses and calls for more work that focuses on what consequences any form of economic integration has for the local level – on the empirical as well as theoretical level (Bunte et al., 2018; Benshaul-Tolonen et al., 2019; Bluhm et al., 2025). Recent advances in trade theory (Melitz, 2003; Helpman, Melitz, and Yeaple, 2004; Walter, 2010) have already outlined that economic globalization exhibits consequences that are more heterogeneous than previously assumed. We add to that literature by additional highlighting the geographical heterogeneity of international economic integration. One important avenue for future research lies in further dis-aggregating the type of FDI project. We might expect that export-oriented (or vertical) FDI produces economic growth, but market-seeking (or horizontal) FDI leads to economic inequality. Unfortunately, our design cannot differentiate between these dynamics. And a rigorous empirical evaluation of this hypothesis goes well beyond the scope of this paper.[23]

Taken together, our analysis makes clear that taking into account both the geographical dispersion and political institutions is crucial to understand the heterogeneous impact of foreign direct investment on domestic economies in developing countries. Hence, we conclude that the increasing inter-regional polarization from FDI equally warrants a more fine-grained, local response to the distributive effects of globalization. If so desired, policy makers in developing countries need to ensure adequate and targeted compensation for places that cannot

[23] We are very grateful to an anonymous reviewer for making this suggestion.

benefit from the locally restricted gains of international integration. Place-based compensation policies might be a potential solution for addressing increasing inter-regional inequality that might destabilize these countries. Otherwise, the revenge of left-behind places in developing and emerging markets (Rodríguez-Pose, 2018) could potentially lead to social conflict and subsequently endanger the economic catch-up process of many of these countries.

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# Local Economic Consequences of Foreign Direct Investment in Democracies and Autocracies

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## Online Appendix

**Abstract**

Governments in developing and emerging countries aim to attract FDI to generate growth. Yet, empirical studies on the country-level show no clear growth-effect. We argue that FDI induces concentrated benefits on the local level – in close proximity to MNCs – which leads to economic development in that area, but also amplifies inter-regional economic inequality. Both effects should be stronger in autocracies compared to democracies, because autocrats face fewer political constraints to create profitable investment environments. Empirically, we leverage geo-located data on FDI projects from 2003-2018, which we combine with nightlights using two approaches: concentric buffers around project locations and global 10x10km grid cells. Our estimator compares the effect of FDI on growth and inequality between areas that have already received FDI and areas that have not yet received FDI. We find strong evidence for FDI-induced local growth and regional inequality. Both effects are more pronounced in autocracies than democracies.

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FIGURE A-1
Illustration of Buffer Approach (in Nigeria)

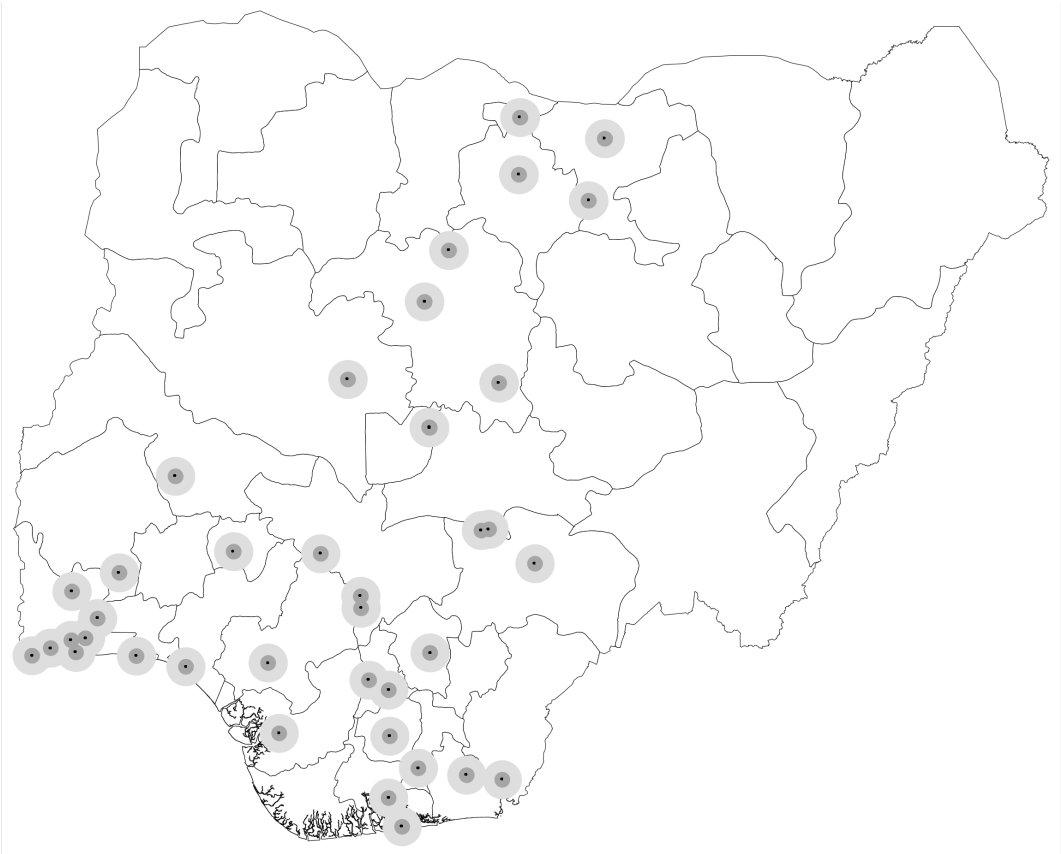


FIGURE A-2
Illustration of Grid Approach

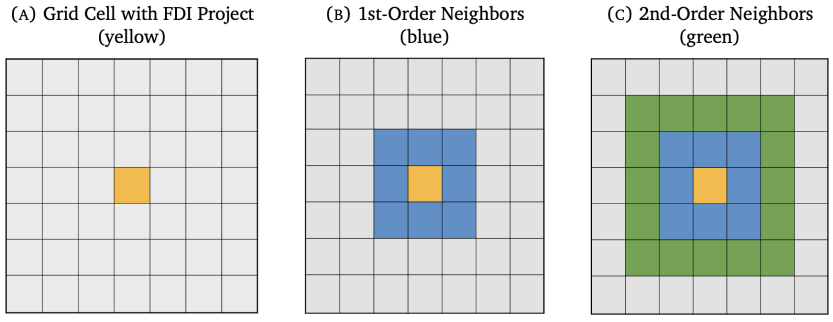
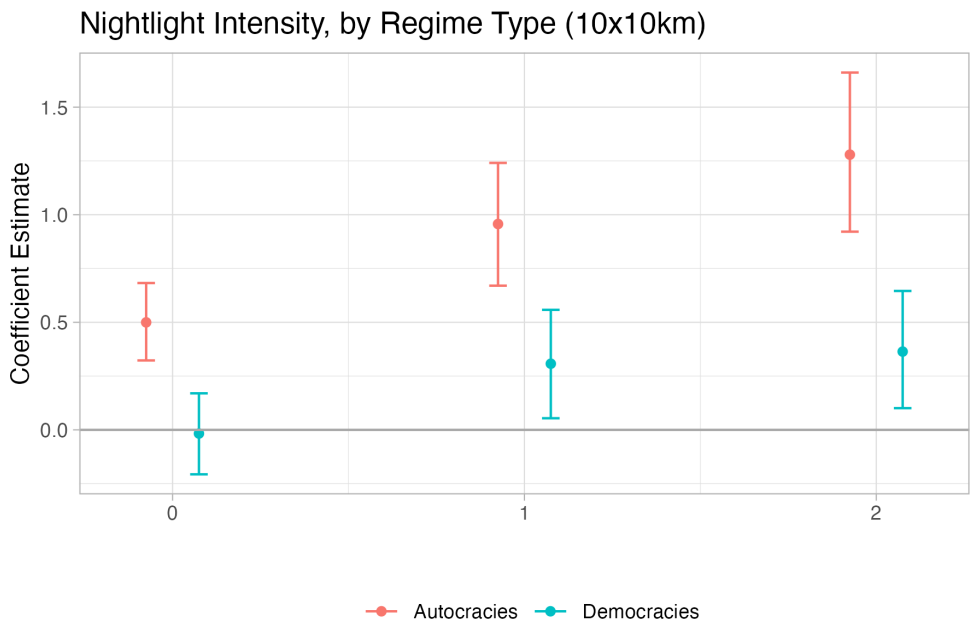
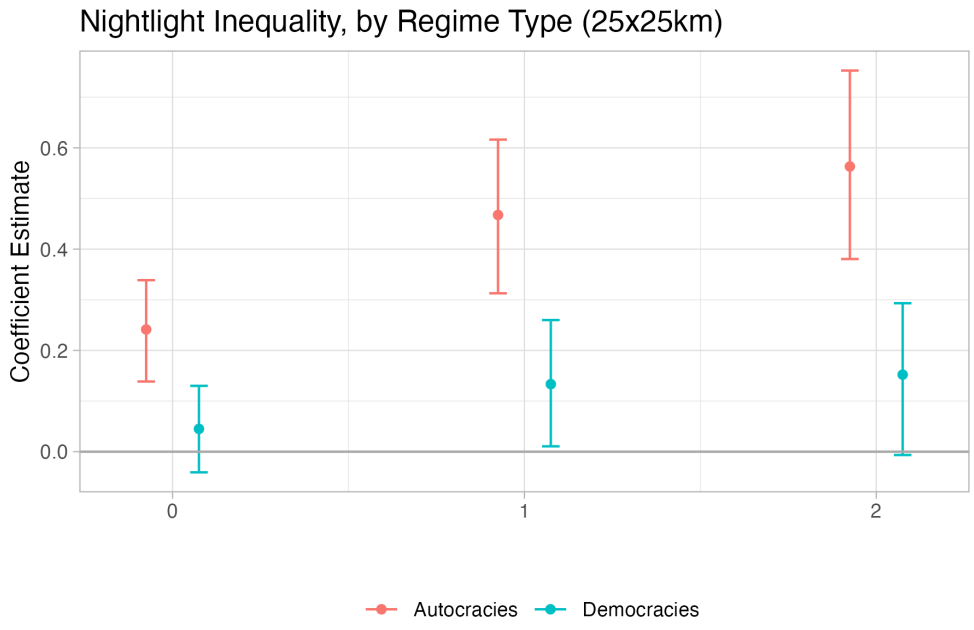


FIGURE A-3
Effect of FDI Projects on Nightlight Intensity – Treatment Matching




*Note:* ATT for 0–2 years after the first FDI project in 10x10km grid cells.

FIGURE A-4
Effect of FDI Projects on Spatial Nightlight Inequality – Treatment Matching




*Note:* ATT for 0–2 years after the first FDI project in 25x25km grid cells.

TABLE A-1
Effect of FDI Projects on Nightlight Intensity – Buffer Approach

| | Nightlight intensity around each FDI project in a radius of... | | | | | |
|---|---|---|---|---|---|---|
| | 10km | 10km | 10km | 10km | 10km | 10km |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| First FDI project | 0.229*** | 0.074*** | | | | |
| | (0.07) | (0.03) | | | | |
| FDI capex, cum (ln) | | | 0.186*** | 0.040*** | | |
| | | | (0.02) | (0.01) | | |
| FDI jobs, cum (ln) | | | | | 0.116*** | 0.028*** |
| | | | | | (0.01) | (0.01) |
| Lagged nightlights | | 0.760*** | | 0.759*** | | 0.759*** |
| | | (0.01) | | (0.01) | | (0.01) |
| Population size | | -0.000** | | -0.000*** | | -0.000*** |
| | | (0.00) | | (0.00) | | (0.00) |
| Constant | 23.811*** | 6.252*** | 23.422*** | 6.233*** | 23.515*** | 6.222*** |
| | (0.05) | (0.14) | (0.06) | (0.14) | (0.06) | (0.14) |
| # of observations | 65790 | 65550 | 65790 | 65550 | 65790 | 65550 |
| # of buffers | 4386 | 4370 | 4386 | 4370 | 4386 | 4370 |
| # of countries | 143 | 140 | 143 | 140 | 143 | 140 |
| Prob >F | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

*Notes:* OLS regression models, buffer-clustered standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1. Two-way fixed effects (unique project location and year) not reported. Independent variables lagged by one year.

TABLE A-2
Effect of FDI Projects on Nightlight Intensity – Grid Approach

| | Nightlight intensity within grid cells the size of... | | | | | |
|---|---|---|---|---|---|---|
| | 10km | 10km | 10km | 10km | 10km | 10km |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| First FDI project | 3.549*** | 1.214*** | | | | |
| | (0.09) | (0.04) | | | | |
| FDI capex, cum (ln) | | | 0.885*** | 0.283*** | | |
| | | | (0.02) | (0.01) | | |
| FDI jobs, cum (ln) | | | | | 0.689*** | 0.225*** |
| | | | | | (0.02) | (0.01) |
| Lagged nightlights | | 0.619*** | | 0.619*** | | 0.619*** |
| | | (0.00) | | (0.00) | | (0.00) |
| Population size | | 0.000*** | | 0.000*** | | 0.000*** |
| | | (0.00) | | (0.00) | | (0.00) |
| Constant | 1.851*** | 0.675*** | 1.849*** | 0.679*** | 1.849*** | 0.678*** |
| | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) |
| # of observations | 14015943 | 13551725 | 14015943 | 13551725 | 14015943 | 13551725 |
| # of grids | 935618 | 903455 | 935618 | 903455 | 935618 | 903455 |
| # of countries | 156 | 153 | 156 | 153 | 156 | 153 |
| Prob >F | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

*Notes:* OLS regression models, grid-clustered standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1. Two-way fixed effects (grid cells and year) not reported. Independent variables lagged by one year.

TABLE A-3
Effect of FDI Projects on Nightlight Intensity – Treated Grids and Neighbors

| | Nightlight intensity within grid cells the size of... | | | | | |
|---|---|---|---|---|---|---|
| | 10km | 10km | 10km | 10km | 10km | 10km |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| First FDI project | 1.362*** | 0.350*** | | | | |
| | (0.09) | (0.03) | | | | |
| FDI capex, cum (ln) | | | 0.365*** | 0.086*** | | |
| | | | (0.02) | (0.01) | | |
| FDI jobs, cum (ln) | | | | | 0.279*** | 0.069*** |
| | | | | | (0.02) | (0.01) |
| Lagged nightlights | | 0.739*** | | 0.739*** | | 0.739*** |
| | | (0.00) | | (0.00) | | (0.00) |
| Population size | | 0.000 | | 0.000 | | 0.000 |
| | | (0.00) | | (0.00) | | (0.00) |
| Constant | 13.960*** | 3.852*** | 13.931*** | 3.868*** | 13.931*** | 3.862*** |
| | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) | (0.04) |
| # of observations | 428676 | 408570 | 428676 | 408570 | 428676 | 408570 |
| # of grids | 28617 | 27238 | 28617 | 27238 | 28617 | 27238 |
| # of countries | 156 | 153 | 156 | 153 | 156 | 153 |
| Prob >F | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

*Notes:* OLS regression models, grid-clustered standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1. Two-way fixed effects (grid cells and year) not reported. Independent variables lagged by one year.

TABLE A-4
Effect of FDI Projects on Spatial Nightlight Inequality – Buffer Approach

| | Difference between nightlights around each FDI project in a radius of... | | | | | |
|---|---|---|---|---|---|---|
| | 10-25km | 10-25km | 10-25km | 10-25km | 10-25km | 10-25km |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| First FDI project | 0.398*** | 0.272*** | | | | |
| | (0.06) | (0.04) | | | | |
| FDI capex, cum (ln) | | | 0.120*** | 0.059*** | | |
| | | | (0.01) | (0.01) | | |
| FDI jobs, cum (ln) | | | | | 0.085*** | 0.044*** |
| | | | | | (0.01) | (0.01) |
| Lagged nightlights | | 0.367*** | | 0.365*** | | 0.366*** |
| | | (0.01) | | (0.01) | | (0.01) |
| Population size | | -0.000*** | | -0.000*** | | -0.000*** |
| | | (0.00) | | (0.00) | | (0.00) |
| Constant | 10.707*** | 4.421*** | 10.618*** | 4.504*** | 10.640*** | 4.479*** |
| | (0.04) | (0.30) | (0.04) | (0.30) | (0.04) | (0.30) |
| # of observations | 65745 | 65535 | 65745 | 65535 | 65745 | 65535 |
| # of buffers | 4383 | 4369 | 4383 | 4369 | 4383 | 4369 |
| # of countries | 143 | 140 | 143 | 140 | 143 | 140 |
| Prob >F | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

*Notes:* OLS regression models, buffer-clustered standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1. Two-way fixed effects (unique project location and year) not reported. Independent variables lagged by one year.

TABLE A-5
Effect of FDI Projects on Spatial Nightlight Inequality – Grid Approach

| | Difference in nightlight intensity between neighboring grid cells the size of... | | | | | |
|---|---|---|---|---|---|---|
| | 10km | 10km | 10km | 10km | 10km | 10km |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| First FDI project | 1.251*** | 0.945*** | | | | |
| | (0.06) | (0.06) | | | | |
| FDI capex, cum (ln) | | | 0.252*** | 0.187*** | | |
| | | | (0.02) | (0.01) | | |
| FDI jobs, cum (ln) | | | | | 0.206*** | 0.152*** |
| | | | | | (0.01) | (0.01) |
| Lagged nightlights | | 0.127*** | | 0.127*** | | 0.127*** |
| | | (0.00) | | (0.00) | | (0.00) |
| Population size | | -0.000*** | | -0.000*** | | -0.000*** |
| | | (0.00) | | (0.00) | | (0.00) |
| Constant | 0.003*** | -0.180*** | 0.004*** | -0.178*** | 0.004*** | -0.179*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| # of observations | 14012472 | 13551491 | 14012472 | 13551491 | 14012472 | 13551491 |
| # of grids | 935379 | 903443 | 935379 | 903443 | 935379 | 903443 |
| # of countries | 156 | 153 | 156 | 153 | 156 | 153 |
| Prob >F | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

*Notes:* OLS regression models, grid-clustered standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1. Two-way fixed effects (grid cells and year) not reported. Independent variables lagged by one year.

TABLE A-6
Effect of FDI Projects on Spatial Nightlight Inequality – Treated Grids and Neighbors

| | Difference in nightlight intensity between neighboring grid cells the size of... | | | | | |
|---|---|---|---|---|---|---|
| | 10km | 10km | 10km | 10km | 10km | 10km |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| First FDI project | 1.079*** | 0.757*** | | | | |
| | (0.06) | (0.05) | | | | |
| FDI capex, cum (ln) | | | 0.210*** | 0.133*** | | |
| | | | (0.02) | (0.01) | | |
| FDI jobs, cum (ln) | | | | | 0.174*** | 0.113*** |
| | | | | | (0.01) | (0.01) |
| Lagged nightlights | | 0.306*** | | 0.306*** | | 0.306*** |
| | | (0.00) | | (0.00) | | (0.00) |
| Population size | | -0.000*** | | -0.000*** | | -0.000*** |
| | | (0.00) | | (0.00) | | (0.00) |
| Constant | 1.395*** | -2.254*** | 1.405*** | -2.228*** | 1.397*** | -2.235*** |
| | (0.01) | (0.06) | (0.01) | (0.06) | (0.01) | (0.06) |
| # of observations | 428661 | 408570 | 428661 | 408570 | 428661 | 408570 |
| # of grids | 28616 | 27238 | 28616 | 27238 | 28616 | 27238 |
| # of countries | 156 | 153 | 156 | 153 | 156 | 153 |
| Prob >F | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

*Notes:* OLS regression models, grid-clustered standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1. Two-way fixed effects (grid cells and year) not reported. Independent variables lagged by one year.