3

Regional inequality and special economic zones

This chapter examines regional inequalities in EBRD economies and the role played by place-based industrial policies – particularly special economic zones (SEZs) – in reducing those disparities. The analysis shows that SEZs are able to stimulate local economic growth, but their success is heavily influenced by regional factors such as the quality of infrastructure, the availability of human capital and the effectiveness of governance. Predicting the success of individual SEZs is a challenge, which highlights the important roles that local conditions and effective SEZ management play in determining outcomes. A case study looking at technology development zones (TDZs) in Türkiye shows how exactly such zones support the growth and performance of firms.


H

Introduction

Place-based industrial policies are strategic interventions by governments aimed at promoting economic development and industrial growth in specific geographical areas – particularly those that are economically underdeveloped or underutilised.[1] Examples include initiatives fostering the development of industry clusters (such as the biotech cluster in Cambridge, England), which seek to use such clusters to drive innovation, or the establishment of regional development funds (such as the EU's European Regional Development Fund), which provide financial support to less-developed areas in order to reduce disparities. Governments can also establish SEZs (such as the Shenzhen SEZ in China or the Aegean Free Trade Zone in Izmir), using special regulatory regimes to attract FDI, boost exports, generate employment opportunities and address persistent regional income inequality within their economies.

Such persistent regional inequalities can be seen in both official data and night-time light (NTL) data, with large – and growing – differences between rural and urban areas in terms of economic opportunities. Coastal areas and areas bordering economies with higher income per capita also tend to be richer. Analysis reveals that the average rate of intra-country convergence across the EBRD regions was approximately 1 per cent a year over the period 2010-19. At that rate, it will take about 70 years to halve the existing regional income gaps within EBRD economies.

SEZs have become increasingly important for economic development worldwide. Initially adopted on a limited scale in the 1970s and 1980s, their numbers then increased significantly in the late 1990s and early 2000s. Another wave of SEZs have been established more recently, particularly in emerging markets and developing economies. It is estimated that more than 5,400 of these zones are in existence globally, with more under development or at the planning stage.[2] The number of SEZs in the EBRD regions has risen from 198 in 1990 to 1,114 in 2020, with SEZs increasingly being seen as a way to catalyse economic transformation and structural change.

Analysis of NTL density suggests that the establishment of SEZs is associated with an increase in economic activity over time within an immediate 20 km radius. Outcomes depend not only on the zone's competitiveness in terms of wage costs, but also on the skill base, the infrastructure and the quality of local governance. In particular, proximity to a port, a higher percentage of workers with a tertiary education and the maintenance of law and order are all associated with stronger economic performance in the area surrounding an SEZ. In Türkiye, for example, firms in districts where TDZs have been established have seen stronger increases in employment, exports, investment, sales, profits and total factor productivity.

This chapter begins by documenting income inequality and urban-rural divides at the level of individual economies in the EBRD regions, providing an overview of regional economic disparities. It then turns its attention to the location and effectiveness of SEZs in EBRD economies, investigating their impact and the factors that drive their success or failure. Building on these insights, the chapter then investigates the impact that TDZs have had on firms' performance in Türkiye.

Persistent regional inequalities

Trends in terms of the evolution of income inequality in the EBRD regions have been mixed (see Chart 3.1, which plots the Gini index – a measure of income inequality where 0 indicates perfect equality and 1 indicates perfect inequality). Between 2000-09 and 2014-22, Bulgaria, Lithuania, Romania and the West Bank and Gaza experienced sizeable increases in income inequality (with their Gini indices rising by at least 0.03 point). Conversely, income inequality declined substantially in Armenia, Georgia, Kazakhstan, Moldova, North Macedonia, Serbia and Tunisia over the same period, with their Gini indices falling by 0.05 point or more.

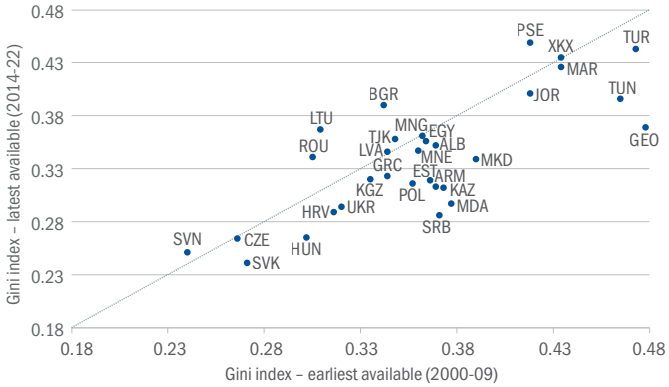
While many economies in the EBRD regions have seen income inequality decline slightly (with those economies sitting below the 45-degree line in Chart 3.1), such declines may mask growing economic disparities within countries at regional level. In order to illustrate patterns of spatial inequality between regions, this chapter uses subnational data on gross regional product (GRP) per capita and NTL density.

[1] See Barca et al. (2012).
[2] See UNCTAD (2019).

Significant income disparities persist both within and across economies in the EBRD regions (see Chart 3.2). There is a clear east-west divide, with central European countries and Baltic states generally achieving higher levels of GRP per capita than Central Asia and parts of eastern Europe. Within economies, there are clear regional disparities in countries such as Poland (where higher incomes can be seen in the west) and Türkiye (where incomes are higher in coastal regions). More generally, coastal regions and areas adjacent to more developed economies tend to have higher GRP per capita. Capital cities and major urban centres also tend to stand out as high-income areas, highlighting pronounced urban-rural divides.

INEQUALITY HAS DECLINED THE MOST in Armenia, Georgia, Kazakhstan, Moldova, North Macedonia, Serbia and Tunisia

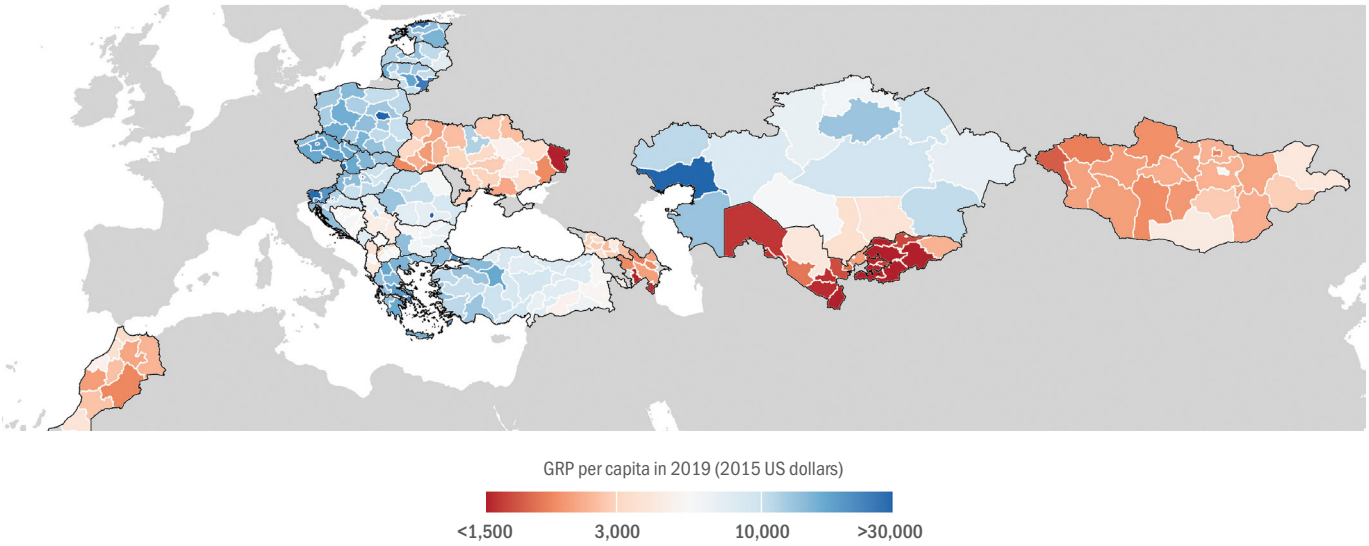
CHART 3.1. Income inequality has declined modestly in many economies in the EBRD regions since the 2000s



Source: Companion dataset (28 November 2023 edition) accompanying the UNU-WIDER World Income Inequality Database (WIID) and authors' calculations.

Note: Data are not available for Azerbaijan, Bosnia and Herzegovina, Lebanon, Turkmenistan or Uzbekistan.

CHART 3.2. Major urban centres tend to stand out as high-income areas, highlighting the existence of urban-rural divides



Source: ARDECO database, Wenz et al. (2023), Kazakhstan's Bureau of National Statistics, GISCO, GADM and authors' calculations.

Note: This chart shows GRP per capita at the level of NUTS-3 regions for Estonia, Latvia, Lithuania and North Macedonia, at the level of NUTS-2 regions for other EBRD economies in the EU, Albania, Serbia and Türkiye, and at the level of GADM-1 regions for all other EBRD economies except Montenegro. There is a single observation for Montenegro at national level. Data are not available for Armenia, Egypt, Jordan, Kosovo, Lebanon, Moldova, Tunisia, Turkmenistan or the West Bank and Gaza, or for the regions of Abkhazia, Absheron, Crimea or Kalbajar-Lachin.

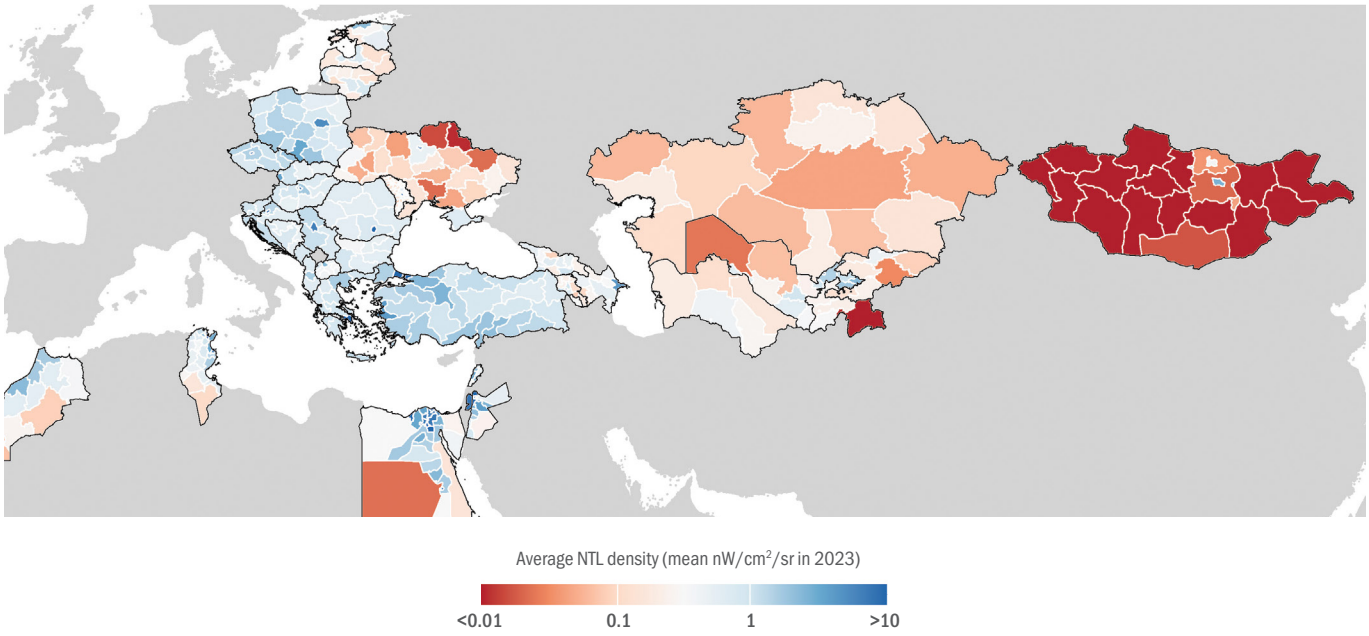
NTL density as a proxy for local economic activity

Given the limited availability of granular data on value added by region, this chapter also uses NTL density as a complementary measure of economic activity. NTL data quantify the average brightness of artificial light emitted at night as captured by satellite imagery and provide a reliable approximation of economic activity, allowing granular spatial analysis of economic disparities. Greater NTL density is, in particular, associated with higher levels of economic activity, urbanisation and development. NTL data are updated frequently and cover remote areas where traditional data collection can be challenging and infrequent.[3] At the same time, however, NTL data may overestimate economic activity in densely populated urban areas, while potentially underestimating activity in rural regions,[4] and the results of such analysis need to be considered in conjunction with other economic indicators.

The patterns seen in NTL data for 2023 tend to mirror those obtained using GRP per capita in 2019 (see Chart 3.3). Similar east-west splits, intra-country disparities and urban-rural divides can be observed. At the same time, however, the NTL data show more pronounced contrasts in populated areas, potentially overestimating economic activity. Conversely, some regions in Central Asia and eastern Europe have low NTL levels relative to their GRP per capita, possibly as a result of weaker light emissions in rural or less-developed areas.

Persistent spatial disparities within countries are a source of concern, as they can lead to economic inefficiencies, social tensions and political instability.[5] Limiting regional inequalities and urban-rural divides is essential in order to ensure balanced economic development and social cohesion and prevent the concentration of poverty and unemployment. This helps to ensure a fairer distribution of resources and opportunities across different areas of a country.[6] Moreover, excessive concentration of economic activity in a few urban centres can result in congestion, environmental degradation and a reduced quality of life.[7]

CHART 3.3. Major urban areas tend to be wealthier



Source: Elvidge et al. (2017), VIIRS NTL database, GISCO, GADM and authors' calculations.

Note: This map shows average NTL density (measured as mean nW/cm/sr) across 1 km x 1 km grid cells within subnational regions in 2023. Data are at the level of NUTS-3 regions for Estonia, Latvia, Lithuania and North Macedonia, at the level of NUTS-2 regions for other EBRD economies in the EU, Albania, Serbia and Türkiye, and at the level of GADM-1 regions for all other EBRD economies except Montenegro. There is a single observation for Montenegro at national level.

[3] See Elvidge et al. (2014) and Chen and Nordhaus (2011).
[4] See Mellander et al. (2015) and Jean et al. (2016).
[5] See World Bank (2009).
[6] See UN DESA (2024).
[7] See OECD (2018).

Intra-country convergence

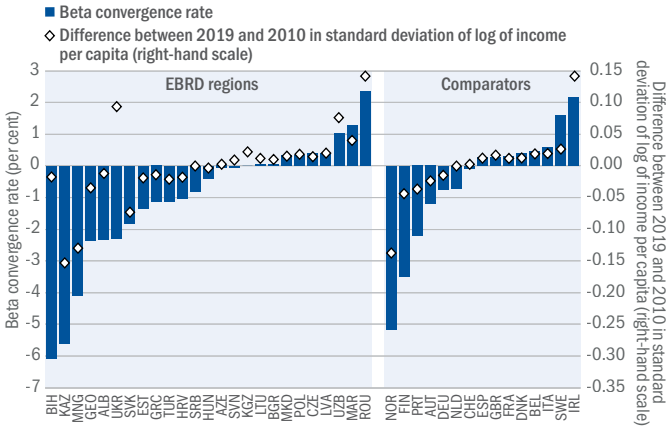
Economic convergence occurs when poorer economies (or poorer regions within economies) catch up with richer ones in terms of income levels.[8] Analysis of convergence typically distinguishes between beta and sigma convergence. In this chapter, beta convergence measures the extent to which regions with lower initial income levels experience stronger subsequent growth rates and thus catch up with higher-income peers. Beta convergence coefficients are derived from country-specific analysis regressing growth in regional income per capita on the initial level of regional income per capita. Negative values indicate stronger growth in poorer regions, with a value of -0.02 implying that the income gap between regions is narrowing by approximately 2 per cent each year. Conversely, a positive value implies that richer regions are growing faster, and thus the income gap between regions is widening. Sigma convergence, on the other hand, assesses the extent to which the dispersion of the distribution of income levels across regions decreases over time, with negative values indicating a decline in cross-regional inequality (see also Box 3.1).

Analysis reveals that the average rate of intra-country convergence across the EBRD regions was approximately 1 per cent a year over the period 2010-19 (see Chart 3.4). At that rate, it will take about 70 years to halve the existing regional income gaps within EBRD economies. While that is lower than the cross-country convergence rate typically reported in economic literature (which is close to 2 per cent),[9] it is above the average intra-country convergence rate for advanced European economies, which stands at 0.5 per cent.

Poorer regions are catching up with richer ones in approximately two-thirds of all economies in the EBRD regions, with the highest levels of convergence being seen in Bosnia and Herzegovina, Kazakhstan and Mongolia (where convergence rates are estimated to stand at around 5 per cent a year; see also Box 3.2 for a further discussion on Kazakhstan). In economies such as Morocco and Romania, on the other hand, poorer regions have been struggling to catch up with their wealthier counterparts.

Even in the presence of beta convergence, sigma convergence is still not guaranteed if economic shocks have a disproportionate effect on some regions.[10] As a result, the evolution of cross-regional inequality can vary significantly across economies with similar average catch-up rates (see, for instance, Albania and the Slovak Republic in Chart 3.4).

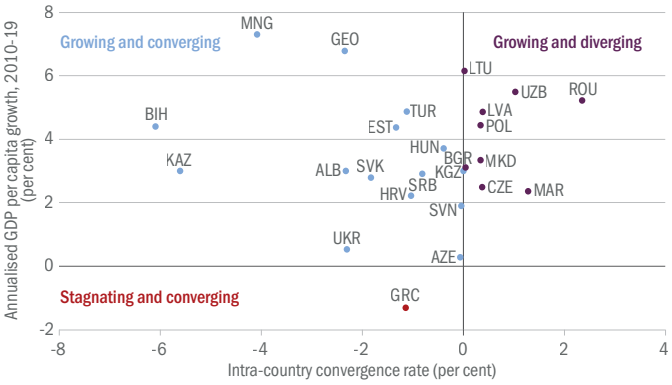
CHART 3.4. Regional income gaps have narrowed in many economies in the EBRD regions since 2010, albeit at a slow pace



Source: ARDECO database, Wenz et al. (2023), Kazakhstan's Bureau of National Statistics, World Bank WDIs and authors' calculations.

Note: Analysis is based on NUTS-3 regions for EBRD economies in the EU, Albania, North Macedonia, Serbia and Türkiye, and GADM-1 regions for all other EBRD economies. Data for Morocco relate to the period 2013-19; data for all other economies relate to the period 2010-19. Negative rates of beta convergence indicate that poorer regions have grown faster than richer ones (see Box 3.1).

CHART 3.5. Regional incomes have converged in some fast-growing economies, but diverged in others



Source: ARDECO database, Wenz et al. (2023), Kazakhstan's Bureau of National Statistics, World Bank WDIs and authors' calculations.

Note: Analysis is based on NUTS-3 regions for EBRD economies in the EU, Albania, North Macedonia, Serbia and Türkiye, and GADM-1 regions for all other EBRD economies. Data for Morocco relate to the period 2013-19; data for all other economies relate to the period 2010-19. The intra-country convergence rate measures beta convergence, indicating whether poorer regions within a country have grown faster than richer ones (see Box 3.1).

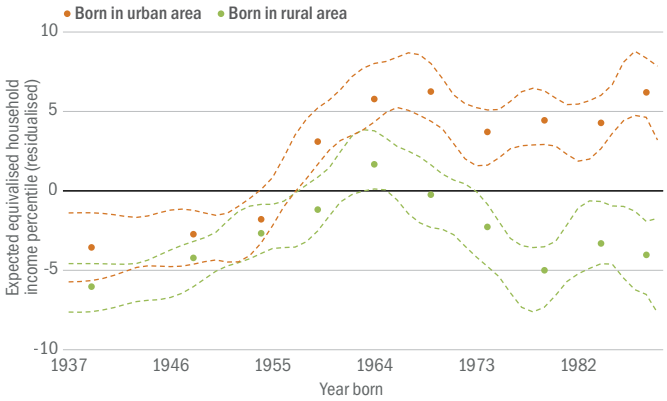
[8] See Barro and Sala-i-Martin (1992).
[9] See Barro (2015).
[10] See Barro and Sala-i-Martin (1992).

Over the period 2010-19, some economies experienced relatively strong growth in average income and fast cross-regional convergence (see, for example, Georgia and Mongolia in the top-left corner of Chart 3.5). In other economies, however, strong growth was not accompanied by convergence. For instance, no convergence was observed in Lithuania, even though its five poorest counties averaged annual GRP per capita growth of 5.3 per cent between 2010 and 2019 – far above the rate achieved in the five Croatian counties with the lowest incomes (3.2 per cent), where convergence was observed but average growth was modest. This range of experiences underscores the importance of looking at convergence in the context of overall growth to obtain a more comprehensive picture of regional development.

Persistent urban-rural disparities

Urban-rural disparities offer another important perspective on intra-economy inequality. These can be seen in the fact that individuals born in rural areas are less able to successfully access economic opportunities. Economic research has established the importance of "place effects", whereby the characteristics of a person's birthplace and childhood environment can have a long-lasting impact on their future economic prospects.[11] The following two-step analysis uses data from the third and fourth rounds of the Life in Transition Survey (LiTS III and LiTS IV) to provide insight into the question of how a person's place of birth (urban or rural) influences their economic outcomes in adulthood.[12] First, in order to isolate the influence of people's birthplace, the analysis regresses household income percentiles in adulthood on country-year fixed effects capturing circumstances that apply to all residents, as well as individual-specific factors that are predetermined at birth (such as gender and parents' level of education), and retains the residuals from that regression. Second, a statistical method is used to see how the average remaining variation in household income percentiles differs across birth cohorts, looking separately at individuals born in urban and rural areas. The difference in the remaining unexplained variation for a given birth cohort shows how much higher the income ranking of an urban-born individual is expected to be, relative to an individual born in a rural area in the same year, taking into account other factors (see Box 3.3 for further details of the methodology).

CHART 3.6. Among younger cohorts, individuals born in urban areas tend, on average, to have significantly higher incomes in adulthood than those born in rural areas



Source: LiTS III, LiTS IV and authors' calculations.

Note: This chart presents a binned scatter plot of the expected residualised household income percentile (after accounting for predetermined factors; see Box 3.3 for details). The analysis only covers individuals who were born between 1930 and 1990. The dotted lines indicate 95 per cent confidence intervals.

The results of this analysis show that the urban-rural income gap has become more pronounced among younger generations (see Chart 3.6). While there is no statistically significant income gap for people born before 1960, the gap widens substantially for those born in later years. For example, individuals born in a rural area after 1980 are, on average, about 9 percentiles lower in the income distribution than their peers born in an urban area in the same year. Complementary evidence from the Life in Transition Survey shows that these urban-rural disparities at birth can explain a sizeable percentage of total observed income inequality in EBRD economies.[13] They can also contribute to the intergenerational transmission of economic disadvantage, deepening and reinforcing spatial inequalities over time.

Individuals born in a rural area after 1980 are, on average, about

9 PERCENTILES LOWER

in the income distribution than their urban-born peers

[11] See Chyn and Katz (2021) for a review.
[12] See Kanbur and Venables (2005) and Young (2013).
[13] See EBRD (2024).

Regional disparities: SEZs to the rescue?

SEZs are often established with a view to addressing regional disparities, mitigating urban-rural divides and promoting economic development in specific regions.[14] They often target the cost effective provision of industrial infrastructure in a particular area, seeking to attract international investors. Other SEZs leverage local endowments of natural resources or the potential for innovation. Their legal frameworks often offer benefits such as exemption from customs duties and taxes and simplified regulations. In this respect, SEZs often serve as a starting point for nationwide reforms and help to sustain improvements in investment climates, particularly in economies with weaker governance where it may be easier to establish simplified regulations governing a specific area.

The popularity of SEZs as an industrial policy has increased dramatically across the EBRD regions, with the number of SEZs in EBRD economies rising from 198 in 1990 to 1,114 in 2020 (see Chart 3.7). The analysis in this chapter draws on a comprehensive new dataset on SEZs in the EBRD regions that contains detailed information on each SEZ's name, geo-location, year of announcement, year of establishment, size and purpose, with information taken from government websites, international reports and various other sources.

The number of SEZs in the EBRD regions has increased dramatically, rising from

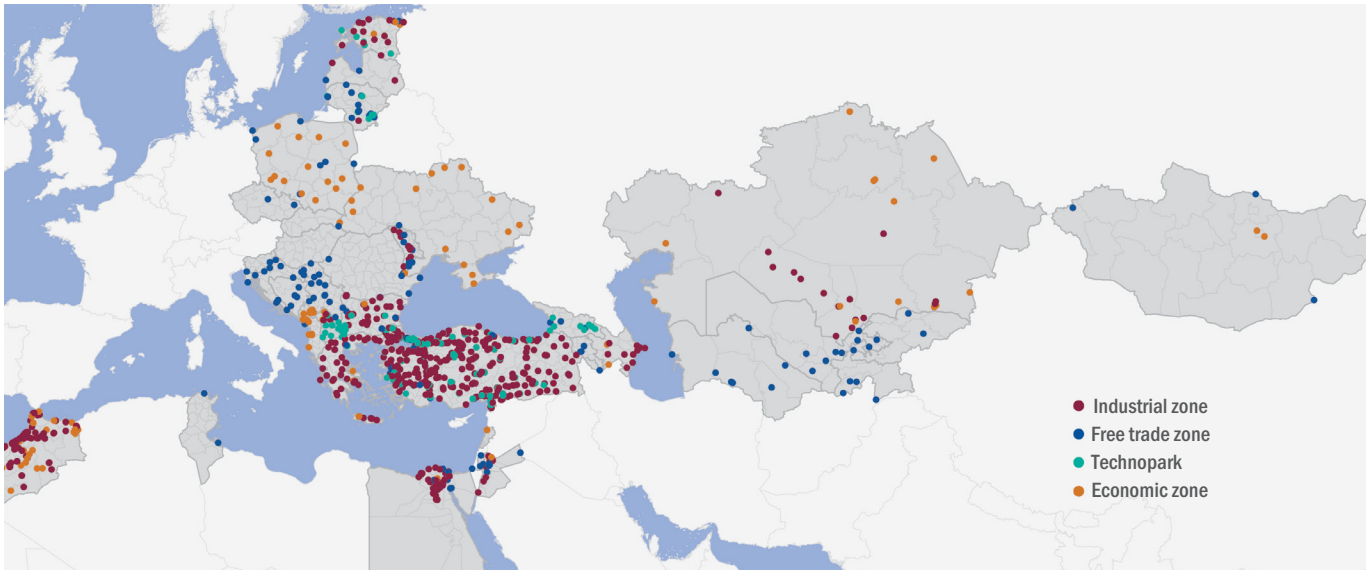
198

in 1990 to

1,114

in 2020

CHART 3.7. SEZs are becoming increasingly popular across the EBRD regions

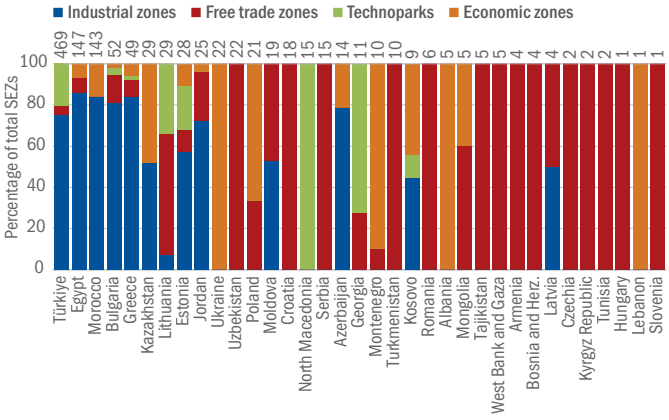


Source: EBRD database of SEZs, GADM 3.6 and authors' calculations.

Note: This map indicates the locations of various types of SEZ in the EBRD regions.

[14] See Frick and Rodríguez-Pose (2018) and UNCTAD (2019).

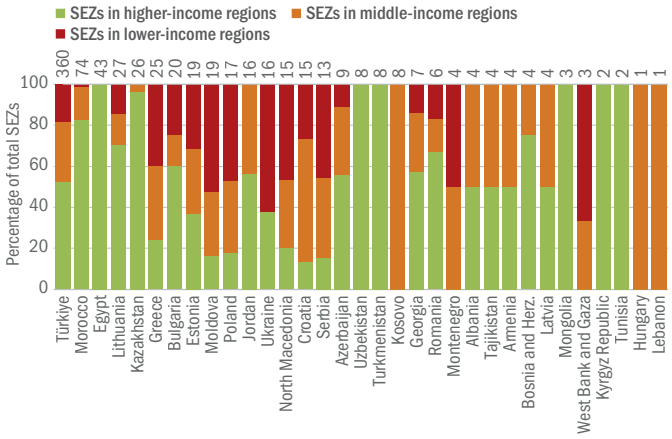
CHART 3.8. EBRD economies vary significantly in their use of SEZs



Source: EBRD database of SEZs and authors' calculations.

Note: The figure at the top of each bar indicates the total number of SEZs in the relevant economy. There are no SEZs in the Slovak Republic. Separate subzones that are managed by a single body are counted as one SEZ. Zones that span entire regions or countries are not included.

CHART 3.9. A substantial proportion of the SEZs in the EBRD regions are in higher-income regions



Source: EBRD database of SEZs, Li et al. (2020) and authors' calculations.

Note: This chart indicates the distribution of SEZs across regions in three broad income categories, which are based on the three terciles of the distribution of NTL density. The figure at the top of each bar indicates the number of SEZs that were classified for this purpose in the relevant economy, with some SEZs being omitted owing to a lack of available data. Where an SEZ comprises a number of subzones, the income category selected is the one that corresponds to the largest number of subzones.

Türkiye has the largest number of SEZs (**469**), followed by Egypt (**147**) and Morocco (**143**)

There are four main types of SEZ, each pursuing different economic objectives. Economic zones target the creation of specific ecosystems in support of comprehensive regional development; industrial zones leverage economies of scale and strategic locations to enhance global competitiveness in manufacturing sectors;[15] technoparks foster innovation and support high-tech industries, often in collaboration with academic institutions;[16] and free trade zones facilitate international trade, export-oriented growth and integration into global value chains, often by offering duty-free environments.[17] The choice of SEZ type will depend on factors such as a country's development priorities, endowments and infrastructure.

Industrial zones are the most common type of SEZ in the EBRD regions, with large numbers of them in eastern Europe and Türkiye (see Charts 3.7 and 3.8). There are also significant numbers of free trade zones, particularly in Central Asia and eastern Europe. Technoparks and economic zones are less common, but have been established in several countries. Türkiye stands out as having the highest number of SEZs (469), with a diverse range of zone types, including technoparks.

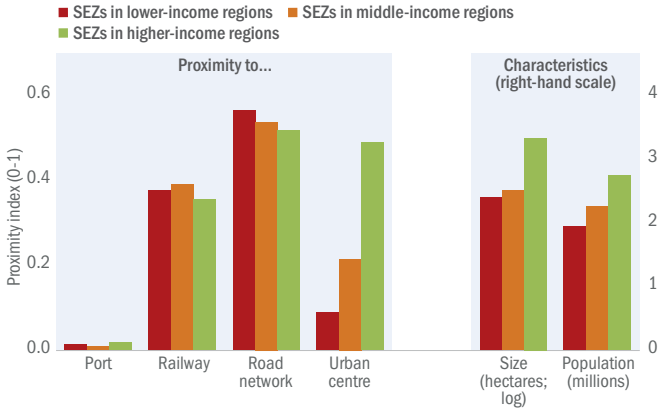
Insights into SEZ rollout strategies and regional characteristics

SEZs can be found in regions with different income levels (see Chart 3.9). While some target lower-income and less-populated areas in order to address regional disparities, others are placed in higher-income regions to leverage existing endowments of human capital or natural resources. For instance, economies such as Poland and Serbia tend to focus largely on lower-income areas with a view to reducing regional disparities, while others (such as Egypt, Kazakhstan and Morocco) put most of their SEZs in more developed regions. In the analysis in this section, "lower-income regions" are defined as areas in the bottom tercile of the distribution of NTL density within the relevant economy, "middle-income regions" fall within the middle tercile and "higher-income regions" are in the top tercile. For each SEZ, NTL density is measured for all areas within a 20 km radius of the centre of the zone in the year prior to its establishment.

SEZs in higher-income regions are generally larger and located in more populous areas closer to urban centres (see Chart 3.10). However, SEZs in all three income categories enjoy similar levels of access to ports, railways and road networks, suggesting consistent infrastructure provision.

[15] See Farole and Akinci (2011).
[16] See OECD (2019).
[17] See World Bank (2017).

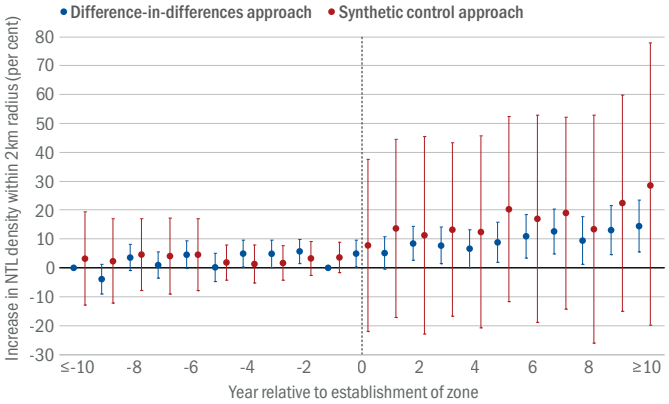
CHART 3.10. SEZs in lower- and higher-income regions enjoy similar levels of access to ports, railways and road networks



Source: EBRD database of SEZs, Li et al. (2020), Schiavina et al. (2023), Wenz et al. (2023), US National Geospatial Intelligence Agency's Vector Map Level 0 (VMAP0) dataset and World Port Index (2010), Global Roads Open Access Dataset (gROADS), version 1 (produced by Information Technology Outreach Services (ITOS) at University of Georgia), and authors' calculations.

Note: The proximity index is calculated as the normalised inverse of distance. A proximity of 1 means extremely close and a proximity of 0 means extremely far. The bars show simple average values for the SEZs in each of the three income categories.

CHART 3.11. SEZs tend, on average, to stimulate local economic activity



Source: EBRD database of SEZs, Li et al. (2020) and authors' calculations.

Note: The whiskers indicate 95 per cent confidence intervals.

Evaluating the impact that SEZs have on local economic development

How successful SEZs have been in promoting local economic development has been a subject of considerable debate. Previous studies of SEZs have largely focused on case studies or produced conflicting results, with no comprehensive cross-country evidence.[18] Some studies have found significant positive effects. For example, the establishment of SEZ programmes in China significantly increased foreign investment in target areas without displacing domestic investment, with a positive impact on capital investment, employment, output, productivity, wages, secondary school enrolment rates and the number of firms in designated areas, with new firms driving these effects more than existing ones.[19] Other studies point to uncertain outcomes for SEZs, with success dependent on the design of the zone, the local context, the quality of governance and how well the zone is integrated into the broader economy.[20]

This section reports on comprehensive analysis of SEZs' performance across the EBRD regions using difference-in-differences and synthetic control approaches. The first approach compares the evolution of NTL density around SEZs following their establishment with areas where a future SEZ is planned, but not yet in operation. The second approach, in contrast, seeks to estimate what the NTL density would have been in the absence of an SEZ on the basis of the evolution of NTL density in a number of areas with similar characteristics (see Box 3.4 for details).[21] As part of the synthetic control analysis, evenly spaced grid points were established with 0.05-degree gaps, and points that were within 20 km of any zone were removed. For each zone, the 100 most similar points were identified on the basis of night-time lights within 20 km, population within 20 km, the distance to a railway, the distance to a port, the distance to a main road and road density.

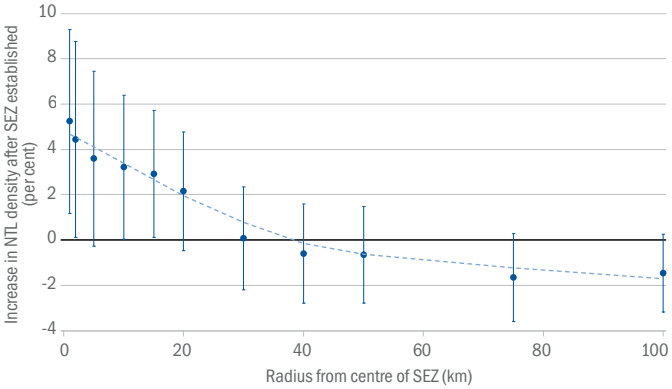
Both approaches point to an increase in local economic activity following the establishment of an SEZ, with effects building gradually over time (see Chart 3.11, which focuses on NTL density within a 2 km radius of the centre of the zone). Given that the median size of an SEZ is just 0.2 km^2 and even the 75th percentile is only 1 km^2, the 2 km radius (which results in a total area of 12.6 km^2) extends well beyond the zone itself. The impact that SEZs have on those areas probably reflects increased demand for services owing to business operations within the SEZs, as well as improved infrastructure. Importantly, the estimates do not reveal any pre-existing trends in terms of NTL density prior to the establishment of SEZs.

[18] See Aggarwal (2012), Frick et al. (2019) and Zeng (2021).
[19] See Wang (2013) and Lu et al. (2019, 2023).
[20] See World Bank (2017), UNCTAD (2019), Duranton and Venables (2018) and Alkon (2018).
[21] See Arkhangelsky et al. (2021). The difference-in-differences approach may be biased when SEZs are established at different times and the effects of SEZs vary across locations. The synthetic control method is robust in this respect.

It is estimated that the positive effects of SEZs increase over time and continue to be observed more than 10 years after their creation. Over the 10-year period following the establishment of a zone, difference-in-differences estimations – which are more conservative in terms of the size of the effect – indicate that local NTL density around the SEZ will, on average, be approximately 14 per cent higher than would otherwise have been expected (see also Box 3.5 on air pollution and Box 3.6 on the ways in which place-based industrial policies affect credit markets). The widening of the confidence intervals over time – particularly for the synthetic control method – point to increasing variability in the effects of SEZs as time passes.

The positive impact that an SEZ is estimated to have on local economic activity diminishes rapidly as the distance from the centre of the SEZ increases (see Chart 3.12). It is statistically insignificant for a radius of around 20 km and economically negligible for a radius of 30 km. This weakening of the economic spillover effects of an SEZ is consistent with the findings of previous research.[22]

CHART 3.12. The impact that an SEZ has on economic activity decreases with distance



Source: EBRD database of SEZs, Li et al. (2020) and authors' calculations.

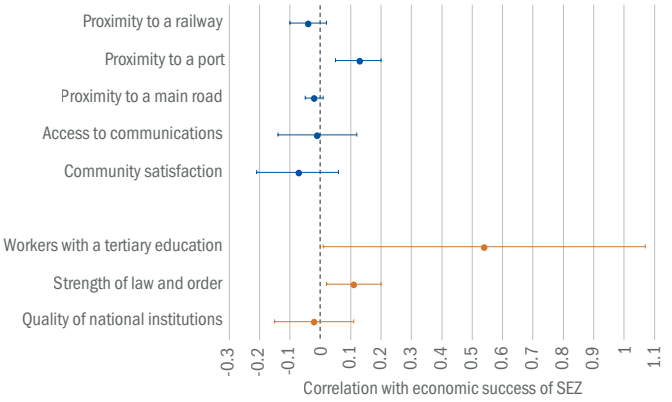
Note: The whiskers indicate 95 per cent confidence intervals.

What determines the success of SEZs?

This subsection looks at why some SEZs have more success than others, with a zone being deemed to be successful if NTL density within a 5 km radius grows faster over the 10-year period following the establishment of the zone than the average for that economy as a whole. On that basis, roughly 40 per cent of SEZs can be regarded as successful, with the effectiveness of zones varying significantly within a single economy. A horse race regression is used here to assess the relative importance of various variables in explaining the success of SEZs. The analysis uses individual responses to the World Gallup Poll (a representative survey of individuals) over the period 2005-08 to construct measures of institutions and public services at a granular regional level across economies.

Of the various infrastructure variables, only proximity to a port is a statistically significant determinant of success (see Chart 3.13). In contrast, other factors – such as distance to the nearest railway, distance to a main road, access to communications (which reflects the perceived quality of telephone and internet infrastructure) and community satisfaction (which measures individuals' satisfaction with public amenities such as roads and schools) – are not consistently associated with the success or failure of SEZs. Infrastructure variables only explain around 3.5 per cent of total variation in the success of SEZs, as measured by the R^2 fit of the regression models (see Chart 3.14).

CHART 3.13. Proximity to a port, larger numbers of workers with a tertiary education and better law and order are all associated with economically successful SEZs

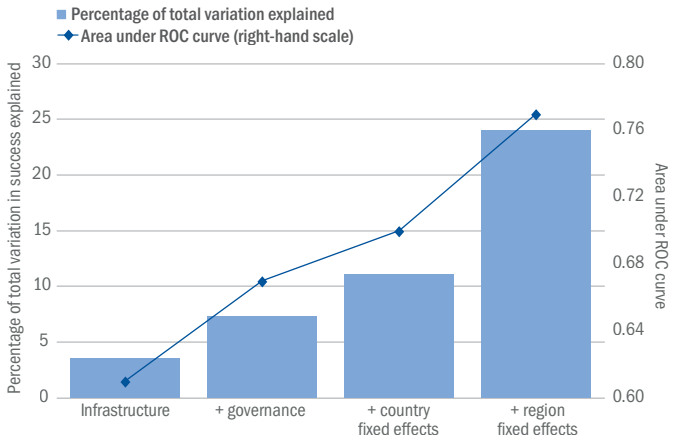


Source: EBRD database of SEZs, Li et al. (2020), US National Geospatial-Intelligence Agency's VMAP0 dataset and World Port Index (2010), ITOS's gROADS dataset (version 1), Gallup World Polls 2005-08 and authors' calculations.

Note: An SEZ is regarded as successful if cumulative growth in NTL density within a 5 km radius over a 10-year period is stronger than the average for the economy as a whole over the same period. The community satisfaction index measures satisfaction with public transport, roads and highways, the quality of schools, healthcare and the environment. The access to communications index assesses the availability of high-quality telephone and internet infrastructure, and the law and order index evaluates the level of security. The national institutions index gauges citizens' confidence in national government, the judicial system and the fairness of elections. The tertiary education index measures the percentage of a subnational region's population who have a tertiary education. All of these indices are derived from Gallup World Poll data at subnational level. The whiskers indicate 95 per cent confidence intervals.

[22] See Lu et al. (2019).

CHART 3.14. Even with infrastructure, governance and fixed effects accounted for, much of SEZs' success – and failure – remains unexplained



Source: EBRD database of SEZs, Li et al. (2020), US National Geospatial-Intelligence Agency's VMAP0 dataset and World Port Index (2010), ITOS's gROADS dataset (version 1), Gallup World Polls 2005-08 and authors' calculations.

Note: The factors analysed include infrastructure (distance to a railway, distance to a port, distance to a main road, access to communications and community satisfaction), governance (tertiary education, law and order and national institutions), and country and region fixed effects.

Over a 10-year period following the creation of an SEZ, local NTL density around the zone is, on average, around

14%

higher than one would otherwise expect

The quality of infrastructure and governance only explains about

7%

of total variation in SEZs' success

The percentage of people in a subnational region who have a tertiary education – a measure of local human capital based on representative household surveys – also exhibits a strong positive correlation with the success of SEZs. Meanwhile, the law and order index for the region – a measure of how secure survey respondents feel – shows a modest but statistically significant positive correlation, indicating that a stable and secure environment contributes to the success of SEZs. Adding governance-related factors increases the total explanatory power to 7 per cent, and that then rises to 11 per cent when country fixed effects are included (see Chart 3.14). The area under the receiver operating characteristic (ROC) curve – an alternative measure of how well models explain the success and failure of SEZs – produces similar results, with much of the total variation in the success of SEZs remaining unexplained.

Previous research has shown that SEZs' performance can also be influenced by a wide range of factors that may be difficult to quantify in a large sample of SEZs. These include the quality of relevant policy frameworks and institutional structures at the national and local levels.[23] Including region fixed effects – unobserved characteristics of various regions that do not change over time – further improves the R^2 of models explaining the success of SEZs, with the percentage of variation explained rising to 24 per cent.

In addition, the evolving nature of global production networks and changes to countries' comparative advantages can significantly impact SEZs' performance over time, and local zone-specific factors and effective SEZ management (which are not captured by region fixed effects) can also play a role. Indeed, SEZs often seek to overcome deficiencies in governance at regional and national levels by creating a more favourable environment for business within the zone itself.

[23] See Farole and Akinci (2011), Aggarwal (2012) and Frick et al. (2019).

Technology development zones in Türkiye

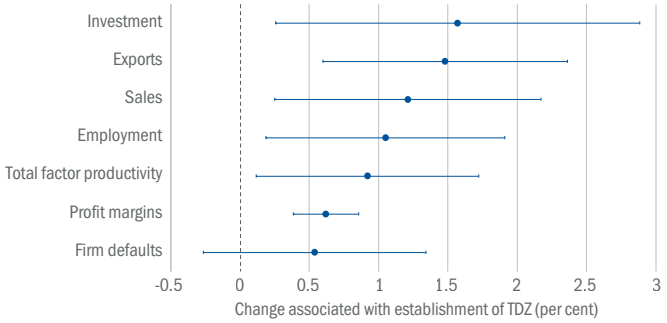
While the last section analysed the relationship between SEZs and a broad measure of economic activity (NTL density), this section explores the impact that SEZs have on firms' performance by looking at Türkiye's TDZs.

TDZs are specialist technoparks that are designed to foster technological advancement by providing a supportive environment for collaboration between universities, research institutions and businesses. These zones offer incentives to attract high-tech companies and startups, promoting innovation and entrepreneurship. At the time of writing, Türkiye has 87 fully operational TDZs and another 14 that are in the process of being established. The rollouts began in 2000 and accelerated during the 2010s, partly on the back of a nationwide university expansion programme aimed at bridging the gap between academia and industry.

The design of the research in this section takes advantage of the gradual rollout of TDZs (see also Box 3.8 for more details on the methodology). The analysis looks at firms in the regions where TDZs are located, but, importantly, firms within the TDZs themselves are excluded, thereby allowing an examination of the broader economic impact of such zones. The findings reveal that the establishment of a TDZ has a significant positive effect on various measures of the performance of firms located in the vicinity of that zone, including sales, investment, employment, exports and profit margins (see Chart 3.15). For example, the establishment of a TDZ is associated with a 1.6 per cent increase in investment, a 1.5 per cent increase in exports and a 1.2 per cent increase in total factor productivity (a measure of how efficiently a firm combines labour, capital and material inputs to produce its final output). Overall, these findings are consistent with recent research showing that the place-based and industry-specific subsidies which were introduced in Türkiye in 2012 have led to increased revenue and employment for firms, as well as meaningful spillovers to their suppliers and customers.[24]

These results provide preliminary evidence of the positive impact that TDZs can have on firms' performance in Türkiye. However, they only cover the experiences of firms within the relevant region and do not capture broader economic spillovers, the impact that TDZs have in terms of reducing regional income inequality, or the impact of TDZs on patenting and innovation. To address persistent regional disparities, TDZs may need to be complemented by other measures aimed at boosting human capital, improving governance and enhancing economic connectivity in less-developed regions.

CHART 3.15. Türkiye's TDZs have a positive impact on nearby firms' employment, exports and investment



Source: Turkish Revenue Administration, TurkStat, Turkish Ministry of Trade, Turkish Firm Registry, Turkish Ministry of Industry and Technology, and authors' calculations.

Note: Explanatory variables include district, sector-year and firm fixed effects. Investment is calculated as the annual growth rate of total long-term tangible fixed assets (including items such as buildings, land, machinery and other equipment, and vehicles). Exports are measured as the log of (1 + exports in US dollars). Sales growth is calculated as the log difference in total sales between consecutive years. Employment is the log of (1 + number of employees). Total factor productivity is estimated using the Levinsohn-Petrin method and expressed in logs. Profit margins are calculated as the log of (1 + net income/total revenue). "Firm defaults" is a binary variable. The whiskers indicate 95 per cent confidence intervals.

Türkiye has
87
fully operational TDZs, with another
14
in the process of being established

[24] See Atalay et al. (2023).

Conclusion and policy implications

The analysis in this chapter highlights the complex dynamics of income inequality and regional disparities within economies in the EBRD regions. Income inequality has declined modestly in the EBRD regions since the 2000s, but urban-rural disparities remain considerable. Although regional income gaps have been slowly narrowing, young urban-born individuals earn considerably more in adulthood than their rural-born counterparts, and this gap has widened substantially for younger cohorts.

Many economies in the EBRD regions use SEZs of different kinds as part of a package of measures aimed at promoting growth and reducing regional disparities. Industrial zones are the most common type of SEZ, particularly in eastern Europe and Türkiye, while free trade zones are popular in Central Asia and eastern Europe. SEZs are frequently found in higher-income regions, where they tend to be larger, closer to urban centres and better integrated into existing infrastructure.

Across the EBRD regions, the establishment of SEZs results in increases in local NTL density in the areas immediately surrounding those zones over a 10-year period. The performance of SEZs varies widely, however, even within a particular economy. Predicting the success of SEZs is challenging, with policy frameworks, institutional quality, local conditions, effective zone management and various other characteristics of zones all playing an important role. In Türkiye, the establishment of TDZs is associated with improvements in the performance of firms located in the relevant regions.

In order to maximise the impact of place-based policies and foster more balanced regional development, policymakers should consider a multidimensional approach. SEZ strategies should be tailored to local contexts, identifying the types of zone and region that have the most potential.[25] At the same time, investment in infrastructure – especially transport infrastructure and digital connectivity – should be prioritised. Indeed, proximity to transport networks is an important determinant of the success of SEZs and regional development as a whole.[26]

The development of human capital is critical in order to enhance the performance of SEZs and underpin a successful transition to higher-value-added economic activities.[27] This calls for a focus on expanding educational opportunities and skill development programmes, particularly in tertiary and vocational education. Furthermore, strengthening governance and legal frameworks is also essential, as highlighted by analysis of the determinants of SEZs' success in this chapter and numerous other studies looking at the crucial role that inclusive institutions play in fostering economic development.[28] Lastly, robust monitoring and evaluation systems are essential in order to assess the ongoing impact of SEZs and other place-based policies, allowing timely adjustments to policy designs.[29]

[25] See Frick and Rodríguez-Pose (2023).
[26] See Aggarwal (2012).
[27] See Rodrik and Stantcheva (2021).
[28] See Acemoğlu and Robinson (2013).
[29] See European Commission (2022).

BOX 3.1.

Convergence analysis

The analysis of intra-country convergence that is presented in this chapter is based on subnational income data from two sources: the European Commission's ARDECO database for EBRD economies in the EU, Albania, North Macedonia, Serbia and Türkiye (at the NUTS-3 level), and the DOSE dataset of subnational economic output for all other EBRD economies (at the GADM-1 level).[30] Data for the region of West Kazakhstan were sourced from Kazakhstan's Bureau of National Statistics, since they were not available in the DOSE dataset for the entire period of study. The analysis uses regional data on GRP per capita in constant 2015 US dollars and focuses on the period 2010-19. For Morocco, the period under review is 2013-19 owing to a discontinuity caused by a change to regional administrative boundaries that affects the availability of subnational income data.

Measures of beta convergence assess whether poorer regions grow faster than richer ones. Estimates are obtained by running the following regression separately for each country:[31]

$$\frac{1}{T} log\left(\frac{y_{i\in C,t}}{y_{i\in C,0}}\right) = \alpha_C + \beta_C log\left(y_{i\in C,0}\right) + \epsilon_{i\in C,t}$$

where $y_{i\in C,t}$ represents the income level of region i in country C at time t, $y_{i,0}$ is the initial income level, and T is the time span between the period t and the initial period. The left-hand side approximates the average annual growth rate over the period studied. The speed of convergence is given by the coefficient β which is negative when regions are converging.

Measures of sigma convergence, on the other hand, assess whether income dispersion across subnational regions decreases over time. Estimates of sigma convergence are obtained by comparing the standard deviation of the log of GRP per capita across regions within each country at the start and end of the period:

$$\sigma_C = SD(log(y_{i\in C,t})) - SD(log(y_{i\in C,0}))$$

Negative values correspond to convergence.

[30] See Wenz et al. (2023).
[31] See Barro and Sala-i-Martin (1992).

BOX 3.2.

Competitiveness and regional development traps in Kazakhstan

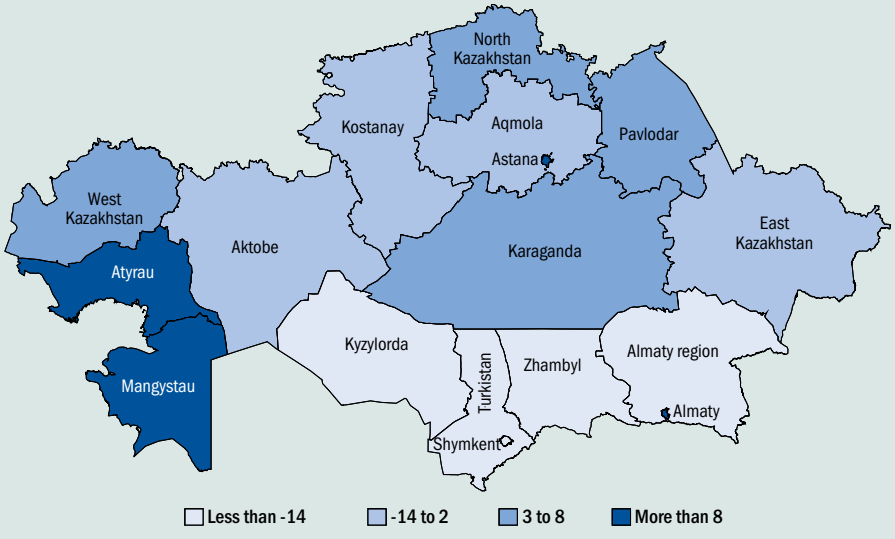
Since 2000, Kazakhstan has experienced remarkable economic growth, with GDP nearly tripling between 2000 and 2022. This strong performance has been driven by the country's abundant natural resources and a number of strategic initiatives. While Chart 3.4 shows a significant degree of regional convergence, inequalities continue to persist in Kazakhstan. This box examines those ongoing disparities, drawing on recent research that introduces two new measures: the Regional Competitiveness and Cohesion Index (RCCI) and the Regional Development Trap Index (RDTI).[32]

The RCCI measures the economic dynamism and competitiveness of Kazakhstan's regions, looking at six different aspects: health and a basic standard of living; higher education and training; labour market efficiency; market size; technological readiness; and innovation. As such, this indicator moves beyond the realm of traditional economic metrics, incorporating social and institutional factors in order to reflect the diverse range of factors that influence regional productivity and development. In contrast, the RDTI identifies regions that are at risk of economic stagnation by comparing GDP per capita, productivity and employment rates with historical averages at regional and national level.

This dual focus on competitiveness and development traps provides a comprehensive framework for understanding why some regions thrive while others stagnate. Regions that score highly in terms of competitiveness are not immune to falling into development traps if they fail to sustain diverse and innovative economic activities. Conversely, regions with lower competitiveness may also find themselves trapped owing to persistent underdevelopment and limited economic opportunities.

The RCCI reveals significant disparities in regional competitiveness, with the Atyrau and Astana regions and Almaty city ranking highest, while the Turkistan, Zhambyl and Almaty regions lag behind (see Chart 3.2.1). Similarly, the RDTI shows that both high-income regions (such as Atyrau and Mangystau) and low-income regions (such as Turkistan) risk falling into development traps owing to a lack of economic diversification or persistent underdevelopment. By combining assessments of competitiveness and economic dynamism, these two measures can guide policymakers when it comes to designing targeted interventions that enhance the competitiveness and resilience of regional economies.

CHART 3.2.1. There is significant variation in the competitiveness of individual regions in Kazakhstan



Source: Rodríguez-Pose and Bartalucci (2021) and Rodríguez-Pose et al. (2024).

Note: The RCCI measures the economic dynamism and competitiveness of Kazakhstan's regions, looking at six different aspects: health and a basic standard of living; higher education and training; labour market efficiency; market size; technological readiness; and innovation. This map shows the competitiveness of the various regions on the basis of the four quartiles of the RCCI distribution: dark blue denotes the most competitive quartile (which comprises regions with an RCCI score of more than 8), while light blue denotes the least competitive quartile (which comprises regions with a score of less than -14). The RCCI scores are based on data for 2019, so the map shows Kazakhstan's regional boundaries as they were at that point in time and does not reflect more recent changes.

[32] See Rodríguez-Pose and Bartalucci (2021) and Rodríguez-Pose et al. (2024).

BOX 3.3.

Measuring the urban-rural gap across cohorts

This chapter uses individual-level data from the 2016 and 2022-23 rounds of the Life in Transition Survey (a representative household survey conducted by the EBRD in partnership with the World Bank) to document the income gap between individuals born in urban and rural areas across different birth cohorts. The analysis involves two steps. First, residuals are obtained from the regression:

$$Rank_{i,t} = \mu_{c,t} + X'_i\Theta + \epsilon_{i,t}$$

where $Rank_{i,t}$ it is the equivalised household income percentile of individual i, $\mu_{c,t}$ is a country-year fixed effect, and X'_i is a vector of variables that are predetermined at birth (gender and parents' level of education). Residualising the dependent variable removes the influence that these factors have on income, thereby isolating the effect that urban and rural birthplaces have on income disparities.

Second, the following function is estimated separately for those born in urban and rural areas:

$$Residual\ rank_{i,t} = f(Birth\ cohort_i) + \epsilon_{i,t}$$

where $Residual\ rank_{i,t}$ is the resulting household income percentile residual for individual i, and $f(\cdot)$ is a flexible, non-parametric function capturing the relationship between individuals' income rankings and birth cohorts. A binned scatter plot is used, partitioning the range of birth cohorts into bins and estimating the conditional mean of the dependent variable within each bin.

BOX 3.4.

Evaluating the impact of SEZs on the basis of NTL density

This chapter uses an event study to evaluate the impact that SEZs have on NTL density, which serves as a proxy for economic activity. The empirical strategy used isolates the effect that the establishment of SEZs has on economic activity by comparing NTL density before and after the establishment of zones, while controlling for fixed effects and potential confounding factors. The primary equation used is:

$$nightlights_{i,c,t} = \sum_{-10 \le \tau \le 10,\ \tau \ne -1,\ -10} \beta_\tau \mathbf{1}(t - start\_year_i = \tau) + \theta_i + \psi_c \times \delta_t + \varepsilon_{i,\,c,\,t}$$

where i denotes the zone, c indicates the country and t represents the calendar year. The "start year" is the year when the zone becomes operational. θ_i represents zone fixed effects, accounting for baseline factor endowment, economic structure and other zone-specific characteristics, and $\psi_c \times \delta_t$ represents country-year fixed effects, capturing country-specific shocks and policies that could influence outcomes for all zones in a given country in a given year. Standard errors are clustered at zone level. The analysis is conducted for the period from 1992 to 2020, which is based on the availability of NTL data.

BOX 3.5.

SEZs and pollution

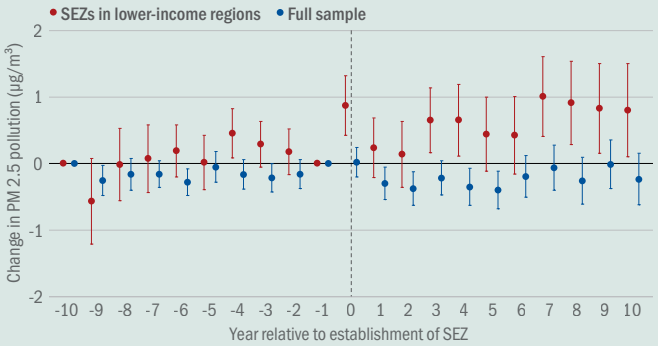
The impact of SEZs extends beyond economic growth. Since they are designed to attract investment through preferential economic regulation and other incentives, SEZs may also have the effect of increasing local pollution. Studies examining the large expansion of SEZs in China reveal that regions with SEZs have, on average, tended to experience lower air quality than other regions.[33] However, the magnitude of those effects varies significantly across zones and regions. This box extends that analysis to the EBRD regions.

This environmental impact is of particular concern given the well-established links between pollution and public health outcomes.[34] In particular, economic literature has demonstrated a clear causal link between pollution and mortality rates, especially among vulnerable people such as children and the elderly.[35] For instance, researchers have found that a 1 standard deviation increase in levels of PM 2.5 on a given day in the United States is associated with a 1.2 per cent increase in subsequent three-day mortality rates for older adults.[36,37] In addition, pollution has also been shown to negatively affect workers' productivity.[38]

This analysis leverages the differential timing of SEZs' establishment across the EBRD regions to analyse their impact on localised pollution (which is captured by average annual PM 2.5 levels within a 1 km radius of the centre of each zone). While PM 2.5 pollution does not increase, on average, across all SEZs, zones located in lower-income regions show a notable increase of about 1 μg/m³ after 8 years, representing an increase equivalent to 4 per cent of the global mean (with similar results being obtained when PM 2.5 concentrations are measured within a radius of up to 10 km around the centre of the zone). One plausible explanation for the differential increase in pollution from SEZs in lower income regions could be that lower levels of state capacity are affecting the implementation of environmental laws. Another possible mechanism could be the greater prevalence of labour-intensive polluting industries in lower-income regions.

At the same time, people living in lower-income areas are more vulnerable to the adverse impact of pollution. Lower-income groups often face higher exposure to air pollution owing to their dependence on outdoor jobs. Furthermore, more limited healthcare options in those regions may exacerbate mortality from pollution-related diseases.

CHART 3.5.1. Pollution increases that are due to SEZs tend to be concentrated in lower-income regions



Source: Van Donkelaar et al. (2021) and authors' calculations.

Note: This chart shows the effect that establishing an SEZ has on subsequent average PM 2.5 pollution within a 1 km radius of the centre of the zone.

[33] See Martin and Zhang (2021).
[34] See World Bank (2022).
[35] See Chay and Greenstone (2003).
[36] See Deryugina et al. (2019).
[37] PM 2.5 indicates the amount of particulate matter that is less than 2.5 micrometres in diameter and is a standard measure of air pollution.
[38] See Chang et al. (2016).

BOX 3.6.

Place-based industrial policies and credit markets: Evidence from the former East and West Germany

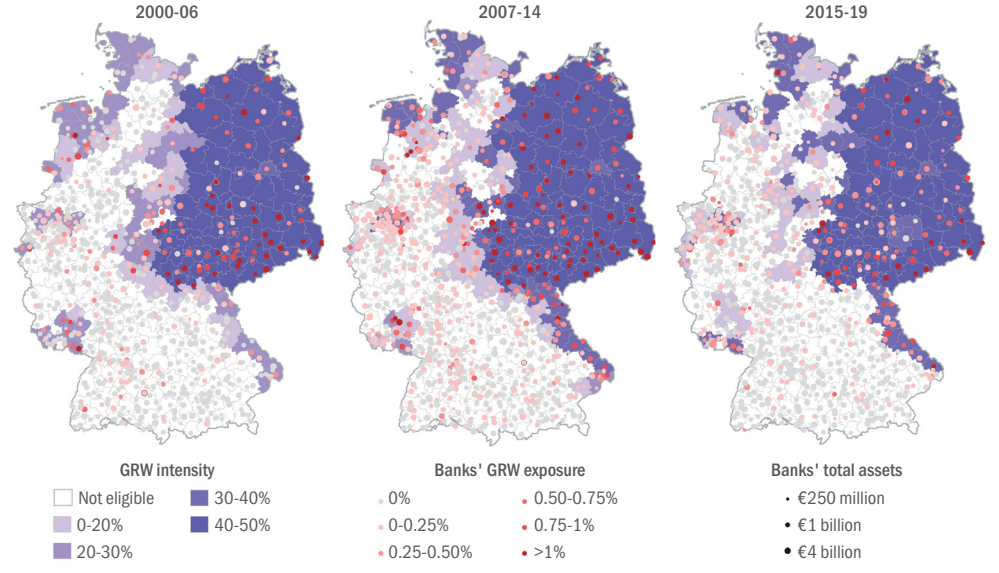
Many place-based industrial policies involve direct transfers to companies, which can be thought of as equity contributions to investment projects. These transfers can affect credit markets in two opposing ways. Subsidies can reduce the cost of capital such that previously unprofitable projects become viable, increasing aggregate investment and potentially leading to more bank lending. However, subsidising projects that would have gone ahead even without those transfers can distort credit markets. Subsidised companies can replace planned borrowing with transfers, reducing their need for bank loans and crowding out bank funding. Moreover, banks that are unwilling or unable to increase total lending may reallocate credit to subsidised firms at the expense of non-subsidised ones.

In order to analyse the impact that place-based industrial policies have on credit markets, this box leverages a unique project-level dataset on the largest place-based policy scheme in Germany: the Improvement of Regional Economic Structures (GRW) programme. Since the unification of East and West Germany in 1990, federal and state (*"Land"*) governments have allocated a combined total of €68 billion through the GRW programme. Firms can apply for subsidies if they are located in an eligible region and comply with the conditions imposed by the GRW programme, which are typically aimed at boosting employment and wages.

The analysis in this box also looks at whether credit markets' responses to subsidy programmes are more pronounced in the less-developed regions of the former East Germany than in the more mature regions of the former West Germany. Information on the existence, duration and size of transfer payments has been obtained from confidential administrative data provided to the Halle Institute for Economic Research (IWH) for the purpose of a programme evaluation.[39] Firms are linked to banks on the basis of Creditreform survey data provided as part of the Dafne database. Further details on the construction of data can be found in Kazakov et al. (2022).

The analysis reveals considerable variation both between and within the former East and West Germany as regards the implementation of this place-based programme, as well as significant variation across banks as regards their involvement with subsidised borrowers. Chart 3.6.1 shows spatial variation in firms' GRW eligibility across the 401 German counties (*"Kreise"*) during the review period of 1998-2019, measured as the intensity of potential subsidies relative to planned investment volumes. The chart also shows regional savings and cooperative banks' exposure to the policy, as measured by subsidised firms' share of total borrowers in a bank's portfolio. All information is depicted separately for the three GRW funding cycles, each of which featured different eligibility criteria.

CHART 3.6.1. There is significant variation in (i) the implementation of the programme across regions and (ii) banks' involvement with subsidised borrowers

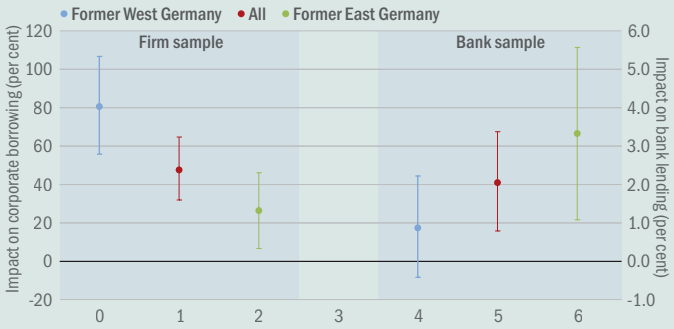


Source: Kazakov et al. (2022).

Note: This chart shows maps of Germany, with county-level measures of GRW intensity depicted using shades of purple and geo-located banks depicted as circles. GRW intensity is calculated as the maximum share of an eligible firm's project investment which can be covered by the subsidy and ranges from 0 to 50 per cent. The colour of the circles depicting banks shows the extent of each bank's exposure to subsidised firms, measured as subsidised firms' average share of all firms with which the bank maintains links over the relevant period. The size of each circle is proportionate to the logarithm of total bank assets. The sample comprises German savings and cooperative banks.

[39] See Brachert et al. (2018).

CHART 3.6.2. GRW subsidies tend, on average, to boost local credit markets, with larger effects in the former East Germany and stronger borrowing by subsidised firms



Source: Kazakov et al. (2022).

Note: This chart shows the impact that the GRW programme has on corporate borrowing and bank lending. These effects are obtained from the estimation of the two equations above. All point estimates are accompanied by 95 per cent confidence intervals. The firm sample comprises German non-financial subsidised firms, each of which is matched to one non-subsidised counterpart, and spans the period from 2002 to 2020. The main variable of interest for that sample is an indicator variable that is equal to 1 in all years after a firm receives its first GRW subsidies (and 0 otherwise). The bank sample comprises German savings and cooperative banks and spans the period from 1998 to 2019. The main variable of interest for that sample is an indicator capturing subsidised firms' share of a bank's total customers in a given year.

Over the review period as a whole (that is to say, between 1998 and 2019), the average bank is linked to a total of 962 firms. On average, 2,282 projects are subsidised each year, with an average subsidy of €350,000 per project. Note that banks' exposures to subsidised firms are typically small, with subsidised firms' shares of banks' customer portfolios ranging from 0 to 4.6 per cent. However, many local banks are involved in the GRW programme, with an average of 42 per cent of the banks in each county being linked to subsidised firms. Moreover, GRW subsidies are an important element of the funding of investment projects from firms' perspectives. Where projects are subsidised, government transfers account, on average, for 28 per cent of total investment volumes.

In order to see whether subsidies affect credit market activity, panel regressions are run at bank and firm level. A first panel regression explains the logarithm of lending L by bank b in year t:

$$\ln L_{bt} = \beta_0 + \beta_1 GRW_{bt} + \beta_2\, GRW_{bt} \times East_b + \beta_3\, X_{bt-1} + \alpha_b + \alpha_{st} + \varepsilon_{bt}$$

where α_b and α_{st} denote bank and state-year fixed effects respectively. The specification also controls for observable bank and firm traits, which are lagged by one period (and averaged in the case of firms). The main variable of interest is an interaction combining (i) an indication of whether the bank is located in the former East Germany and (ii) an indication of the exposure to GRW-subsidised firms in the bank's portfolio. Standard errors are clustered at bank level.

In order to test for responses to the GRW programme on the flipside of local credit markets, the following panel regression seeks to explain the logarithm of the level of corporate debt D for firm f in year t:

$$\ln D_{ft} = \gamma_0 + \gamma_1 GRW_{ft} + \gamma_2\, GRW_{ft} \times East_f + \gamma_3\, X_{ft-1} + \alpha_f + \alpha_{st} + \varepsilon_{ft}$$

Here, GRW is an indicator variable that is equal to 1 in all years after the firm obtains a subsidy for the first time; $East$ is an indicator variable that is equal to 1 if the firm is headquartered in a county in the former East Germany; and X is a vector of lagged control variables at firm level. The approach to fixed effects and standard errors is the same as in the specification above.

The results of this analysis show that bank lending and corporate borrowing both tend to increase in response to GRW subsidies, indicating that place-based programmes tend, overall, to have an expansionary effect on local credit markets (see Chart 3.6.2). Moreover, unreported results indicate that place-based programmes do not crowd out lending to non-subsidised firms either. Thus, place based subsidy programmes support activity in local banking markets.

At the same time, banks' response to larger GRW exposures is only statistically significant in eligible regions of the former East Germany. The insignificant lending response in regions of the former West Germany suggests that the expansionary effect which subsidies have on local credit markets is particularly relevant in counties that are arguably lagging behind more in terms of economic performance. This suggests that access to credit could be particularly effective in amplifying the impact of place-based programmes in regions with a more pronounced need for economic transition and transformation.

Lastly, the analysis shows that subsidised firms engage, on average, in approximately 60 per cent more bank borrowing than their non-subsidised counterparts. Across all counties, there is a significant positive correlation between corporate borrowing and firms that have previously received a GRW subsidy. However, the magnitude of this effect is noticeably larger for firms in the former West Germany (see Chart 3.6.2).

BOX 3.7.

Lessons from the EU's Cohesion Policy

The EU's Cohesion Policy – the world's most extensive territorial development initiative – offers valuable insights for policymakers considering regional development strategies. Since 1989, it has invested over €1 trillion with a view to reducing regional disparities and promoting balanced economic growth across the EU. It has influenced similar initiatives in other parts of the world, including place-based industrial policies in the United States and regional development programmes in China. Operating on the basis of a multi-annual financial framework, with the current period running from 2021 to 2027, the policy aims to strengthen economic and social cohesion by reducing disparities between subnational regions and EU member states in terms of development levels.

The Cohesion Policy works by channelling investment through several structural funds – primarily the European Regional Development Fund, the European Social Fund Plus and the Cohesion Fund. These funds support a wide range of initiatives, focusing on key priority areas such as research and innovation, digital technologies, support for small businesses, the low-carbon economy, infrastructure development, job creation, education and training, and environmental protection. Funds are allocated on the basis of regional GRP per capita, with less-developed regions receiving the bulk of the support. Management of the policy's implementation is shared between the European Commission and national/regional authorities, with member states developing their own operational programmes outlining how they intend to use the funds to address their specific development needs.

The Cohesion Policy has had a positive impact in several areas. There has been noticeable success in the area of infrastructure development, with EU transfers significantly increasing growth in GRP per capita in recipient regions, particularly through improvements in transport, energy and other infrastructure.[41] EU funds have also had a positive influence on regional innovation, helping to narrow the innovation gap between regions.[42] In addition, the Cohesion Policy has made a significant contribution to job creation and educational attainment in supported regions.[43]

However, the policy has faced criticism in several areas. Some member states – particularly newer and less-developed ones – have struggled to use the allocated funds effectively owing to administrative and institutional barriers.[44] In particular, the policy has been criticised for its complex implementation procedures and high administrative costs. Simplification efforts have had limited success in terms of reducing bureaucratic obstacles.[45]

Despite significant investment, regional disparities persist, with the Cohesion Policy's ability to effectively reduce regional inequalities being limited in the face of broader economic trends and globalisation.[46] Questions have been raised about the efficiency of fund allocation and targeting, with some critics arguing that the policy sometimes prioritises political considerations over economic efficiency in the distribution of funds.[47]

There are concerns as to whether EU funds truly add value or simply displace national investment. Evidence points to both positive spillover effects and negative displacement effects, suggesting that the impact on regional economies is complex.[48]

In conclusion, while the Cohesion Policy has had a significantly positive impact in areas such as infrastructure development, innovation and employment, it continues to face challenges when it comes to effectively tackling persistent regional disparities and ensuring efficient use of funds. Reforms are ongoing with a view to addressing these issues, focusing on simplification, a result oriented approach and better targeting of investment in order to maximise the impact on cohesion within the EU.

[40] See European Commission (2021).
[41] See Becker et al. (2010).
[42] See Ferrara et al. (2017).
[43] See Pellegrini et al. (2013).
[44] See Tosun (2014).
[45] See Mendez and Bachtler (2017).
[46] See Rodríguez-Pose and Garcilazo (2015).
[47] See Bachtler and Gorzelak (2007) and Midelfart-Knarvik and Overman (2002).
[48] See Le Gallo et al. (2011).

BOX 3.8.

Evaluating the impact that TDZs have on firm-level outcomes in Türkiye

This box analyses the impact that Türkiye's TDZs have on firm-level outcomes, comparing the performance of firms located in districts with TDZs with that of firms in other districts without TDZs. It employs the following regression model:

$$Firm\ Outcomes_{idt} = \beta 0 + \beta 1(TDZ_{dt}) + \theta(Sector * Year_t) + \alpha_d + \alpha_f + \varepsilon_{idt}$$

where $Firm\ Outcomes_{idt}$ denotes measures of the performance of firm i operating in district d at time t. Outcome variables include (i) the annual growth rate of total long-term tangible fixed assets (including items such as buildings, land, machinery and other equipment, and vehicles), (ii) the log of 1 plus exports in US dollars, (iii) the log difference in total sales between consecutive years, (iv) the log of 1 plus the number of employees, (v) total factor productivity estimated using the Levinsohn Petrin method and expressed in logs, (vi) profit margins calculated as the log of (1 + net income/total revenue) and (vii) a binary variable for firm defaults. TDZ_{dt} is a dummy variable indicating the existence (or not) of a TDZ in district d at time t. All specifications include district, sector-year and firm fixed effects. District fixed effects account for time-invariant factors at district level. Sector year fixed effects control for confounding factors that vary across sectors and over time. Standard errors are clustered at district level.

The data cover the period 2009-22. Firm location data have been obtained from tax authorities at district level. Financial statements (including annual income statements and balance sheets for all Turkish non-financial firms) have been sourced from the Turkish Revenue Administration and TurkStat, as have employment data detailing the number of employees at each firm. Export data have been obtained from the Turkish Ministry of Trade. Credit registry data, which provide details of credit balances, have been sourced from the Central Bank of the Republic of Türkiye's Credit Registry. Data on the rollout of TDZs, which detail their locations and dates of establishment, have been sourced from the Ministry of Industry and Technology.

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