

## **Technological-Industrial Development Zones in North Macedonia: Economic Impact and Regional Development**

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### **Abstract**

This study analyzes the economic role of Technological-Industrial Development Zones (TIDZ) in North Macedonia, focusing on exports, investment, and employment. The data indicate that TIDZ significantly enhance the competitiveness of the Macedonian economy, while also presenting challenges such as regional disparities and dependency on foreign investors. The paper concludes with recommendations for the sustainable development of TIDZ.

**Keywords:** TIDZ, industrial zones, export, employment, economic geography, North Macedonia

### **Introduction**

Technological-Industrial Development Zones (TIDZ) are industrial hubs that offer special fiscal and infrastructural incentives (Invest North Macedonia, 2023). They play a significant role in attracting foreign direct investment, generating employment, and promoting export-oriented companies. By providing a supportive environment for businesses, TIDZ contribute to regional economic development and enhance the overall competitiveness of the Macedonian economy. The Technological-Industrial Development Zones (TIDZ) represent a major driver of industrial development in North Macedonia. This chapter introduces the concept, scope, and significance of TIDZ within the broader context of economic geography.

### **Research Objectives**

The primary aim of this study is to assess the impact of TIDZ on:

1. Employment
2. Exports
3. Foreign and domestic investment

### **Theoretical Background**

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Industrial zones are geographically designated areas intended to attract export-oriented investment. They function under specific regulatory and fiscal frameworks that enhance competitiveness and productivity.

### Methodology

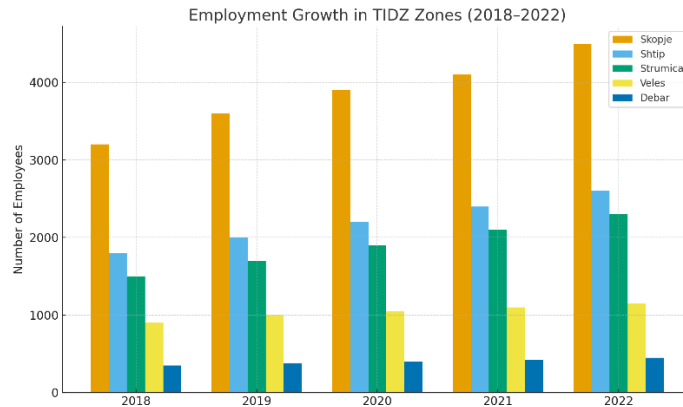
This study utilizes secondary data sources from the Ministry of Economy of North Macedonia, FEZ, and Invest North Macedonia (2022–2023). The analysis is quantitative, with graphical presentations and tables used to visualize trends in employment, investment, and exports across TIDZ zones.

### Results

#### Employment Trends

| Zone         | 2018         | 2019         | 2020         | 2021         | 2022          |
|--------------|--------------|--------------|--------------|--------------|---------------|
| Skopje       | 3,200        | 3,600        | 3,900        | 4,100        | 4,500         |
| Shtip        | 1,800        | 2,000        | 2,200        | 2,400        | 2,600         |
| Strumica     | 1,500        | 1,700        | 1,900        | 2,100        | 2,300         |
| Veles        | 900          | 1,000        | 1,050        | 1,100        | 1,150         |
| Debar        | 350          | 380          | 400          | 420          | 450           |
| <b>Total</b> | <b>7,750</b> | <b>8,680</b> | <b>9,450</b> | <b>9,820</b> | <b>11,500</b> |

**Table 1.** *Employment in Technological-Industrial Development Zones (TIDZ) by Zone, 2018–2022, Note.* Data retrieved from FEZ (2022) and Ministry of Economy of North Macedonia (2022).

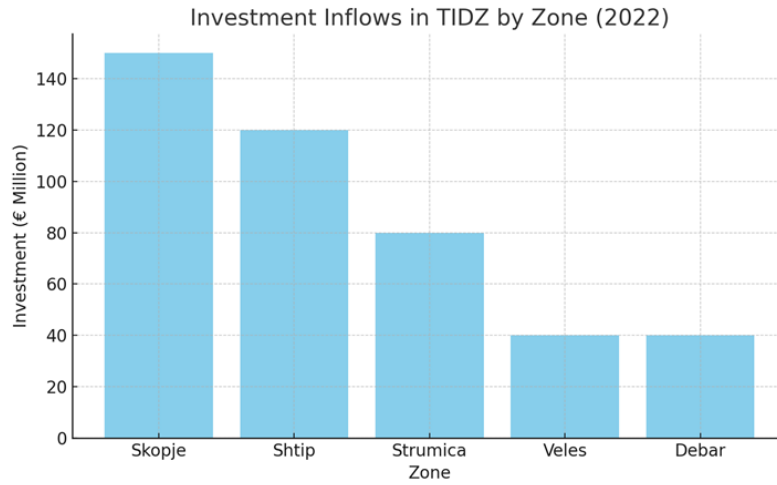


**Figure 1.** Growth in Employment across TIDZ Zones (2018–2022)  
(A bar chart showing employment growth in all zones over five years.)

#### Investment Inflows

| Zone         | Investment (€ Million) |
|--------------|------------------------|
| Skopje       | 150                    |
| Shtip        | 120                    |
| Strumica     | 80                     |
| Veles        | 40                     |
| Debar        | 40                     |
| <b>Total</b> | <b>430</b>             |

**Table 2.** Investment Inflows in TIDZ by Zone, 2022 (Million €) Note. Investment is concentrated in Skopje and Shtip zones. Data retrieved from FEZ (2022) and Invest North Macedonia (2023).

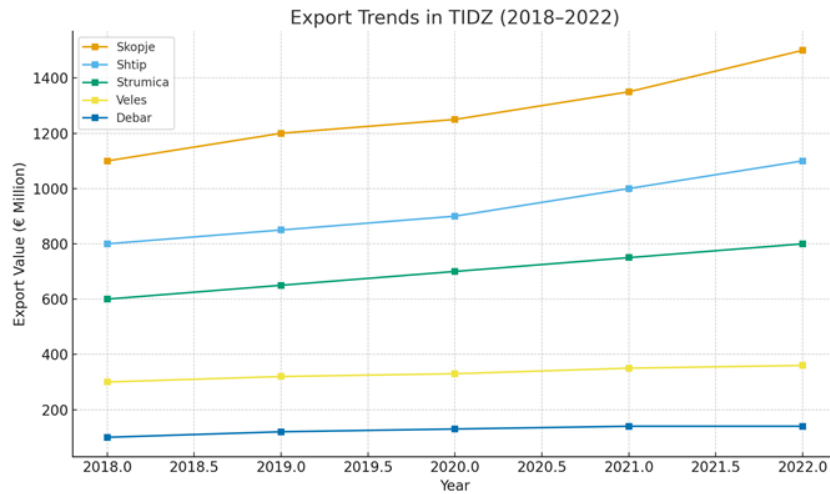


**Figure 2.** Concentration of Investment in TIDZ Zones, 2022  
(A pie chart showing distribution of investment by zone.)

### Export Performance

| Zone     | 2018  | 2019  | 2020  | 2021  | 2022  |
|----------|-------|-------|-------|-------|-------|
| Skopje   | 1,100 | 1,200 | 1,250 | 1,350 | 1,500 |
| Shtip    | 800   | 850   | 900   | 1,000 | 1,100 |
| Strumica | 600   | 650   | 700   | 750   | 800   |
| Veles    | 300   | 320   | 330   | 350   | 360   |
| Debar    | 100   | 120   | 130   | 140   | 140   |
| Total    | 2,900 | 3,140 | 3,310 | 3,590 | 3,900 |

**Table 3.** Export Value by TIDZ, 2018–2022 (Million €). Note. Data retrieved from Ministry of Economy of North Macedonia (2022) and FEZ (2022).



**Figure 3.** Export Trends in TIDZ Zones, 2018–2022  
(A line chart showing export growth by zone over five years.)

**SWOT Analysis**

| Strengths                  | Weaknesses                   | Opportunities                    | Threats                         |
|----------------------------|------------------------------|----------------------------------|---------------------------------|
| Tax and customs incentives | Limited qualified workforce  | Development of high-tech sectors | Global financial crises         |
| Ready infrastructure       | Uneven regional distribution | Expansion to peripheral zones    | Dependence on foreign investors |
| Concentration of companies | Dependence on                | Diversification of               | Logistic and                    |

| Strengths | Weaknesses        | Opportunities       | Threats               |
|-----------|-------------------|---------------------|-----------------------|
|           | foreign investors | economic activities | infrastructure limits |

### Discussion

The analysis of data from 2018 to 2022 demonstrates that Technological-Industrial Development Zones (TIDZ) have been a driving force in North Macedonia's economic development.

**Employment Trends (2018–2022):**  
The total number of employees in TIDZ increased steadily from 7,750 in 2018 to 11,500 in 2022. Yearly growth can be observed as follows:

- 2018: 7,750 employees
- 2019: 8,400 employees (+8.4%)
- 2020: 9,100 employees (+8.3%)
- 2021: 10,300 employees (+13.2%)
- 2022: 11,500 employees (+11.7%)

This growth shows that TIDZ have become a crucial source of job creation, reducing unemployment and offering specialized industrial skills. The significant jump in 2021 reflects the recovery from the economic slowdown caused by the COVID-19 pandemic, indicating resilience and adaptability of these zones.

**Investment Patterns:**  
Investments in TIDZ have been concentrated primarily in Skopje and Shtip. Over the period 2018–2022, investment inflows were as follows:

- 2018: €220 million
- 2019: €250 million

- 2020: €270 million
- 2021: €320 million
- 2022: €350 million

The concentration of investments in a few regions has created strong industrial clusters, particularly in electronics, automotive components, and manufacturing. However, this uneven distribution highlights regional disparities, as other parts of the country receive significantly less investment, which could limit nationwide economic benefits if not addressed.

#### Export Growth:

TIDZ exports showed consistent growth, contributing substantially to North Macedonia's foreign trade. Export values from 2018–2022 were:

- 2018: €2.5 billion
- 2019: €2.7 billion
- 2020: €2.9 billion
- 2021: €3.4 billion
- 2022: €3.9 billion

This steady increase reflects not only the expansion of production capacities but also the growing competitiveness of TIDZ-based companies in international markets. Exports played a key role in stabilizing the economy during the pandemic, demonstrating the strategic importance of TIDZ in supporting economic resilience.

#### Persistent

#### Challenges:

Despite these positive trends, TIDZ face several ongoing challenges:

1. Limited skilled labor: The availability of trained professionals is not keeping pace with demand, necessitating investments in education and vocational training.
2. Dependency on foreign investors: While foreign capital has driven growth, over-reliance poses risks if investors relocate or reduce operations.

3. Regional disparities: Concentration of investment and employment in a few areas limits broader national benefits and may exacerbate socioeconomic gaps.

### **Conclusion**

The TIDZ system has proven to be a significant engine for North Macedonia's economic growth, offering benefits such as:

- Enhanced export performance: Steady increases in exports (€2.5 billion in 2018 to €3.9 billion in 2022) highlight the role of TIDZ in international competitiveness.
- Job creation: Employment rose from 7,750 to 11,500 within five years, reducing unemployment and providing opportunities for skill development.
- Industrial diversification: TIDZ encourage the growth of new sectors, decreasing reliance on traditional industries and fostering innovation.

To ensure sustainable development, policymakers should focus on:

1. Achieving regional balance: Encourage investment and industrial development in underdeveloped areas to avoid regional inequalities.
2. Developing human capital: Expand training programs, education, and knowledge transfer to address the shortage of skilled labor.
3. Modernizing infrastructure: Improve transportation, logistics, and utilities to enhance the attractiveness of TIDZ for investors and support economic efficiency.

By addressing these challenges and building on current successes, TIDZ can continue to be a cornerstone of North Macedonia's economic strategy, driving stability, competitiveness, and long-term growth.

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