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Investigating the role of government investment in ports on Economic growth in Iran with a focus on the Blue Economy*

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Abstract

Government investment in ports is considered one of the main pillars of the development of maritime transport infrastructure and can play a fundamental role in enhancing economic growth. This study, focusing on the maritime economy, investigates the impact of government investment in ports on Iran's economic growth during the period 1993 to 2023. To analyze the data, the Autoregressive Distributed Lag (ARDL) model was employed. The variables examined in this study include total fisheries production, the value added of agriculture, forestry, and fisheries, and government investment in ports. Additionally, capital and labor were considered as control variables. The results indicate that total fisheries production, the value added of agriculture, forestry, and fisheries, capital, and labor have a positive and significant impact on economic growth. In the short term, total fisheries production had the greatest effect on gross domestic product. Moreover, the value added of agriculture, forestry, and fisheries, as well as capital and labor, also played an important role in stimulating economic growth. In the long term, total fisheries production demonstrated the most positive and sustainable effect on economic growth. However, despite the importance of these infrastructures for trade and transport development, the impact of government investment in ports on Iran's gross domestic product was found to be statistically insignificant in both the short and long term. This finding may be attributed to factors such as inefficiency in port infrastructure utilization, misallocation of resources, institutional and managerial constraints, economic sanctions, and weak integration of ports with other transport sectors. The results highlight the necessity of revising port investment policies and improving efficiency in Iran's blue economy.

Keywords: Blue Economy, Capital, Economic Growth, Labor.

JEL Classification: Q56, O16, O40, J21.

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1. Introduction

Economic growth is a fundamental objective for every nation, and in countries with extensive coastal zones, the blue economy has emerged as a vital engine of sustainable development. Iran, with its strategic access to the Persian Gulf and the Caspian Sea, possesses significant potential in marine-based economic activities, including fisheries, port operations, agriculture related to coastal areas, and maritime transport. Given the importance of ports as critical infrastructure hubs linking domestic production to global markets, understanding the role of public investment in ports on Iran's economic growth is crucial. This study aims to examine the impact of public investment in ports on the economic growth of Iran, with a particular focus on the key components of the blue economy such as fisheries production, agricultural value added, capital formation, and labor force participation.

2. Theoretical Framework

The blue economy encompasses sustainable use of ocean resources for economic growth, improved livelihoods, and job creation, while preserving the health of marine ecosystems. Theoretical models emphasize the interaction between natural resource utilization and economic development, where productive sectors like fisheries and port services contribute directly to GDP growth and indirectly through employment and investment multiplier effects. The role of government investment, particularly in port infrastructure, is often debated; while such investments can stimulate economic activities by enhancing trade facilitation and logistics, inefficiencies and management challenges may impede expected returns. This study builds on endogenous growth theory and resource-based economic frameworks, hypothesizing that key blue economy sectors positively influence economic growth, and that public investment in ports should have a measurable effect on economic performance in both the short and long term.

3. Methodology

The study employs the Autoregressive Distributed Lag (ARDL) model to analyze the short-term and long-term impacts of independent variables on economic growth in Iran. ARDL is particularly suitable for this research because it handles variables with mixed orders of integration (I(0) and I(1)) and performs well with relatively small sample sizes. Using annual time series data for Iran, the model estimates the elasticity of economic growth with respect to total fisheries production, value added from agriculture, forestry and fisheries, government investment in ports, gross capital formation, and labor force size. The dependent variable is the per capita Gross Domestic Product (GDP) in dollars, and the analysis covers both short-run dynamics and long-run equilibrium relationships. The model is specified as follows:

$$(EG)_t = \alpha_0 + \alpha_1(FP)_t + \alpha_2(AFF)_t + \alpha_3(GIP)_t + \alpha_4(GDI)_t + \alpha_5(TLF)_t + \mu$$

where EG is per capita GDP, FP total fisheries production, AFF value added from agriculture, forestry, and fisheries,GIP government investment in ports,GDI gross capital formation, and TLF labor force.

4. Discussion

The ARDL model results indicate that total fisheries production, capital formation, and labor force positively and significantly affect GDP in the short term. Moreover, a one-period lag of value added from agriculture, forestry, and fisheries shows a significant positive influence on economic growth, suggesting delayed but impactful effects of these sectors. However, government investment in ports does not exhibit a statistically significant effect on short-term economic growth, possibly due to the time lag in realizing returns on such investments or inefficiencies in capital utilization.

Long-term results reinforce the importance of fisheries production, agriculture-related value added, capital, and labor, all having positive and statistically significant effects on economic growth, with fisheries production exerting the greatest impact. Conversely, government investment in ports remains insignificant in the long term, which may indicate structural inefficiencies, insufficient scale of investment, or delays in infrastructural benefits translating into economic gains.

These findings highlight the need for strategic planning to harness the full potential of blue economy sectors, especially fisheries, while also addressing management and operational challenges in port investments. Enhancing port infrastructure, optimizing administrative procedures, and encouraging private sector participation could improve the efficacy of investments in ports, thereby contributing more effectively to economic growth.

5. Conclusion and Suggestions

This study concludes that the key components of Iran's blue economy — total fisheries production, agricultural value added, capital formation, and labor force — significantly drive economic growth both in the short and long run. Fisheries production emerges as the most influential factor, underscoring the necessity for targeted policies to support this sector.

In contrast, public investment in ports does not currently have a significant impact on economic growth, which may be attributed to inadequate investment levels, lack of effective management, or structural constraints within the ports. While ports hold strategic importance, the direct economic benefits from government investments have been limited, suggesting the need for more efficient utilization of resources.

To improve the contribution of port investments to economic growth, the following recommendations are made:

- Enhance port infrastructure, including logistics, handling capacities, and

transport connectivity.

- Optimize port management through the adoption of modern technologies and skilled workforce training.
- Promote private sector involvement and public-private partnerships to bring innovation and capital.
- Foster synergies between ports and other blue economy sectors like fisheries, maritime transport, and coastal tourism.
- Conduct further multidisciplinary research on port investment impacts to inform policy decisions.
- Develop a comprehensive long-term strategy for port development emphasizing economic growth and environmental sustainability.

6. Ethical Consideration

6.1. Compliance with ethical guidelines

The present study has adhered to the scientific principles and ethical guidelines of research.

6.2. Authors' Contribution

The authors have contributed equally to the writing of this article.

6.3. Conflict of interest

The authors declare that there is no conflict of interest in this research.

6.4. Acknowledgments

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