

# Diseconomies of scale in SIDS

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For the attention of the Ministry of the Interior and Kingdom Relations



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Koninkrijksrelaties



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# Outline

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# Context

## Objective of the study:

- Gathering existing knowledge on determinants of diseconomies of scale on Small Island Developing States (SIDS)
- Identify the sectors and goods & services most affected by diseconomies of scale
- List known solutions
- Quantifying the diseconomies of scale experienced by the SIDS
- Identifying new solutions

# Introduction

## Small Island Developing States (SIDS):

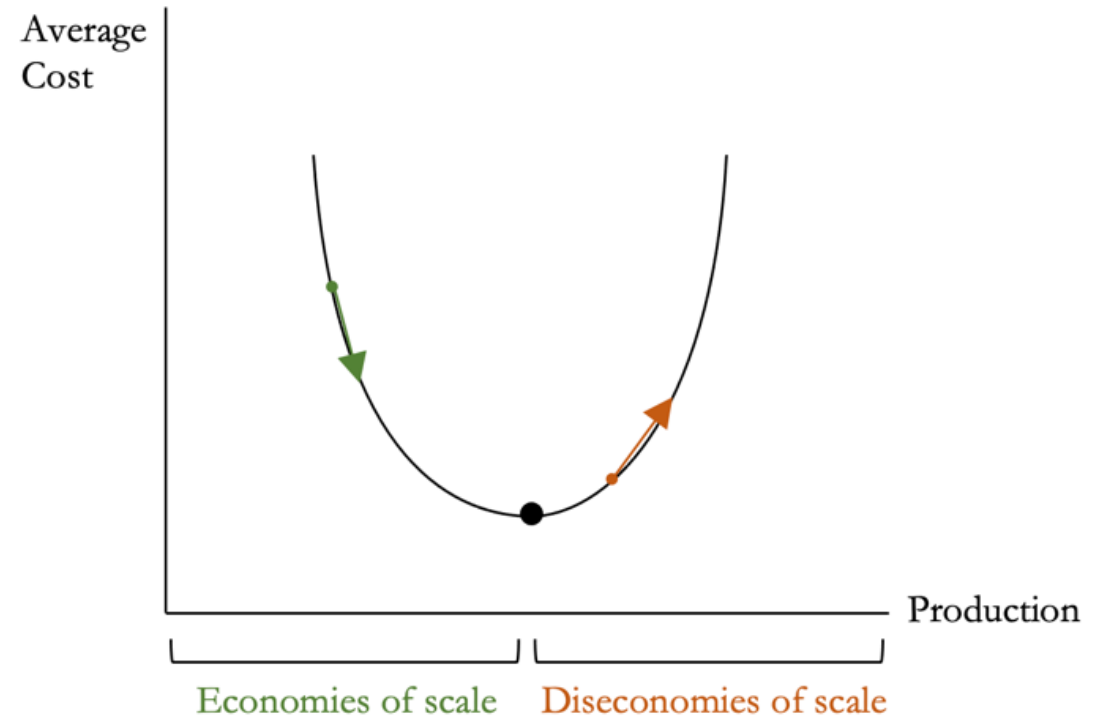
- Group of developing states recognized in 1992
- 57 islands across the globe
- They share economic, social and environmental challenges



# Introduction

## Diseconomies of scale:

- It refers to the increase in average cost as quantities produced increase.
- It is also the lack of economies of scale: average cost increases when the production decreases. This is the most relevant case in SIDS.



# Introduction

Average cost:

$$\begin{aligned} \circ \frac{\text{Total costs}}{\text{Production}} &= \frac{\text{Amount of money needed to produce}}{\text{Number of goods and services produced}} \\ &= \text{The money needed to produce 1 good or} \\ &\quad \text{provide 1 service} \end{aligned}$$

# Current knowledge

In general:

- Diseconomies of scale negatively affects the growth and profitability of organizations
- Diseconomies of scale result from public laws: late or outdated regulations



# Current knowledge

Specifically in Small Island Developing States, determinants of diseconomies of scale are:

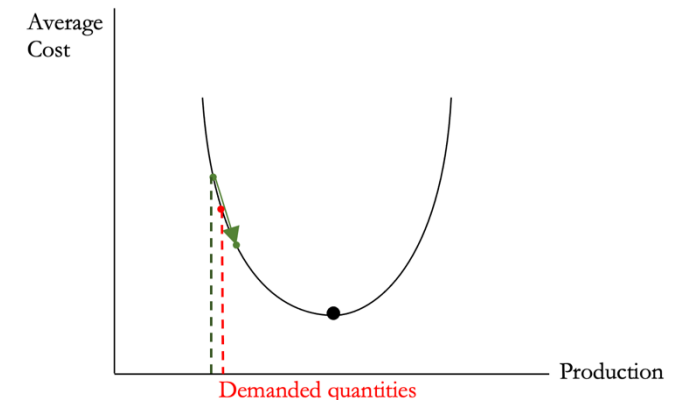
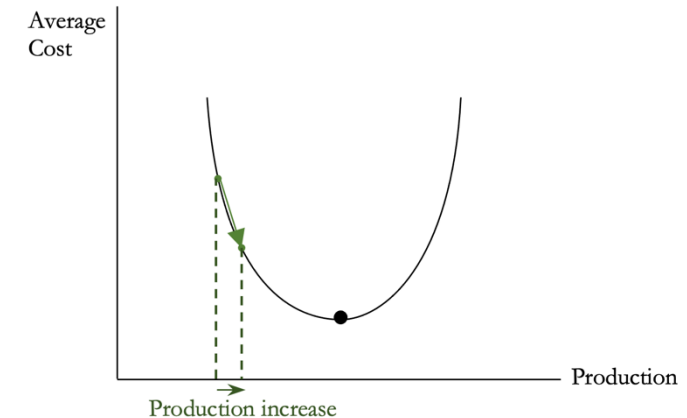
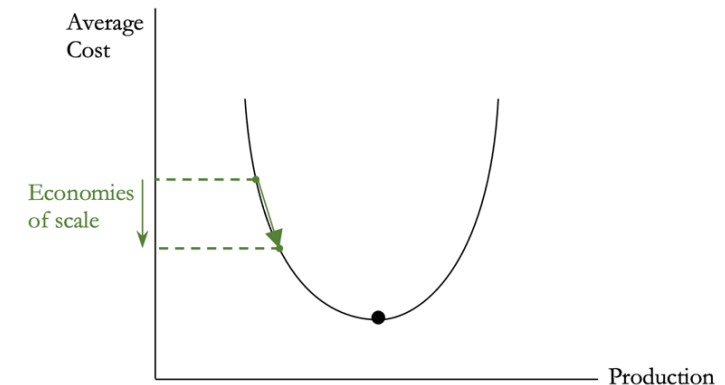
- Small population size
- Distance between an island and major economies or international trade
- Dependence on foreign skilled labor
- Imperfect competition
- Environmental issues
- Conflicts between native inhabitants and foreigners



# Current knowledge

Small population size:

- An organization has an opportunity to achieve economies of scale
- The organization must produce more
- Quantities are limited by small national demand due to a small population size



# Current knowledge

Distance between an island and major economies or international trade:

- It also applies to archipelagos



# Current knowledge

Dependence on foreign skilled labor:

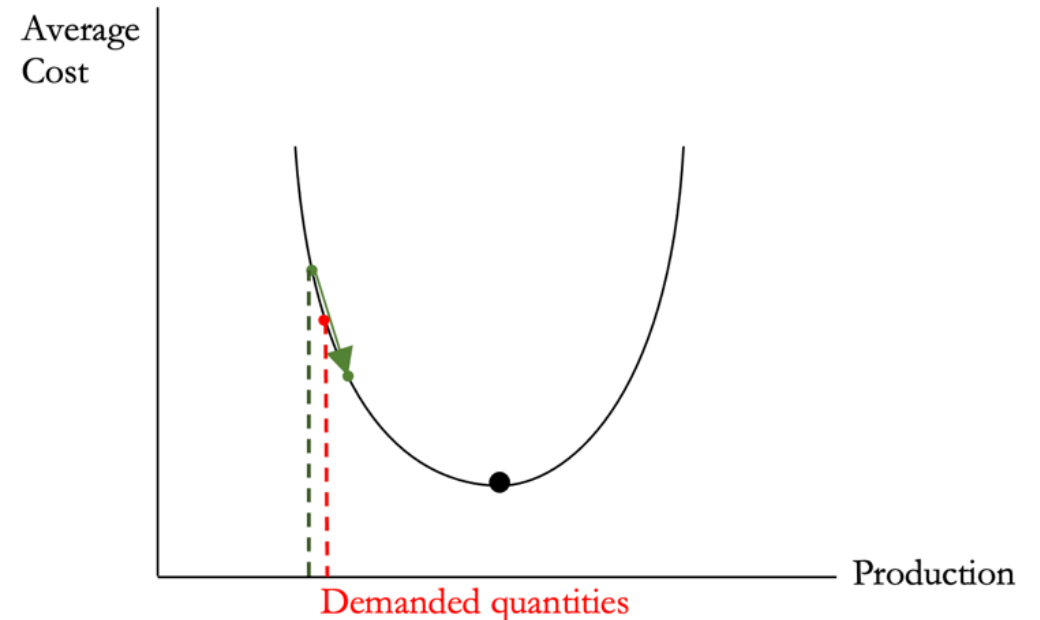
- Fewer training opportunities for natives
- Obligation to provide benefits or high wages to attract foreigners



# Current knowledge

## Imperfect competition:

- The number of firms is limited because of low national demand.
- Transportation, banking and energy are subject to imperfect competition in general.
- Retailing, heavy, bulky products that are difficult to produce are industries that experience imperfect competition, specifically in islands.



# Current knowledge

## Environmental issues:

- Limited fossil fuels and forestry resources
- Pollution created by economic activities
- Fragile ecosystem
- Solving environmental problems is extremely costly





# Current knowledge

Conflicts between native inhabitants and foreigners:

- Dispute over land management



# Current knowledge

Solutions to diseconomies of scale experienced by SIDS:

- Exports using the island identity (tourism)
- Concentrate island's population in one place
- Produce goods for which diseconomies of scale have little impact such as certain type of nuts
- Collaborations (International and regional)

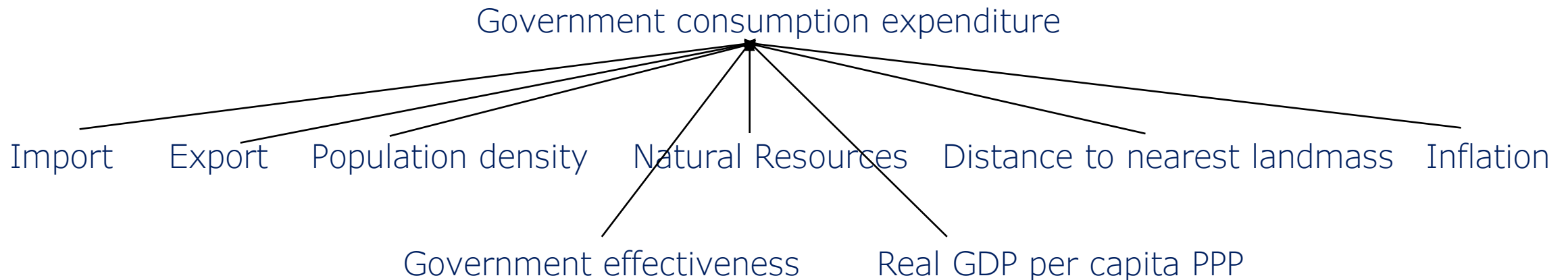


Lightweight, low volume and easy to manufacture goods

# Empirical analysis

The analysis:

- Use data on 215 countries between 2018 and 2022
- Employ the most suitable econometric technique: Ordinary Least Squares
- Governments are studied according to their final consumption expenditure in percentage of GDP
- The analysis establishes the following relationships:





# Empirical analysis

Results are correlations:

Variables are in percentage of GDP, except for population density.

- Imports increase public consumption expenditure. Their effect is stronger for the SIDS.
- Countries that export a lot have lower government consumption expenditure.
- Densely populated country have lower government consumption expenditure.
- Use of natural resources increase public consumption expenditure. This effect is stronger for the SIDS.

Import	0.231 *
Export	-0.198 *
Population density	-0.002 *
Real GDP per capita PPP	0.0001
Natural resources	0.182 *
Inflation	-0.034
Government effectiveness	1.666
Distance to nearest landmass	-0.0002
Island	-10.338 *
Island×Import	0.153 *
Island×Export	-0.050
Island×Distance to nearest land mass	0.002
Island×Natural resources	0.367 *
Constant	11.928 *
Average Total Island Effect	0.959 *
Island Import Effect	0.384 *
Island Export Effect	-
Island Natural Resources Effect	0.549 *
Observations	148
Number of islands	16

Statistical significant result (at 5%): \*

# Empirical analysis

Estimates are not perfectly accurate because:

- Tax revenues are missing
- Government Debt is missing
- Government consumption expenditure influences import
- Less than half of the number of islands in the SIDS are studied



This leads to estimation imprecision

# Policy Implications

Solutions according to the empirical analysis:

- Invest in adaptation of technological progress
- International collaborations
- Develop export-oriented sectors
- Increase population size to expand national demand
- Clustered island population (Housing Policy in the Maldives, 2004)

# Summary

## Determinants of diseconomies of scale in islands:

- Small population size
- Distance between an island and major economies or international trade
- Dependence on foreign skilled labor
- Imperfect competition
- Environmental issues
- Conflicts between native inhabitants and foreigners

## Solutions to diseconomies of scale:

- Flexible public regulations
- Services using the island identity (tourism)
- Grouping sparse population
- Lightweight, low volume and easy to manufacture goods
- Collaborations (International and regional)
- Technological progress
- Exportation

