

**REM WORKING PAPER SERIES**

**A Geographical Theory of (De)Industrialization**

**José Pedro Pontes, Armando J. Garcia Pires**

**REM Working Paper 0203-2021**

November 2021

**REM – Research in Economics and Mathematics**

Rua Miguel Lúpi 20,  
1249-078 Lisboa,  
Portugal

ISSN 2184-108X

Any opinions expressed are those of the authors and not those of REM. Short, up to two paragraphs can be cited provided that full credit is given to the authors.





**REM – Research in Economics and Mathematics**

Rua Miguel Lupi, 20  
1249-078 LISBOA  
Portugal

Telephone: +351 - 213 925 912

E-mail: [rem@iseg.ulisboa.pt](mailto:rem@iseg.ulisboa.pt)

<https://rem.rc.iseg.ulisboa.pt/>



<https://twitter.com/ResearchRem>

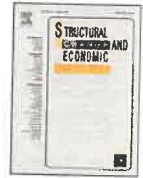
<https://www.linkedin.com/company/researchrem/>

<https://www.facebook.com/researchrem/>



Contents lists available at ScienceDirect

## Structural Change and Economic Dynamics

journal homepage: [www.elsevier.com/locate/strueco](http://www.elsevier.com/locate/strueco)

## A geographical theory of (De)industrialization

José Pedro Pontes<sup>a,\*</sup>, Armando J. Garcia Pires<sup>b</sup><sup>a</sup> Instituto Superior de Economia e Gestão, Universidade de Lisboa and UECE-REM, Portugal<sup>b</sup> Centre for Applied Research at NHH (SNF), Norwegian School of Economics (NHH), Hellevein 30, 5045 Bergen, Norway

## ARTICLE INFO

## Article history:

Received 8 March 2021

Revised 9 July 2021

Accepted 25 October 2021

Available online 28 October 2021

## JEL Classification:

B20

O12

O14

R12

## Keywords:

Deindustrialization

Industrialization of Agrarian economies

Von Thünen

Friedrich list

## ABSTRACT

In the model of agricultural land use and rent of Von Thunen (1826), manufacturing decentralization is viewed as the refining (or “distilling”) of an agricultural commodity near the cultivation site, which substitutes for its transport to an industrial mill located in the Town. As Friedrich List (1841) added, this substitution is economically feasible only if the savings in transport cost following from in site refining cover the increase in fixed costs associated with a second industrial plant. We update this approach aiming to rationalize some stylized trends of manufacture relocation nowadays, which are jointly labeled as “deindustrialization”.

© 2021 Elsevier B.V. All rights reserved.

## 1. Introduction

With sharp variations across countries, the average degree of industrialization in Europe, as measured by the share of manufacturing value added in GDP, seems to have been increasing moderately since the beginning of the century, a trend that accords with the picture drawn by Rodrik (2016) for the main regions of the world economy.<sup>1</sup>

It has been widely admitted for some time that the variation in industrialization rates across countries and regions can be accounted for – although not exclusively – by two major causal factors (see, among others, Spilimbergo, 1998). The first main determinant is the general trend of transport and communication costs to fall. Until recently, the improvement of transportation has been matched by a similar trend of trade costs, namely *ad valorem* tariffs and other non-tariff barriers to trade. Although some change to an opposite course of action has been taking place recently, there is no reason to believe that a sharp and general reversal of the trend to free trade will occur in the future. The second major cause of regional asymmetries in industrialization lies in the fast growth

in productivity in manufacturing, mainly associated with the automation of increasingly complex tasks.<sup>2</sup> Such gains in industrial efficiency clearly outpace the progress found in non-manufacturing activities.

Some have established a causal link between these factors and the geographical variation in industrialization through the international trade theory based on the Ricardian *comparative advantage*, which assumes zero factor mobility between countries or regions and complete international mobility of products. For instance, Rodrik (2016) explains the intensity of manufacturing growth in a country by the change in relative unit production costs of manufacturing and non-manufacturing activities, using the world mean evolution of relative costs as a benchmark.

Other approaches based on the *comparative advantage* concept use instead the Heckscher-Ohlin framework, which is founded on differences in relative factor abundance across countries. According to this view, the fall in trade costs gives birth to comparative advantages that were previously hidden. Labor intensive manufacturing operations are moved to low wage countries, or, by contrast, automated industrial processes return to core, capital abundant countries.

\* Corresponding author.

E-mail addresses: [ppontes@iseg.ulisboa.pt](mailto:ppontes@iseg.ulisboa.pt) (J.P. Pontes), [armando.pires@snf.no](mailto:armando.pires@snf.no) (A.J.G. Pires).<sup>1</sup> This picture would be much different if the share of manufacturing in overall employment would be used instead.<sup>2</sup> Other important factors for regional asymmetries are increasing returns, preferences, agglomeration economies, or first nature advantages (Krugman, 1993).