

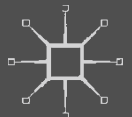
PALGRAVE STUDIES IN ECONOMIC HISTORY



REGIONAL INEQUALITY IN SPAIN

1860–2015

Alfonso Díez-Minguela
Julio Martínez-Galarraga
Daniel A. Tirado-Fabregat



Palgrave Studies in Economic History

Series Editor

Kent Deng

London School of Economics

London, UK

Palgrave Studies in Economic History is designed to illuminate and enrich our understanding of economies and economic phenomena of the past. The series covers a vast range of topics including financial history, labour history, development economics, commercialisation, urbanisation, industrialisation, modernisation, globalisation, and changes in world economic orders.

More information about this series at
<http://www.palgrave.com/gp/series/14632>

Alfonso Díez-Minguela
Julio Martínez-Galarraga
Daniel A. Tirado-Fabregat

Regional Inequality in Spain

1860–2015

palgrave
macmillan

Alfonso Díez-Minguela
University of València
València, Spain

Julio Martínez-Galarraga
University of València
València, Spain

Daniel A. Tirado-Fabregat
University of València
València, Spain

Palgrave Studies in Economic History
ISBN 978-3-319-96109-5 ISBN 978-3-319-96110-1 (eBook)
<https://doi.org/10.1007/978-3-319-96110-1>

Library of Congress Control Number: 2018952080

© The Editor(s) (if applicable) and The Author(s) 2018

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Cover illustration: MELBA PHOTO AGENCY / Alamy Stock Photo

This Palgrave Macmillan imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

For all the people and places that made me.

Alfonso

For Jana, who joined us while we were writing this.

Julio

To Raquel, Dani, and Andrea.

Dani

Acknowledgements

This book is the result of years of work, during which time we received invaluable help from various colleagues and institutions. The debts we owe are numerous since a great many researchers provided comments and advice throughout the process, both informally and in seminars and conferences we shared. Much of the content to be found in the following pages comes from previous papers on which the authors collaborated with Rafael González-Val, Joan Rosés and Teresa Sanchis. It was and continues to be a pleasure to work with them. We would also like to thank those colleagues who selflessly shared their data and estimations, which in many cases are yet to be published but which enabled us to complete our analysis. Marc Badia, Emanuele Felice, Jordi Guilera and Pedro Lains let us have their most recent estimates for regional GDP for Portugal and Italy. Eduard Álvarez Palau, Jordi Martí Henneberg and Mateu Morillas Torné helped us with the mapping, and Peter Hall was always willing to work on the English, even against the clock when a deadline was approaching. The area of Economic History (EH-Valencia) of the Department of Economic Analysis at the University of València became a space that made the research task much easier and provided us with a permanent stimulus. And we must not forget the Department of Economic History, Institutions, Policy and World Economy at the University of Barcelona (UB), which is where the investigation that years later would result in the publication of this book began. Out of everyone

at the UB we would most especially like to remember Francesc Valls, a colleague and friend who recently passed away. We would also like to express our gratitude to all the team at Palgrave Macmillan, for both the production and the publishing processes. Our thanks also go to Kent Deng (series editor), to two anonymous referees for their suggestions, and to Laura Pacey and Clara Heathcock for their patience, endless inspiration and excellent editing. Finally, we are grateful for the financial support received from the Ministry of Economy and Competitiveness via the ECO2012-39169-C03-02, ECO2015-65049-C12-1-P and ECO2015-71534-REDT projects.

Contents

1	Introduction	1
2	A Potted History: Spain 1860–2015	25
3	Methodology, Sources and New Evidence	49
4	Regional Income Inequality in Spain 1860–2015	81
5	Scratching Beneath the Surface: Distribution Dynamics	105
6	Spatial Patterns of Regional Income Inequality Then and Now	129
7	What Explains the Long-term Evolution of Regional Income Inequality in Spain?	149
8	Spain and Its Neighbours: An International Comparison	181

9 Conclusions	213
----------------------	-----

Appendix	223
-----------------	-----

Index	299
--------------	-----

List of Figures

Fig. 2.1	Real per-capita GDP (left axis) and openness (right axis), Spain 1860–2015	31
Fig. 2.2	Labour force by main economic activity in Spain, 1860–2011 (millions)	33
Fig. 2.3	Concentration in manufacturing at provincial level, Spain 1856–1995	41
Fig. 3.1	Per-capita income in Spain (current €), 1860–2015	51
Fig. 3.2	Spanish provinces (NUTS3), autonomous communities (NUTS2) and macro-regions (NUTS1)	58
Fig. 3.3	Regional (NUTS1) shares of national GDP	70
Fig. 4.1	Regional (NUTS2) per-capita income inequality in Spain (SCV, WCV, Theil) 1860–2015	89
Fig. 4.2	Regional (NUTS2 v. NUTS3) per-capita income inequality in Spain (WCV) 1860–2015	91
Fig. 4.3	Regional income inequality in Spain, 1860–2010	93
Fig. 4.4	β -convergence in Spain, 1860–2015	95
Fig. 4.5	β -convergence in Spain: (a) 1860–1910, (b) 1910–1950, (c) 1950–1980 and (d) 1980–2015	96
Fig. 4.6	Per-capita GDP and σ -convergence in Spain, 1860–2015	98
Fig. 4.7	Regional (NUTS2) per-capita income inequality in Spain (SCV, WCV, Theil) 1860–2015	101
Fig. 5.1	Box plots of per-capita GDP by province, Spain 1860–2015 (Spain = 1)	111

xii **List of Figures**

Fig. 5.2	Kernel densities for per-capita GDP by province, Spain 1860–2015	113
Fig. 5.3	Regional (NUTS3) income (class) mobility, Spain 1860–2015	116
Fig. 5.4	Regional (NUTS3) per-capita GDP (class) mobility (Shorrocks indices), Spain 1860–2015	117
Fig. 5.5	Regional (NUTS3) per-capita GDP (ranking) mobility (Tau rank), Spain 1860–2015	119
Fig. 5.6	Regional (NUTS3) per-capita GDP (ranking) mobility, Spain 1860–2015	121
Fig. 5.7	Regional (NUTS3) per-capita GDP (ranking) mobility, Spain 1860–2015	124
Fig. 6.1	Regional (NUTS3) per-capita GDP, Spain 1860–2010	134
Fig. 6.2	Spatial clustering (Moran's I) of regional (NUTS3) per-capita GDP, Spain 1860–2010	137
Fig. 6.3	Spatial clustering. LISA maps, 1930–2010	138
Fig. 6.4	Regional per-capita GDP in the Iberian Peninsula (2000)	140
Fig. 7.1	Regional (NUTS2) inequality (GDP per capita, GDP per worker and economic activity rates)	152
Fig. 7.2	Theil T index, decomposition of labour productivity (NUTS2), Spain 1860–2015	155
Fig. 7.3	Regional (NUTS1) gross value added (GVA) per worker in Spain, 1860–2015	165
Fig. 7.4	Labour productivity by major economic activity in Spain, 1860–2015	168
Fig. 8.1	Per-capita GDP by country (1990 Geary-Khamis dollars)	182
Fig. 8.2	South-west Europe v. the UK (per-capita GDP)	184
Fig. 8.3	Regional per-capita GDP (1990 Geary-Khamis \$) by country, 1860–2010	186
Fig. 8.4	Regional income inequality in south-west Europe, 1870–2010	188
Fig. 8.5	β -convergence in south-west Europe (1870–2010)	190
Fig. 8.6	β -convergence in south-west Europe (1870–1910, 1910–1950, 1950–1980, 1980–2010)	191
Fig. 8.7	Kernel densities, per-capita regional income, south-west Europe (1870–2010)	193
Fig. 8.8	Regional rankings for per-capita income, 1870–2010	195

Fig. 8.9	Maps of regional per-capita income in south-west Europe (quintiles)	200
Fig. 8.10	Regional income dispersion (WCV) and per-capita GDP (1870–2010)	204
Fig. 8.11	Regional income dispersion (WCV) and per-capita GDP in south-west Europe (whole sample, 1870–2010)	206

List of Tables

Table 2.1	Annual growth rates in Spain by major period (1990 Geary-Khamis \$)	27
Table 2.2	Relative shares of employment and gross value added by major sector in Spain	33
Table 2.3	Emigration and internal migration rates (per 1000 people), Spain, 1887–1991	40
Table 3.1	Regional GDP, NUTS3 sources	51
Table 3.2	Regional (NUTS2) GDP (%)	70
Table 3.3	Regional (NUTS2) population (%)	72
Table 3.4	Regional (NUTS2) GDP per capita (Spain = 1)	74
Table 4.1	σ -convergence in Spain 1860–2015	87
Table A5.1	Transition probability matrices by major period	126
Table 7.1	Theil T index, decomposition of labour productivity (NUTS2), Spain 1860–2015	155
Table 7.2	Hanna-Kim decomposition (NUTS2), Spain 1860–2015	159
Table 7.3	Decomposition of regional income-per-worker convergence, 1860–2015	167
Table 7.4	Decomposition of regional income-per-worker convergence, 1860–1910	170
Table 7.5	Decomposition of regional income-per-worker convergence, 1910–1950	171
Table 7.6	Decomposition of regional income-per-worker convergence, 1950–1980	174

xvi **List of Tables**

Table 7.7	Decomposition of regional income-per-worker convergence, 1980–2015	175
Table 8.1	Descriptive statistics	185
Table 8.2a	Regional rankings for per-capita income in 1870, 1910, 1950, 1980 and 2010 (top ten)	196
Table 8.2b	Regional rankings for per-capita income in 1870, 1910, 1950, 1980 and 2010 (bottom ten)	197
Table A1	Territorial units (NUTS), Spain	223
Table A2	Official nomenclature and equivalent used, NUTS2	225
Table A3	Gross domestic product (%), NUTS3	226
Table A4	Gross domestic product (%), NUTS2	240
Table A5	Gross domestic product (%), NUTS1	247
Table A6	Population, NUTS3	250
Table A7	Population, NUTS2	264
Table A8	Population, NUTS1	271
Table A9	Gross domestic product per capita (Spain = 1), NUTS3	274
Table A10	Gross domestic product per capita (Spain = 1), NUTS2	288
Table A11	Gross domestic product per capita (Spain=1), NUTS1	295



1

Introduction

Why Is It Important to Study Regional Economic Inequality?

The world is a very unequal place from an economic point of view. The roughly 200 countries that today occupy the planet's surface present huge differences in income levels,¹ and there are big differences within the countries themselves, too. Yet it is only relatively recently that this territorial inequality has attracted the attention of academics, politicians and international organizations. The main reason for this, as has repeatedly been shown (Kanbur et al. 2005; Milanovic 2005; World Bank 2009), is the fact that the successful growth experiences of emerging countries like China and India have been accompanied by growing disparities, especially between coastal and inland regions.

The case of China is probably the most paradigmatic. Despite the rapid economic progress of the last few decades which has transformed it into a leading actor in the world economy, its income per capita lags behind that of the most developed countries. And with a gross domestic product (GDP) per capita of around 16,000 \$, China still has a long way to go to

¹ GDP per capita in Norway, currently one of the top-ranked countries in the world, is over 70,000 \$. This is more than 100 times greater than that of the poorest country, the Central African Republic, which barely reaches 680 \$ (international dollars, purchasing power parity [PPP]). IMF figures.

reach the almost 60,000 \$ per-capita GDP of the US, occupying as it does a relatively modest position (79th) in the world ranking. Furthermore, this figure, which is a national aggregate, covers a wide range of realities. Provinces like Beijing, Shanghai and Tianjin have per-capita incomes of over 33,000 \$, that is, close to those in what are considered developed countries such as South Korea and Spain. At the other extreme, however, Gansu, which is the poorest province, has a per-capita income that is only a quarter that of its counterparts, barely reaching 8000 \$ (similar to Bolivia, which is ranked 120th in the world).² This contrast between coastal and inland areas is one of the basic characteristics of the developing Chinese economy.

Concern about territorial inequalities is also present in developed economies. Indeed the European Union (EU) plans to spend 352 billion euros on its cohesion policy over the period 2014–2020, a sum that represents virtually a third of its total budget. In particular, 182 billion euros will be allocated to regions with per-capita incomes below 75 per cent of the EU average.

The issue is not a minor one, and neither is the economic (and possibly political) reality to be dealt with. The Eurostat Regional Yearbooks (ERY) rate the question as a serious one and identify three characteristics of territorial inequality in Europe that need to be highlighted. The first is that there is a very high level of regional economic inequality. GDP per capita (GDPpc) in the richest NUTS2 region in the EU (Inner London) is over five times (5.8 in 2015) higher than the average for the EU-28. At the other extreme, the poorest regions have levels of GDPpc that are less than half the EU average. And these are not isolated cases—82 of the 276 NUTS2 regions that make up the EU-28 have a GDPpc below 75 per cent of the average. Another 45, however, exceed the EU average by at least 25 per cent.

The second is that regional inequality has a definite geographical profile in the form of a centre-to-periphery-type pattern. The ERY for 2017 points out that many of the rich regions of Europe can be found on a line

² Hunan, which occupies 16th position among the 31 provinces of China, has a per-capita GDP of around 13,000 \$. Zhang and Zhang (2003) and Kanbur and Zhang (2005), among others, study the evolution of regional inequality in China.

that starts in northern Italy and crosses Austria and Germany before splitting into two branches of prosperity—one that goes through the Benelux countries towards southern England and another that heads off towards the Nordic countries. The equivalent line for poor regions starts in the Baltic republics, then heads south across Eastern Europe towards Greece, southern Italy and the southernmost parts of the Iberian Peninsula.

Third and finally, the same report highlight the growing importance of the NUTS2 regions in which the capitals of EU member states are located. With the exception of Germany and Italy, these regions top their respective national rankings in terms of GDPpc in all EU countries that comprise more than one NUTS2 region. This is true even when the state capital is an island of prosperity in a sea of relative poverty.

Bearing all these aspects in mind, Spain—a country of over 46 million inhabitants covering an area greater than 500,000 km² with a heterogeneity without parallel in Europe in terms of climate, geography, culture and language—serves as an excellent microcosm for analysing regional economic inequality. We would even argue that this inequality in Spain today reproduces on a smaller scale the same patterns identified by Eurostat for the European economy as a whole.

Considering the Spanish average to be 100, the GDPpc for Madrid, the richest NUTS2 region in Spain, was 136 in 2015. For Extremadura, the poorest, it was 69. To put it another way, the richest region enjoyed a per-capita income practically twice the size of the poorest. Although not of the same magnitude, regional differences in income levels are significant in a fair number of cases. In 2015, 3 of the 17 NUTS2 regions in Spain recorded a GDPpc below 80 per cent of the average (Andalusia, Extremadura and Castile-La Mancha). Another three, on the other hand, exceeded it by over 20 per cent (Madrid, Navarre and the Basque Country).

Apart from this, territorial inequality in Spain also forms a definite geographical pattern. In this case the richest regions are to be found in the north-eastern triangle of the Iberian Peninsula, with its vertices in Catalonia, the Basque Country and Madrid. The area covered by the triangle includes Aragon, La Rioja and Navarre, all of which have income levels higher than the Spanish average. Also forming part of the group are the Balearic Islands, located off the north-east coast of the Peninsula.

Meanwhile the poorest regions of Spain are located along a line running from the south-east of the Iberian Peninsula towards the north-west, cutting across Valencia, Murcia, Andalusia, Castile-La Mancha, Castile-Leon, Extremadura, Cantabria, Asturias and Galicia.

Finally, like in most EU countries, the Spanish NUTS2 region with the highest per-capita income is the one in which the state capital is located, Madrid, which, as already mentioned, has an income per capita over 35 per cent higher than the Spanish average. However, this was not always the case, as we will see in the course of the book. During much of the economic development process in Spain it was Catalonia and the Basque Country, the pioneers of Spanish industrialization, that frequently occupied the top places in the national ranking.

As can be imagined, the situation described in the previous paragraphs is a cause of social and political tension between territories, and in particular between traditionally rich regions that are losing ground and poorer regions that receive net transfer payments from the state. This transfer of resources forms part of a system of fiscal flows between autonomous communities and the state that tends to favour poorer regions and find funding in the richer ones. The financing model for the autonomous communities, that is, the criteria whereby the state decides what resources each territory should contribute or receive, is therefore a bone of contention causing disputes that can sometimes spill over into society and be taken up by the general public. Regional inequality and the funding of net payment transfers for the purposes of territorial rebalancing are weapons wielded by regional pro-independence movements at one end of the spectrum and those who want to recentralize power in the state at the other.

The best way of overcoming this situation, whether in Europe or Spain, is to make any actions designed to correct these inequalities more effective. However, evidence of this actually happening is thin on the ground. Various papers (Giannetti 2002; Puga 2002) have pointed out that, on a European scale, the economic integration process has achieved a certain level of convergence between member states in terms of income. Nevertheless, at least since the mid-1980s, this convergence has done little to close the gap between regions. On the contrary, regional inequality has continued to grow in spite of the huge resources allocated to the development of poorer regions through territorial cohesion policies. In

the case of Spain, the situation is no different. Even with increased intervention and public spending aimed at territorial rebalancing in the context of integration within the EU, the gap between rich and poor regions has been growing since the mid-1980s.

With this problem in mind, the aim of this book is to search the past for the factors that determine regional inequality. The object is simply to identify and make visible those elements that need to be taken into account when designing public policies so that these policies can be more effective in getting to the root of the problem. We start from the premise that a knowledge of history, of the long-term evolution of territorial inequality, is a key element when it comes to understanding today's economic reality, especially if we consider that this reality is the result of a long and complex process, strongly influenced by technological and institutional change, geography and policies.

This introduction is followed by a brief overview of what the field of economics considers to be the main reasons that explain why inequality between territories exists and how it evolves over time. As we will argue later, whatever the economic reasoning used to explain the problem, it should be agreed that territorial inequality is caused by imbalances generated by the economic development processes and characterized by the integration of national markets, unequal technological advance, the speed of structural change and the varying degrees to which national economies are exposed to globalization processes. Understanding it therefore requires us to consider a great variety of elements together and carry out an empirical analysis covering a lengthy time period. At the end of the day, territorial inequality is to do with the movement of societies along pathways of growth that extend into the long term.

How Does Economics Explain the Existence of Regional Inequalities?

Studying the determinants and possible evolution of regional economic inequality has generally been approached from two different though very closely related economic viewpoints: international trade theory and economic growth theory. Given this context, the purpose of the following

paragraphs is, first, to record which elements predominate in the various theoretical approximations carried out to explain the existence of economic inequality between territories, and second, to present the economic reasoning that provides the basis for hypotheses about the evolution of inequality during economic growth processes.

Various explanations for regional economic inequality have been put forward in the international trade literature. Neoclassical economic models, for example, have explained regional income disparities on the basis of spatial differences in the distribution of endowments (e.g. natural resources, factors of production and infrastructure) and technology. Differences in factor endowments would result in territorial specialization processes leading to marked differences in regional production structures. Thus regional specialization in sectors characterized by different productivity levels could be one explanation for territorial inequality.

With this analytical framework, the effect of removing obstacles to trade and the advance of market integration would favour the convergence of factor returns and living standards. The factor-price-equalization (FPE) theorem from the Heckscher–Ohlin (HO) model is optimistic about the consequences of market integration; the increase in trade and factor movements should lead to factor-price equalization across regions, an element that would encourage convergence between territorial production structures, thereby boosting GDPpc convergence. However, under the same HO framework, market integration could also lead to increasing regional specialization because regions still have different factor endowments, especially as regards accumulable factors like infrastructures and human capital. In this situation, the standard HO model allows FPE but not income equality (Rassek and Thompson 1998; Slaughter 1997). So, if we accept this economic reasoning, it makes sense for territorial cohesion policies to focus mainly on the public provision of infrastructures or human capital in more disadvantaged regions.

However, according to the new economic geography (NEG) literature, the neoclassical analysis is missing some relevant forces that can affect regional disparities and prevent convergence. NEG theoretical models suggest that the interaction between transport costs, increasing returns and market size under a monopolistic competition framework can lead to the spatial agglomeration of economic activity (Krugman 1991). Companies

produce more efficiently and workers enjoy better welfare by being close to large markets, and therefore more companies and workers relocate to these areas. This creates a cumulative causation process that tends to increase income differences across territories. In other words the initial differences, far from becoming smaller with the advance of economic integration processes and production factor mobility, would tend to get bigger. Regions with the greatest market potential would probably see a concentration of economic activities subject to increasing returns, that is, those activities with the highest levels of productivity.

Bearing this in mind, if we accept that the elements detailed by the NEG provide an economic explanation for the existence of territorial inequality, then traditional territorial cohesion policies would not be effective. Indeed, rather than dedicate resources to providing the poorest regions with new infrastructures or human capital, these policies should boost the territory's connectivity, taking it economically closer to the big markets. The key to this, as suggested in the EU's Horizon 2020 programme, lies in designing transport and communications networks, essential aspects given the framework of today's technological revolution brought about by advances in information and communications technologies (ICT).

Nevertheless, it should be remembered that Puga (1999), extending the initial arguments of the NEG, pointed out that the relationship between the regional integration process and the degree of concentration of economic activity depends to a large extent on whether or not workers move across regions in response to income differentials. Industrial agglomeration tends to raise local wages in regions densely populated by companies. When higher wages lead workers to relocate from de-industrializing (poor) to more industrialized (rich) regions, agglomeration intensifies but wage differentials tend to collapse. In other words, market integration and industrial concentration should lead to income convergence. If workers do not move across regions, however, interregional wage differentials tend to persist and the relationship between integration and agglomeration is no longer monotonic. For example, in the case of further reductions in transport (transaction) costs, a new tendency towards dispersion can emerge as a result of congestion costs. Progressive market integration can thus eventually lead to income convergence, as

predicted by traditional models. In other words, still within the NEG framework, the increasing integration of markets, especially the labour market, would eventually bring about a reduction in territorial inequality in the long term. This aspect, linked to the behaviour of the labour market, should therefore be included in any strategies followed by national or supranational governments in their fight to reduce territorial inequality.

Growth theory has also provided some insights into the causes of regional inequality. According to the Solow growth model, differences in capital per worker in a closed-economy context lead to slow income convergence across locations (Barro and Sala-i-Martin 2003). If cross-regional movements of capital are added to the model, convergence rates may increase due to the fact that capital moves from capital-abundant to capital-scarce regions following differences in relative returns (Barro et al. 1995). However, absolute convergence of incomes in this conceptualization would be slowed down if the poorest regions were also characterized by being endowed with few accumulable factors, that is, factors like human capital or infrastructures that make it possible to increase the productivity of the physical capital. Therefore, within the framework of neoclassical economic theory, public investment in these areas would to some extent be effective in promoting regional convergence processes.

A new strand of thinking known as endogenous growth theory also makes contradictory predictions about the impact of cross-regional integration. In the presence of increasing returns on activities that generate technical progress (e.g. R+D), the basic model (Romer 1986) predicts that increasing movements of capital will lead to regional divergence. This is because, if technology is not considered to be a public good and is therefore subject to the decision-making processes of individual agents and their desire for monopoly incomes, any increase in scale of the economy will have a positive lasting effect on growth, encouraging territorial inequality. With this conceptual framework, traditional cohesion policies would be ineffective. This has been taken into account in the EU's Horizon 2020 programme, which establishes that territorial cohesion policies should give precedence to investment in activities that generate knowledge and not only to the public provision of accumulable factors in less advantaged regions.

How Do We Expect Regional Inequality to Evolve in the Course of Economic Development Processes?

Judging from that brief review of the theoretical literature on regional income inequality, we can conclude that more empirical work is needed because the various models make conflicting predictions. However, it should be noted that economic history has traditionally argued that the early stages of modern economic growth, particularly when growth and regional market integration have increased in tandem, are associated with greater inequality in regional income per capita. Williamson (1965) studied income evolution in a cross-section of countries along with the long-term evolution of regional inequality in the US. His hypothesis was that regional inequality followed an inverted U-shape throughout the growth process, with increasing inequality being evident during the nineteenth century and then convergence afterwards. As far as the US is concerned, he argued that structural change and specialization increased inequality in the early stages of economic growth, but that the continuing process of structural change and integration in combination with associated increases in capital movements and internal migrations could explain any reduction in regional income inequalities.

Kim (1998) confirmed Williamson's findings, showing how regional inequality across regions in the US evolved following an inverted U-shaped pattern. He also argued that increased inequality during the second half of the nineteenth century could be explained by specialization and divergence in economic structures. Further advances in economic growth and national market integration in the twentieth century were accompanied by a decrease in regional income inequality, which was brought about by the homogenization of economic structures and convergence in productivity across states (also Kim and Margo 2004). Caselli and Coleman II (2001) went slightly further in their exploration of long-term regional inequality in the US, making a connection between regional convergence and decreases in agricultural employment in the poorest areas.

However, the inverted U-shape denoting the relationship between structural change, economic development and regional inequalities as suggested by Williamson (1965) had no theoretical framework to support it. To give it a solid economic foundation, Barrios and Strobl (2009) designed a model to support the hypothesis, building on the growth model based on technology diffusion developed by Lucas (2000). This makes it possible to trace the transition from pre-industrial stagnant economies to modern economies in the course of long-term economic growth. The dynamics of this transition depend on technology shocks or innovations which, from the very beginnings of industrialization, increase levels of productivity and speed up growth at national level.

At the start, these technology shocks are concentrated in particular areas because of their region-specific factor endowments (e.g. human capital, mineral resources) and/or institutions. Economic growth is therefore spatially localized, meaning that in the early stages of growth and industrialization there tends to be an increase in regional inequality. Although divergence forces are initially predominant, there comes a point when a process of technology diffusion from the leading region to other regions comes into play. The pace and timing of this diffusion depend on the technological capabilities of the other regions and the level of knowledge countrywide. Follower regions, which are all at different points in time as regards development, gradually adopt the leading region's innovations and move from stagnation towards growth. Regional convergence then begins. Other regions will eventually catch up either due to the spread of technology or as a result of factor flows (capital, labour). In these circumstances, the relationship between average income per capita across the country and regional inequalities becomes non-monotonic and traces an inverted U-shaped or bell-shaped curve over time. And thus the model supplies a theoretical framework to back up the Williamson hypothesis.

Research carried out by Barrios and Strobl (2009) also makes it possible to infer certain things about the forces that may affect regional income inequality during the economic development process. These authors argue that spatial inequalities would be greater if national markets were globally integrated. This would indicate the existence of a positive relationship between trade and regional economic inequality in any particular country.

Various studies have explored this relationship, in most cases going back as far as 1980 and analysing recent decades, and the evidence they provide suggests that trade has an effect that leads to greater regional inequalities.³ Rodríguez-Pose and Gill (2006) and Hirte and Lessmann (2014) look at the effect that trade openness has on territorial inequality and include both developed and developing economies in their samples. The evidence found in these studies confirms that the effect does indeed exist. Rodríguez-Pose (2012) demonstrates that the effect is stronger in poorer countries. Likewise, Ezcurra and Rodríguez-Pose (2014) look at 22 emerging economies during the period 1990–2006 and again find that changes in international trade have given rise to a significant increase in interregional inequality and that the impact is strongest in the poorest countries. It would appear that greater exposure to trade, although it might benefit these emerging economies in aggregate terms, generates winners and losers among the regions.

However, if economic growth is considered to be endogenous and there are economies of scale in technology production, then public policies would be expected to channel funds into research and development (Baldwin and Martin 2004). Designing networks and reducing transport costs would also become important. NEG models provide a strong basis in this respect to explain the effect that declining transport costs and changes in market accessibility have on the geographical location of economic activity (Krugman 1991; Puga 1999; Fujita and Thisse 2002).

The presence of agglomeration economies could also prove to be an obstacle to regional income per-capita convergence.⁴ Ciccone and Hall (1996) and Ciccone (2002) find an agglomeration effect that connects the density of economic activity with interregional differences in labour productivity, thereby making a link between economic density and agglomeration effects. Brühlhart and Sbergami (2009) perform a Barro-type empirical analysis of economic growth determinants for a large sample of

³One exception would be Milanovic (2005), who analyses the five most populated countries in the world (China, India, the US, Indonesia and Brazil) between approximately 1980 and 2000, but finds no link between trade openness and regional inequality.

⁴On a related subject, NEG models provide ambiguous results concerning the impact of trade openness on a country's internal economic geography (Krugman and Livas Elizondo 1996; Paluzie 2001; Crozet and Koenig 2004; Hanson 2005). An overview of this literature is given in Brühlhart (2011).

countries around the world and another sample comprising only EU member states for the period 1960–2000. Together with the explanatory variables traditionally used in this type of exercise, they introduce additional indicators for the spatial agglomeration of production and population. Their results indicate a positive relationship between the presence of agglomeration economies and growth in early stages of regional development. However, they also indicate that once a region reaches a certain level of income per capita, the relationship disappears or becomes negative. On this point they argue that their empirical analysis provides evidence to support the Williamson hypothesis.⁵

Another relevant dimension is the rate of change along the inverted U-shaped curve, an aspect also considered by Barrios and Strobl (2009). Region-specific factor endowments (physical and human capital) and public policies gain momentum as modern economic growth spreads across the regions. In an attempt to maintain territorial cohesion, the aim of such policies is to reduce regional disparities by financing the building of infrastructures, for example. In this regard, since 1986 the EU has given greater importance and dedicated more resources to regional policies designed to strengthen economic and social cohesion. A new high-level strategy (Europe 2020) was introduced under the Treaty of Lisbon, which for the first time included use of the term “territorial cohesion”.

Two other elements from Barrios and Strobl (2009) are deserving of comment. If technological change is concentrated in specific sectors and therefore locations, then structural differences could increase the extent of regional income inequality. In other words it might be possible to see a direct relationship between regional production specialization and spatial income inequalities. This is particularly relevant because it is one of the main mechanisms explored by Kuznets (1955) and Williamson (1965). Also, the model allows for technology shocks (ICT revolution) and large-scale institutional change (supranational market integration),

⁵ Gardiner et al. (2011) question Brühlhart and Sbergami's (2009) results. They look at the relationship between agglomeration and growth in the EU-15 (1981–2007), but their results are inconclusive. They note that the relationship's existence lacks robustness when they introduce different agglomeration measures and change the size of the territorial units (NUTS1 or NUTS2). They also point out that the robustness of the results is reduced because only a limited period is studied (1960–2000).

and these could have a big impact on the long-term dynamics of regional inequality. If the ICT revolution or greater market integration benefits the richest regions most, for example, one would expect to see a rise in GDPpc inequality across regions.

Meanwhile Giannetti (2002) analyses the European experience, in which convergence among countries since the early 1980s has not been accompanied by convergence among regions. She argues that this may be partly due to sectoral specialization. Economic integration speeds up growth at country level but also increases within-country spatial disparities, since regions that specialize in high-tech sectors benefit most from knowledge spillovers while the opposite happens in regions that specialize in more traditional sectors.

How Has Regional Economic Inequality Really Evolved Over the Last 30 Years?

There is a growing body of empirical literature directed at testing the central hypothesis deriving from Williamson's (1965) seminal work and later studies such as that by Barrios and Strobl (2009). Indeed it was Barrios and Strobl (2009) who empirically tested their own model using parametric and semi-parametric techniques to check for the presence of an inverted U-shaped relationship between regional inequality and economic development. The sample they used was a panel of European countries for the period 1975–2000. They found strong evidence of a bell-shaped curve with an initial increase in regional inequalities and then, after a certain threshold, the beginning of convergence. The results are robust not only to changes in regional administration units and time periods, but also to the inclusion of control variables and non-European countries.

Lessmann (2014) also checks for the presence of an inverted U-shaped relationship between spatial inequality and economic development. To this end he uses a panel dataset of spatial inequalities in 55 countries at different stages of economic development during the period 1980–2009. He provides strong support for an inverted U-shaped relationship and, just as importantly, points out that regional inequality has recently been

on the rise. This would suggest that there may be an N-shaped relationship between spatial inequalities and economic development.

Lessmann and Seidel (2017) carry out a similar exercise but expand the sample of countries with regional incomes on the basis of night-time-light satellite data,⁶ which enabled them to cover 180 countries over the period 1992–2012. They, too, find evidence in support of the Williamson hypothesis. An analysis of the determinants of regional inequality leads them to suggest that trade openness brings with it an increase in regional inequality, but that this can be offset by regional transfers and investments in infrastructures and by making institutions more democratic. Importantly, at high income levels there is also a high degree of dispersion in regional incomes, which, as in Lessmann (2014), would indicate the presence of an N-shaped evolution. These papers argue that, although there are various forces that could possibly explain the presence of an N-shaped relationship between regional inequality and economic development, tertiarization currently seems to be the predominant trend in the most developed economies, that is, a structural shift away from industrial production towards a service base.

The N-shape hypothesis is in line with previous findings by Amos (1988). His study focused on the US during the period 1950–1983 and showed that the increase-decrease pattern discernible in the evolution of regional disparities that Williamson first drew attention to eventually turned into an increase-decrease-increase pattern, which would support the hypothesis that regional inequality increases in the later stages of development.⁷ He attributed this new increase in regional inequality following completion of the Williamson curve to changes such as suburbanization and the transition to a service-based economy.⁸ Ezcurra and Rapún (2006), however, questioned these results in a study covering 14 Western European countries over the period 1980–2002. Using non-parametric methodology and controlling through the use of additional

⁶This methodology is in line with Gennaioli et al. (2014), who worked with data for 83 countries covering recent decades. Depending on the availability of data, they found evidence of a regional convergence rate close to the 2 per cent generally seen in the growth literature. Magrini (2004) and Breinlich et al. (2014) contain reviews of the empirical literature on regional growth and convergence.

⁷He found that this was the case in 37 of the 50 US states by the early 1980s.

⁸See also List and Gallet (1999).

variables in the spirit of Barrios and Strobl (2009), they concluded that regional imbalances stabilize in the later stages of development.

In short, the existing empirical literature examines how regional inequality evolves over time and studies its main drivers. The question as to whether regional production specialization, openness, public expenditure, urbanization rates, market potential or economic agglomeration, for example, stimulate regional convergence/divergence can therefore be empirically tested. However, these empirical investigations only cover recent decades and fall short when it comes to considering a long-term perspective. Any analysis of the relationship between economic growth and regional inequalities should really take into account the entire economic development process, that is, starting with the earliest stages of modern economic growth, as in Kuznets (1955) and Williamson (1965). Given these conditions it is easy to understand why Lessmann (2014) himself noted that: “the major problem for this kind of research is that it is essential either to have historical data for single countries or to include poorer countries in a cross-country dataset, since the theories of Kuznets and Williamson point at the deep structural changes associated with the industrialization process”.

And in the Long Term?

It is perhaps for this reason that the relationship between regional inequality and economic development has ultimately also attracted the interest of economic historians. Until recently the main problem was that, in most countries, reliable information on regional GDP for historical periods was practically non-existent. Fortunately, this situation has begun to change. Over the last few years several studies have supplied new regional GDP estimates at country level, and these make it possible to examine the long-term evolution of regional inequality. Most of these studies have been based on the work done by Geary and Stark (2002), in which the authors proposed a methodology for estimating historical regional GDP for the UK that has become the benchmark for other authors and countries (Wolf and Rosés [in press](#)).