



## The upswing of regional income inequality in Spain (1860–1930)

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### ARTICLE INFO

#### Article history:

Received 25 July 2009

Available online 4 February 2010

#### Keywords:

Industrialization

Market integration

Heckscher–Ohlin model

New economic geography

Regional convergence

### ABSTRACT

This paper studies the evolution of Spanish regional inequality from 1860 to 1930. The results point to the coexistence of two basic forces behind changes in regional economic inequality: industrial specialization and labor productivity differentials. The initial expansion of industrialization, in a context of growing economic integration of regions, promoted the spatial concentration of manufacturing in certain regions, which also benefited from the greatest advances in terms of labor productivity. Since 1900, the diffusion of manufacturing production to a greater number of locations has generated the emulation of production structures and a process of catching-up in labor productivity and wages.

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### 1. Introduction

A source of concern among policy-makers is the possibility that the processes of cross-national integration, like the European Union and NAFTA, may result in increasing regional inequality.<sup>1</sup> Furthermore, the predictions made by economic theory about the impact of integration on regional economic inequality are at best ambiguous, which calls for empirical analysis.

The Neoclassical trade theory (the Heckscher–Ohlin (HO) model) argues that regional incomes differ because of differences in factor endowments and factor prices (Harry Flam and Flanders, 1991; Slaughter, 1997). The factor-prize-equalization (FPE) theorem, within this framework, is optimistic about the consequences of market integration: the increase in trade and factor movements leads to factor-price equalization across regions, and hence, per-capita GDP convergence.<sup>2</sup> It should be noted, however, that market integration may also lead to increasing regional specialization because regions differ in factor endowments. In this situation, the standard HO model allows FPE but not income equality (Rassekh and Thompson, 1998; Slaughter, 1997). Conversely, if regional differences in factor endowments tend to decrease and factor prices converge, one should observe a reduction in regional income disparities.<sup>3</sup>

On the other hand, the recent new developments in trade theory, the New Economic Geography (NEG), are even less optimistic about the regional inequality impact of integration processes.<sup>4</sup> NEG models are constructed around the idea that the

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<sup>1</sup> In the case of the process of European integration, which has lasted more than half a century, regional differences within countries have soared, albeit a substantial decrease in cross-national differences in GDP per capita (Puga, 2002). The fact is that substantial regional inequality appears to be an enduring characteristic of the European economic landscape. Spain is a good example of this situation. According to the most recent data published by the Spanish statistical office (INE, 2008), per-capita GDP in the richest Spanish NUTS II region (the Basque Country) was about two times that in the poorest region (Estremadura).

<sup>2</sup> However, to hold, the FPE theorem requires a long list of strict assumptions. See, for example, Samuelson (1949), Deardorff (1986) and Leamer (1995).

<sup>3</sup> Kim (1998).

<sup>4</sup> Baldwin et al. (2003) and Fujita et al. (1999) offer an extensive analysis of this framework.

existence of product differentiation, increasing returns to scale and transport costs may generate pecuniary externalities in firms and workers' location choices. In the presence of factor mobility or intermediate inputs, these three factors give rise to agglomeration and, hence, uneven regional specialization. As workers tend to concentrate in a given location, the resulting shift in local demand increases the incentive for firms to concentrate production in that location. Also, workers may obtain a wage premium in these places due to the presence of Marshallian externalities and the subsequent higher labor productivity levels.<sup>5</sup> In sum, NEG argues that market integration could lead to regional divergence.

To further complicate the situation, economic integration is not the only causal factor for regional convergence and divergence. Williamson (1965) pointed out that regional inequality could have been growing during the initial phases of modern economic growth and declining from certain levels of development. So, in the long run, in parallel with the processes of economic integration and industrialization, changes in economic inequality may have followed an inverted-U shape. Similarly, several authors have emphasized the importance of structural change in regional inequalities. For example, Caselli and Coleman (2001) related the convergence among regions within the US to the reduction of agricultural employment in the poorest locations. To summarize, a substantial literature has related the upward trend in regional per-capita GDP inequality to the unequal distribution of industrial production.

Finally, the growth theory also offers insights about the causes of regional inequality. In the textbook Solow model, in a closed economy context, differences in capital per worker led to slow income convergence across locations (Barro and Sala-i-Martin, 2003). If we add to the model cross-regional movements of capital, convergence rates may increase due to the fact that capital moves from capital-abundant to capital-scarce regions following differences in its relative remuneration (Barro et al., 1995). The new strand of growth theory, the endogenous growth theory, also makes contradictory predictions about the impact of cross-regional integration. In the presence of increasing returns, the basic model (Romer, 1986) predicts that increasing movements of capital will lead to regional divergence. Instead, if we consider that technology is not a public good and, hence, subject to decision-making processes of individual agents and their prospect for monopoly rents, an increased scale of the economy will have a lasting positive effect on growth. The monopoly rent increases with the number of consumers, while the costs for innovation are independent of the size of the economy (Crespo Cuaresma et al., 2008).

An obvious historical precedent of these economic unions among nations is the emergence of national markets in many European countries and the United States. During the 19th century, institutional barriers to trade and factor movements within countries were eliminated, transport costs decreased dramatically (particularly with the construction of the railway networks and the improvements in sea transport), and national monetary and financial markets emerged. As a consequence, domestic movements of people, capital and goods grew, and the prices of commodities and production factors tended to converge across locations.<sup>6</sup> On the other hand, the creation of these national markets was sometimes contemporary to industrialization processes and the subsequent processes of structural change and regional specialization.<sup>7</sup>

In this context, the study of the Spanish experience is particularly appealing. First, the Spanish national market emerged over the second half of the 19th century as a consequence of the expansion of the railway network, the liberalization of markets and the development of a national financial system. However, domestic migrations and structural change were relatively unimportant up to the years following World War I (see Section 2). Second, industrialization developed in certain regions, like Catalonia and the Basque Country, while a large part of the country remained agrarian (Nadal, 1974). Third, different studies have confirmed the fact that manufacturing production became increasingly concentrated during the period, as is suggested by the NEG models (Rosés, 2003; Tirado et al., 2002). Nevertheless, we had sparse and inconclusive evidence about the impact of this industrial concentration on regional income disparities (Rosés and Sánchez-Alonso, 2004). Finally, in the European context, Spain was a relatively large country with a low population density that specialized in exportation of agricultural goods and minerals. So, one could expect that its experience to be situated in between two extreme historical experiences: that of the United States, which is characterized by land abundance, the expansion of the land frontier and important transport costs (Kim, 1995, 1998, and Kim and Margo, 2004), and that of Britain, which is marked by high population density, the international specialization in manufacturing exports, and low transport costs (Crafts and Mulatu, 2005, 2006).

The rest of the paper will proceed as follows. Section 2 discusses the process of creation of the Spanish national market. In Section 3, we describe the methods and sources for constructing our new per-capita regional GDP database. In Section 4, we present the main stylized facts on the evolution of Spanish per-capita regional GDP. The following section considers the subsequent regional specialization and the industrialization patterns. Section 6 decomposes the determinants of regional variation in per-capita GDP. Section 7 presents the conclusions.

## 2. The formation of the Spanish national market

Before the mid-19th century, Spanish regions were relatively independent regional economies. Barriers to interregional trade and the movement of capital and labor were ubiquitous: local tariffs and regulations on domestic commerce were

<sup>5</sup> An interesting variation of this framework, which combines the HO and the NEG models, is offered by Epifani (2005). This author showed that: (1) if regional differences in endowments are relatively small, agglomeration forces induce an over-specialization, which results in a reversion of the relation between factor prices and factor abundance; and (2) if trading partners are very dissimilar in terms of endowments, the predictions of the Heckscher–Ohlin framework, including the FPE theorem, hold.

<sup>6</sup> See, for example, Boyer and Hatton (1997) on Britain, and Slaughter (2001) on the United States.

<sup>7</sup> The classical account of this process is Pollard (1981).

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