

DEVELOPING COUNTRIES: INDUSTRIAL PRODUCTION vs. SCIENTIFIC PRODUCTION

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1. INTRODUCTION AND AIM

In recent years, a series of developing countries (China, India, Brazil, etc.) with very high production levels and very competitive prices have been making inroads into different industrial sectors. So far, production in these countries has been considered to be of medium-low quality, and therefore affecting a particular segment of the market.

On the other hand, the scientific and technological policies implemented by the governments of some of these countries in the last few decades have boosted current industrial, scientific, and technological development, together with research and innovation in relevant areas.

The aim of this study is to link two indicators: industrial production in the ceramic sectors (floor and wall tiles) in these countries, and scientific production in the science of ceramic materials, in order to highlight the close relationship between the two.

2. METHOD

This study has been carried out by consulting public data on ceramic (floor and wall tile) production, which have provided information on developments in the major tile producing countries, as well as data on scientific production, obtained by consulting the Journal Citation Reports and Web of Science databases of the ISI Web of Knowledge, these being major databases, which contain the most prestigious publications worldwide in all fields of science and technology.

The following table shows the production data for ceramic floor and wall tiles worldwide.

	Production (millions of m ²)							
	2000	2001	2002	2003	2004	2005	2006	2007
China	1807	1810	1868	2100	2300	2500	3000	3200
Brazil	453	473	508	534	566	568	594	637
Spain	621	638	651	583	596	609	608	585
Italy	632	638	606	603	589	570	569	559
India	97	109	150	240	270	298	340	385
Turkey	175	150	162	189	216	261	265	260
Vietnam	55	95	105	134	138	176	199	254
Iran	71	78	95	160	175	190	210	250
Mexico	138	167	159	171	177	196	210	215

Table 1.

To obtain scientific production data, publications from the 'Materials Science. Ceramics' group were selected in the Journal Citation Reports for 2007. The data obtained are set out in the following table.

	Scientific publications (no. of articles)							
	2000	2001	2002	2003	2004	2005	2006	2007
China	327	333	402	410	527	553	660	741
Brazil	103	79	111	81	123	86	135	74
Spain	68	118	114	128	102	116	125	203
Italy	87	122	96	153	165	124	150	148
India	55	71	83	74	122	125	156	196

Table 2.

In order comparatively to plot the evolution of the variables (industrial production and scientific production) over the chosen years, calculations were made based on the year 2000. The evolution is shown in the following figures.

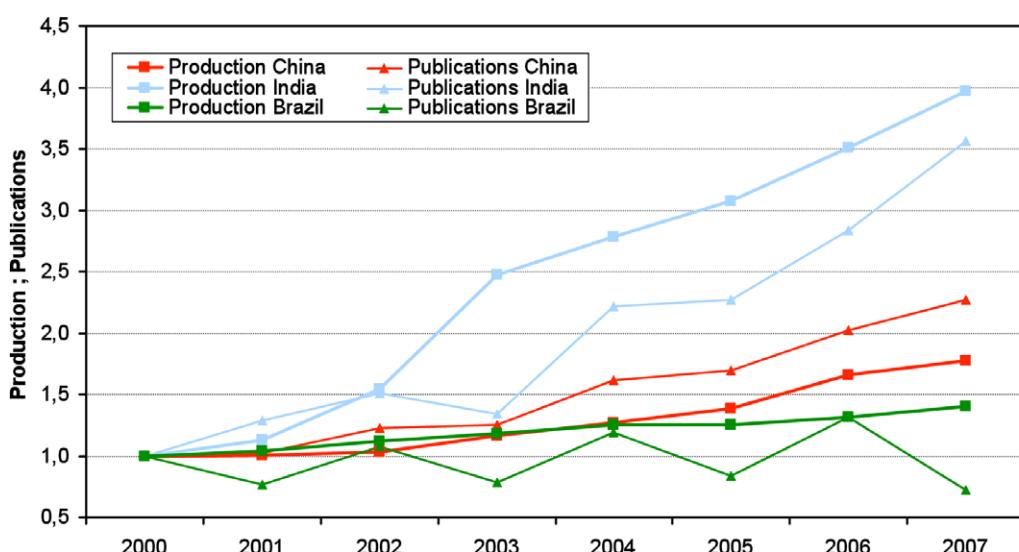


Figure 1.

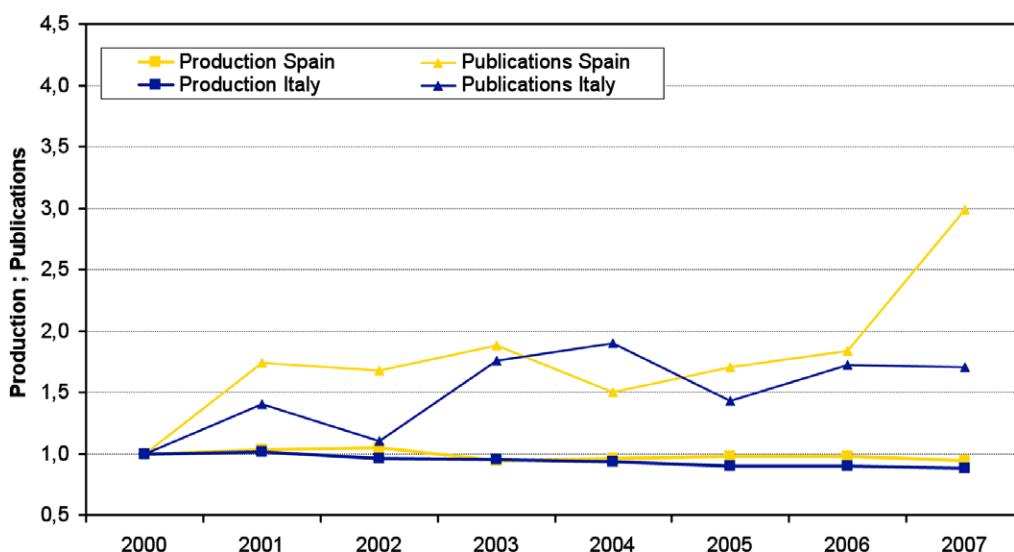


Figure 2.

3. CONCLUSION

An initial interpretation of these graphs shows that in the two Asian countries, China and India, the increase in both indicators is virtually parallel. The gradual growth of their industrial production, due to changes in their economies since the last decade of the twentieth century, has been accompanied by increased scientific publications as a result of their research activities. Also in this case, the scientific and technological policies aimed at stimulating research in China and India have been critical to achieving these results, since they have provided these societies with the infrastructure and equipment needed to pursue research activity. These data show that, in the short term, this increase in scientific production will be reflected in enhanced production quality, so that the innovative character that has traditionally set European producers apart from the new producers will gradually disappear.

This study is an approach to a situation that has evolved in recent years from a suggestion to a reality. A future, more in-depth study of the topics dealt with in this study would provide more precise, key data in order better to understand the new situation facing the ceramic industry.

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