

# ICE

## CONTENTS

NUM. 781  
OCTOBER 1999

**INFORMACION COMERCIAL ESPAÑOLA. REVISTA DE ECONOMIA**

### **TECHNOLOGICAL CHANGE AND INDUSTRIAL COMPETITIVENESS**

<b>Mikel Buesa</b>	3	Introduction: Technological Change and Competitiveness
<b>Carmen López Pueyo and Jaime Sanaú</b>	11	Technology and Growth: Analysis in Spanish Industry
<b>Antonio Fonfría and Inés Granda</b>	27	Innovation and Technology: Empirical Contrast of Schumpeterian Technological Regimes
<b>Juan A. Tomás Carpi, Juan R. Gallego and Josep V. Picher</b>	45	Technological Change and Transformation of Local Industrial Systems: The Spanish Ceramics Industry
<b>Lucía Avella, Esteban Fernández and Camilo J. Vázquez</b>	69	Relationship between Manufacturing Advantages and Competitiveness of Large Spanish Industrial Firms
<b>Sara Barcenilla</b>	85	Technological and Commercial Specialisation. Empirical Evidence for European Union Countries
<b>Daniel Coronado Guerrero and Manuel Acosta Seró</b>	103	Technological Innovation and Regional Development
<b>Alex Rialp i Criado</b>	117	Micro-organisational Approach to Business Internationalisation: A Review and Synthesis of the Literature
<b>Alfredo Martínez Bobillo and Fernando Tejerina Gaite</b>	129	International Acquisitions and Control in Spanish Industrial Companies
<b>Inmaculada Martínez Zarzoso</b>	143	International Competitiveness of Spanish Industry

### **ECONOMIC FORUM**

<b>Manuel E. Sansalvador, José A. Trigueros and Javier Reig</b>	157	ISO 9000-Compliant Total Quality Management in SMES
---	-----	---

### **BOOK REVIEWS**

171	Critiques, reviews
-----	--------------------

### **CONTENTS**

185	Contents, abstracts
-----	---------------------

**AVELLA CAMARERO, Lucía; FERNANDEZ SANCHEZ, Esteban and VAZQUEZ ORDAS, Camilo J.**

**Relationship between Manufacturing Advantages and Competitiveness of Large Spanish Industrial Firms**

The purpose of this paper is to ascertain whether or not manufacturing superiority is related to competitive success or economic results in a sample of large Spanish industrial firms. The database used contains information gathered from a questionnaire mailed to industrial companies located in Spain which had over 200 employees in 1994 (reference year for the survey). The methodology used included multiple regression analysis, discriminant function analysis, means test and Pearson's correlation coefficient. The results reveal that, for the sample considered, there is no direct relationship between the development of manufacturing advantages or strengths and larger profits.

**Key words:** large enterprise, industrial enterprises, production management, business strategy, competitive advantage, Spain.

**JEL Classification:** L23, L60, M11

**BARCENILLA VISUS, Sara**

**Technological and Commercial Specialisation. Empirical Evidence for European Union Countries**

This article, inspired by the most recent neo-Schumpeterian proposals on international trade, analyses the characteristic traits of technological and commercial specialisation patterns in European economies. More specifically, the author first reviews the characteristics of the two patterns in terms of degree of concentration, similarity, stability and accumulability over time. Secondly, the capacity for technological specialisation is analysed to explain the commercial performance observed in the period 1973-1993 for each of the economies considered.

**Key words:** foreign trade relations, technology, technology transfer, comparative advantage, competitive advantage, European Union, 1973-1993.

**JEL Classification:** C21, F14, O33

**CORONADO GUERRERO, Daniel and ACOSTA SERO, Manuel**

**Technological Innovation and Regional Development**

This article addresses three key issues in the territorial technology-development relationship: first, how can innovation and regional technological capabilities be quantified; second, what are the determining factors underlying innovation and what role does clustering play; and third, what can be done to enhance the technological capabilities of less

advantaged regions to improve competitiveness and increase regional growth. These issues are discussed in connection with Spanish regions according to the following scheme: the point of departure is a diagnosis of regional imbalance and technological capabilities from the dual viewpoint of resources and results; thereafter, an appropriate model is deployed to identify the determining micro-economic factors underlying innovation; finally, the results obtained are discussed along with their implications for the design and implementation of regional technological innovation policies in our country.

**Key words:** regional development, regional imbalance, technological innovation, patents, technological policy, Spain, 1989-1995..

**JEL Classification:** O18, O30, R12

**FONFRIA MESA, Antonio and GRANDA GAYO, Inés**

### **Innovation and Technology: Empirical Contrast of Schumpeterian Technological Regimes**

The aim of the present paper is to analyse technological regimes in four European countries, namely Spain, Italy, France and the United Kingdom, using the information on patents registered in the USA under 27 technological classes in the period 1975-1994. The innovative activity models outlined by Schumpeter, viewed from both a theoretical perspective and through a series of empirical studies by various authors, provide the theoretical foundations on which the empirical analysis is based. With respect to methodology, indicators on the clustering and asymmetry of innovative activities, extent of the innovation and innovator stability and birth rate are used to analyse the characteristics of features from which companies benefit, such as technological accumulation, appropriation of results of innovation, technological opportunity and knowledge bases. Important differences in innovation patterns from one technological class to another, as well as between countries are detected in the empirical analysis. The Schumpeterian technological regimes, in turn, are observed to be very stable over time.

**Key words:** technological innovation, patents, Spain, Italy, France, United Kingdom, 1974-1995.

**JEL Classification:** O31

**LOPEZ PUEYO, Carmen and SANAU VILLARROYA, Jaime**

### **Technology and Growth: Analysis in Spanish Industry, 1986-1992**

For decades technology has been generally acknowledged as one of the most relevant drivers of economic growth and the expansion and diversification of productive activities. The present paper synthesises the theoretical rationale on the subject and analyses the effects that technological capital had on Spanish industrial production in the period 1986-

1992, comparing them with the results obtained in other economies and/or periods. The differential effects of public or private funding are also discussed.

**Key words:** technological change, research and development, industrial production, economic growth, panel model, public financing, private financing, Spain, 1986-1992.

**JEL Classification:** C23, D24, O30, O40

### MARTINEZ BOBILLO, Alfredo and TEJERINA GAITE, Fernando

#### International Acquisitions and Control in Spanish Industrial Companies

Increasing economic globalisation and the resulting challenges facing private enterprise in terms of competitiveness have enhanced the importance of international acquisitions as a growth strategy. The purpose of this article is to identify the characteristics that played a decisive role in each industrial sector in international acquisitions policy in Spain in the period 1991-1994. The results of the survey reveal that the largest number of acquisitions took place in technology-intensive sectors, although a substantial shift towards less technologically-oriented industries is also observed. The results further show that industry indebtedness and number of acquisitions are inversely related.

**Key words:** industrial enterprises, high technology industries, mergers and acquisitions, direct investments, investments abroad, Spain, 1991-1994.

**JEL Classification:** F23, L20

### MARTINEZ ZARZOSO, Inmaculada

#### Industrial Competitiveness of Spanish Industry

The purpose of this paper is to use unit values of exports and imports to distinguish between markets in which the amounts traded depend largely on price competition and those in which the amounts traded depend largely on factors other than price, such as quality or degree of sophistication. The methodology used for this purpose and applied to the Spanish economy involves classifying the various industries into four different typologies. In addition, the authors study the relationship between unit values of trade and *per capita* income to ascertain whether, as a country evolves towards higher levels of development, the unit value of its exports rise as well, which would confirm the theory. The results obtained indicate that a larger number of Spanish industries competes in price than in quality. They furthermore confirm that there is a direct relationship between the unit value of exports and *per capita* income in our country.

**Key words:** foreign trade, bilateral trade, competitiveness, industrial quality, prices, *per capita* income, Spain, 1975-1996.

**JEL Classification:** F14

**RIALP I CRIADO, Alex**

**Micro-organisational Approach to Business Internationalisation: A Review and Synthesis of the Literature**

This paper identifies the principal approaches to internationalisation from the business or micro-organisational standpoint: multinational company/FDI theories, the so-called «internationalisation process model» (gradualist approach) and the recent literature on ways to enter foreign markets. Although intrinsically relevant, none of these approaches is able, by itself, to fully embrace and explain the complex nature of business internationalisation. A broader perspective is therefore needed to pool the key features of each. This more comprehensive concept of the internationalisation process should relate the existence of certain specific company advantages (in the production, technology, organisation, management and/or commercial areas) to relative gradualism.

**Key words:** foreign trade, multinational companies, export enterprises, direct investment, international investments, theoretical analysis, bibliographical reviews.

**JEL Classification:** F23, M10

**SANSALVADOR SELLES, Manuel Enrique; TRIGUEROS PINA, José Antonio y REIG MULLOR, Javier**

**ISO 9000-Compliant Total Quality Management in SMES**

The principles of quality management are valid irrespective of company size, although SMES often take ISO 9000 approach to quality. While recognising the validity of such systems, the authors feel that companies should turn their achievements to advantage when targeting excellence. The present paper analyses the European model for SMES as an interesting proposal for total quality, identifying the links between such model and Quality Assurance Systems based on the ISO 9000 family of standards.

**Key words:** small and medium size firm, total quality, quality control, quality standards.

**JEL Classification:** M11, M21

**TOMAS CARPI, Juan A.; GALLEGO BONO, Juan R. and PICHER I CAMPOS, Josep V.**

**Technological Change and Transformation of Local Industrial Systems:  
The Spanish Ceramics Industry**

The transformation of the Spanish ceramics industry constitutes an interesting illustration of the relationship between technological discontinuities and changes in company and

territorial competitive advantage. This article intends to outline a clustered industrial system's transition from a technologically subordinate position to the world-wide *avant garde*. Four prominent issues are addressed. Firstly, the nature of the technological discontinuity with respect to the explanation of the direction of change. Secondly, the induced effect of that change on the structure of a vertically integrated industry and business organisation and strategy. Both are decisive in explaining, thirdly, the self-reinforcing relationship between production dynamics and development of the local innovation system. Finally, the authors stress not only the role of the territory and its institutions in the process, but how production dynamics propel the transformation of both the former and the latter, reinforcing the strengths of the industrial system. The approach used has revealed certain fundamental relationships in industrial, technological and territorial dynamics.

**Key words:** industrial economics, technological change, industrial districts, ceramics industry, tiles, Spain.

**Classification JEL:** L23, L74, 032