

**ATTRIBUTION OF CHANGES IN DIVISIA REAL ENERGY
INTENSITY INDICES IN SEVERAL EUROPEAN
COUNTRIES FROM 1995 TO 2010**

**PAULA FERNÁNDEZ GONZÁLEZ
MANUEL LANDAJO
M^aJOSÉ PRESNO**

**FUNDACIÓN DE LAS CAJAS DE AHORROS
DOCUMENTO DE TRABAJO
Nº 706/2013**

De conformidad con la base quinta de la convocatoria del Programa de Estímulo a la Investigación, este trabajo ha sido sometido a evaluación externa anónima de especialistas cualificados a fin de contrastar su nivel técnico.

ISSN: 1988-8767

La serie **DOCUMENTOS DE TRABAJO** incluye avances y resultados de investigaciones dentro de los programas de la Fundación de las Cajas de Ahorros.
Las opiniones son responsabilidad de los autores.

ATTRIBUTION OF CHANGES IN DIVISIA REAL ENERGY INTENSITY INDICES IN SEVERAL EUROPEAN COUNTRIES FROM 1995 TO 2010

Paula Fernández González

Manuel Landajo

M^aJosé Presno

Abstract

The change in aggregate energy intensity in 20 European countries during the 1995-2010 period is analysed in this paper. We rely on a multiplicative energy intensity approach (by using the Sato-Vartia Logarithmic Mean Divisia Index method, or LMDI-II), which allows us to quantify and compare real energy intensity indices. A new tool to monitor changes in real energy intensity in greater depth is also applied. Focusing on the *attribution analysis of IDA (Index Decomposition Analysis)*, as proposed by Choi and Ang [1], we quantify the contribution of each individual sector to the percent change of real energy intensity. By using Fisher's real energy intensity index, we analyze the evolution of real energy efficiency and the attribution of the percent change in the index across several European countries.

Key words: Attribution analysis, Divisia indices, energy intensity, decomposition analysis.

JEL: O13, Q40, Q43, Q51, R11.

Corresponding author: Paula Fernández González. Department of Applied Economics, Faculty of Economics and Business (University of Oviedo, Oviedo (33006) SPAIN. E-mail: pfgonzal@uniovi.es.

* Department of Applied Economics - Faculty of Economics and Business - University of Oviedo.

1. Introduction

As a consequence of its many statistical and economic advantages over alternative indices, the logarithmic mean Divisia index (or LMDI) has emerged as the preferred method in energy and environmental studies. Based on it, Choi and Ang [1] have recently proposed a decomposition approach that introduces a new tool to study and monitor changes in greater depth, as compared to methods previously available in the literature. In this paper we focus on this new approach, so-called *attribution analysis of IDA and energy studies*. We adapt this analysis to the Sato-Vartia Logarithmic Mean Divisia Index method (LMDI-II) by quantifying the contribution of individual sectors to the percent change of real energy intensity.

Following the energy intensity approach (Ang and Lee [2]) and based on the LMDI-II method, we decompose changes in aggregate energy intensity in two basic factors: the intensity and the structural one. The intensity effect is mostly understood as changes in real energy intensity. Once we know the real energy intensity we go one step further and, on the basis of the procedure proposed by Choi and Ang [1], we attribute the percent changes of real energy intensity to the pre-defined attributes (sectors). This expedient provides additional information on how much each attribute (sector) contributes to the percent change of real energy intensity over the period under study.

The paper has a double purpose. First, a comparison analysis of the change in real energy intensity of 20 European countries, at a pre-defined disaggregation level, along the 1995-2010 period. Secondly, we aim at studying and quantifying the contribution of each attribute –with four pre-defined sectors- to the percent change in real energy intensity.

IDA is one of the decomposition techniques most widely used in environmental and energy studies. These decomposition methods basically amount to applying economic indices in order to decompose the variation of an aggregate variable. Thus, the methodological problems involved are analogous to the well known index number problem stated by Fisher [3] and developed by Diewert [4].

The earliest decomposition models included those formulated on the basis of Laspeyres, Paasche or Marshall-Edgeworth indices. Refined models were afterwards developed. Ang and Choi [5] proposed a logarithmic mean weight function that leads to a refined Divisia method, the so-called LMDI method. This method has its roots in studies by Siegel [6] and Shapley [7] and amounts to using Fisher's ideal index, which is defined as the geometric mean of Laspeyres and Paasche indices (Ang [8]; De Boer [9]).

Comprehensive reviews of basic and refined decomposition methods appear in Ang and Zhang [10] and Ang et al. [11]. According to Ang [8; 12] multiplicative LMDI is the preferred index decomposition method, both from the theoretical and the application viewpoints. Among other advantages: (a) it satisfies the factor reversal test – i.e., it provides perfect decompositions with no residual term-, (b) it is consistent in aggregation –although weights do not add up to unity-, (c) it verifies the time reversal test –i.e., estimated variations between periods 0 and t , and viceversa, are equal in absolute terms-, (d) it handles zero values effectively, and (e) the results given by the additive and the multiplicative decompositions are related by a simple formula.

The LMDI method has two versions, depending on how the Divisia index is approximated: the Montgomery-Vartia index (LMDI-I) –based in Montgomery [13] and Vartia [14;15]- and the Sato-Vartia index (LMDI-II) –based in Sato [16] and Vartia [15]. We shall focus on the latter, as it is a genuine geometric mean and the sum of its weights is unity.

In section 2 we outline a LMDI-II-based methodology to multiplicatively decompose changes in aggregate energy intensity (AEI) into the contributions from structural and intensity factors. More specifically, subsection 2.1 briefly reviews single-period (*periodwise*) decomposition, while 2.2 focuses on multi-period (*time series*) decomposition.

In section 3, we detail the procedure to attribute the percent change of real energy intensity to the sectors. Subsection 3.1 addresses single-period attribution, while subsection 3.2 focuses on multi-period (*chain method*) attribution.

Section 4 presents an application of the above methodology. We report decomposition results for the AEI change in 20 European countries in along the 1995-2010 period, analysing the change in real energy intensity and making a comparison study across countries. We also analyse the contributions of each of the four sectors to the percent change of real energy intensity in these European countries along the same period.

Finally, in the last section, we summarize the main conclusions of the paper.

2. The energy intensity approach through the LMDI-II method

Following the energy intensity approach introduced by Ang [17], we first decompose the change in aggregate energy intensity into the contributions from the structural and the intensity factors. This decomposition is carried out by using both the periodwise (single-period) and the time series (multi-period) implementations of LMDI-II.

AEI is defined as the ratio of total energy consumption over total output. Following the energy intensity approach (Ang [17]), the change in AEI is due to the contributions from two basic factors: (a) the technical change and variations in the use of higher quality energy inputs (the so-called intensity effect), and (b) the production structure (i.e., the structural effect).

Considering the following variables in period t :

E_t : total energy consumption,

$E_{i,t}$: energy consumption in sector i ,

Y_t : Gross Domestic Product,

$Y_{i,t}$: production of sector i ,

$P_{i,t}$: energy consumption share of sector i ($P_{i,t}=E_{i,t}/E_t$),

$S_{i,t}$: product share of sector i ($S_{i,t}= Y_{i,t}/Y_t$),

I_t : aggregate energy intensity ($I_t=E_t/Y_t$),

$I_{i,t}$: energy intensity of sector i ($I_{i,t}=E_{i,t}/Y_{i,t}$).

AEI may be expressed in terms of disaggregated sectorial data, namely:

$$I_t = \sum_{i=1}^k S_{i,t} I_{i,t} \quad (1)$$

where the summation is taken over the k sectors considered at the specified disaggregation level.

Considering infinitesimal periods, dividing by I_t and integrating on both sides with respect to time t in $[0, T]$ yields:

$$\ln(I_T/I_0) = \int_0^T \sum_{i=1}^k \frac{S'_{i,t} I_{i,t}}{I_t} dt + \int_0^T \sum_{i=1}^k \frac{S_{i,t} I'_{i,t}}{I_t} dt \quad (2)$$

where $S'_{i,t}$ and $I'_{i,t}$ are the first derivatives of $S_{i,t}$ and $I_{i,t}$ with respect to time, respectively.

2.1. Periodwise decomposition

Denoting by $(R_{tot})_{0,T}$ the total effect between periods 0 and T ($(R_{tot})_{0,T} = I_T/I_0$), with $(R_{str})_{0,T}$ and $(R_{int})_{0,T}$ being, respectively, the estimated structural and intensity effects, Equation (2) above may be expressed in any of the following two forms:

$$(R_{tot})_{0,T} = e^{\left(\int_0^T \sum_{i=1}^k P_{i,t} (S'_{i,t}/S_{i,t}) dt \right)} e^{\left(\int_0^T \sum_{i=1}^k P_{i,t} (I'_{i,t}/I_{i,t}) dt \right)} = (R_{str})_{0,T} (R_{int})_{0,T} \quad (3)$$

$$(R_{tot})_{0,T} = e^{\left(\int_0^T \sum_{i=1}^k (I_{i,t} S'_{i,t}/I_t) dt \right)} e^{\left(\int_0^T \sum_{i=1}^k (I'_{i,t} S_{i,t}/I_t) dt \right)} = (R_{str})_{0,T} (R_{int})_{0,T} \quad (4)$$

Due to practical impossibility of obtaining continuous data over any time interval, a transformation of the integral path problem into a parametric one is needed. Liu et al. [18] report the following parametric Divisia methods:

Parametric Divisia method I (PDM-I)

$$(R_{str})_{0,T} = e^{\left[\sum_{i=1}^k \left[\left(\frac{I_{i,0}}{I_0} \right) + \beta_i \left(\frac{I_{i,T}}{I_T} - \frac{I_{i,0}}{I_0} \right) \right] (S_{i,T} - S_{i,0}) \right]} \quad (5)$$

$$(R_{int})_{0,T} = e^{\left[\sum_{i=1}^k \left[\left(\frac{S_{i,0}}{I_0} \right) + \tau_i \left(\frac{S_{i,T}}{I_T} - \frac{S_{i,0}}{I_0} \right) \right] (I_{i,T} - I_{i,0}) \right]} \quad (6)$$

where $0 \leq \beta_i \leq 1$ and $0 \leq \tau_i \leq 1$.

Parametric Divisia method II (PDM-II)

$$(R_{str})_{0,T} = e^{\left[\sum_{i=1}^k [P_{i,0} + \beta_i (P_{i,T} - P_{i,0})] \ln \left(\frac{S_{i,T}}{S_{i,0}} \right) \right]} \quad (7)$$

$$(R_{int})_{0,T} = e^{\left[\sum_{i=1}^k [P_{i,0} + \tau_i (P_{i,T} - P_{i,0})] \ln \left(\frac{I_{i,T}}{I_{i,0}} \right) \right]} \quad (8)$$

where $0 \leq \beta_i \leq 1$ and $0 \leq \tau_i \leq 1$.

The parameter values (β_i and τ_i) may be interpreted as weights of the corresponding variables at the periods 0 and T . As these weights can be assigned in a number of ways, several specific decomposition methods arise.

The LMDI-II method is a special case of PDM-II, with logarithmic mean weights. Ang and Choi (1997) proposed the following logarithmic mean weight function:

$$L(P_{i,0}, P_{i,T}) = \frac{(P_{i,T} - P_{i,0})}{\ln(P_{i,T}/P_{i,0})} \quad (9)$$

In order to fulfill the unity property of weight functions, the following normalization is applied:

$$w_i^* = \frac{L(P_{i,0}, P_{i,T})}{\sum_{i=1}^k L(P_{i,0}, P_{i,T})}, \quad i=1,2,\dots, k \quad (10)$$

where w_i represents the normalized weight of sector i , $i=1,2,\dots, k$.

2.2. Time series decomposition

If the cumulative change in AEI (total effect) from period 0 to period T is denoted as $(C_{tot})_{0,T}$, the estimated cumulative structural effect as $(C_{str})_{0,T}$, the estimated cumulative intensity effect as $(C_{int})_{0,T}$, and the estimated cumulative residual term¹ as $(C_{rsd})_{0,T}$, then the estimated cumulative effects, from the first (0) to the last period (T) may be decomposed multiplicatively as follows:

$$(C_{tot})_{0,T} = (R_{tot})_{0,1} (R_{tot})_{1,2} \cdots (R_{tot})_{T-1,T} \quad (11)$$

$$(C_{str})_{0,T} = (R_{str})_{0,1} (R_{str})_{1,2} \cdots (R_{str})_{T-1,T} \quad (12)$$

$$(C_{int})_{0,T} = (R_{int})_{0,1} (R_{int})_{1,2} \cdots (R_{int})_{T-1,T} \quad (13)$$

$$(C_{rsd})_{0,T} = (R_{rsd})_{0,1} (R_{rsd})_{1,2} \cdots (R_{rsd})_{T-1,T} \quad (14)$$

The above time series decomposition makes it possible to detect different phases or time patterns in the effects, also allowing identification of possible structural breaks in intermediate periods. In addition, the final results provided by this procedure are expected to be more accurate, as compared with periodwise decompositions.

3. Attribution analysis of the Divisia real energy intensity index

Once the intensity factor (so-called *real energy intensity*) is obtained, it is possible to assess the contribution of each individual attribute² (i.e., each industrial sector) to overall percent change. Although it would be also possible to quantify the attributes to the overall percent change in other determinant factors (for instance, the structural one), we will focus on real energy intensity, reporting both periodwise (single-period) and time series (multi-period) attribution analysis.

3.1. Single-period attribution analysis

¹ In any exact decomposition method, there is no deviation from the target value. The residual term is null (resp., unity) in the case of an additive (resp., multiplicative) technique. Nevertheless, we will compute the residual term in order to check that our calculations are correct.

² Attribution analysis is a general approach, whose validity is not limited to the two factor case or to the energy intensity approach.

Since attribution analysis requires an arithmetic mean index, Choi and Ang [1], relying on an identity derived by Balk [19], transformed the Divisia or geometric mean index into an arithmetic one.

In the energy literature, the real intensity index is often used as a measure of the true intensity change from a given period ($t-1$) to period t (e.g. Ang et al. [20]). A Divisia index of real energy intensity in log-change form can be written explicitly as a geometric mean index in the following way: be written explicitly as a geometric mean index in the following way:

$$\ln(R_{int})_{0,T} = \ln\left(\frac{R_{int T}}{R_{int 0}}\right) = \sum_{i=1}^k w_i \ln\left(\frac{I_{i,T}}{I_{i,0}}\right) \Leftrightarrow (R_{int})_{0,T} = \prod_{i=1}^k \left(\frac{I_{i,T}}{I_{i,0}}\right)^{w_i} \quad (15)$$

By defining unknowns π_i (as in Equation (20) below) which turn the geometric index into an arithmetic mean index, the following expression is obtained:

$$\frac{R_{int T}}{R_{int 0}} = \frac{\sum_{i=1}^k \pi_i I_{i,T}}{\sum_{i=1}^k \pi_i I_{i,0}} \quad (16)$$

Defining $s_{i,0} \equiv \frac{\pi_i I_{i,0}}{\sum_{g=1}^k \pi_g I_{g,0}}$ and $s_{i,T} \equiv \frac{\pi_i I_{i,T}}{\sum_{g=1}^k \pi_g I_{g,T}}$, using the identity

$$\sum_{i=1}^k (s_{i,T} - s_{i,0}) = 0, \text{ and applying the definition of logarithmic mean, the following two}$$

identities are derived (Balk [19]):

$$\sum_{i=1}^k L(s_{i,T}, s_{i,0}) \ln\left(\frac{s_{i,T}}{s_{i,0}}\right) = 0 \quad (17)$$

$$\ln\left(\frac{s_{i,T}}{s_{i,0}}\right) = \ln\left(\frac{I_{i,T}}{I_{i,0}}\right) - \ln\left(\frac{R_{int T}}{R_{int 0}}\right) \quad (18)$$

Inserting (18) in (17), and solving the equation in $\ln((R_{int})_{0,T})$, we obtain the following alternative log-change expression of $(R_{int})_{0,T}$:

$$\ln\left(\frac{R_{int T}}{R_{int 0}}\right) = \sum_{i=1}^k \frac{L(s_{i,T}, s_{i,0})}{\sum_{g=1}^k L(s_{g,T}, s_{g,0})} \ln\left(\frac{I_{i,T}}{I_{i,0}}\right) = \sum_{i=1}^k \frac{\pi_i L(I_{i,T}, I_{i,0}(R_{int})_{0,T})}{\sum_{g=1}^k \pi_g L(I_{g,T}, I_{g,0}(R_{int})_{0,T})} \ln\left(\frac{I_{i,T}}{I_{i,0}}\right) \quad (19)$$

Comparing the two log-change forms (15) and (19), we obtain

$$\pi_i = \frac{w_i}{L(I_{i,T}, I_{i,0}(R_{int})_{0,T})} \quad (20)$$

Replacing (20) in (19), the right hand side is the same as the log change form in (12). Equation (20) is so-called *Reinsdorf's formula*, which provides a link between geometric mean and arithmetic mean indices (Reinsdorf [21]). Thus, the attributions of LMDI-II real energy intensity will be given by the following formula:

$$\left(\frac{R_{int T}}{R_{int 0}} - 1\right) = \sum_{i=1}^k s_i \left(\frac{I_{i,T}}{I_{i,0}} - 1\right) \quad (21)$$

where

$$s_i = \frac{\pi_i I_{i,0}}{\sum_{g=1}^k \pi_g I_{g,0}} = \frac{\frac{w_i I_{i,0}}{L(I_{i,T}, I_{i,0}(R_{int})_{0,T})}}{\sum_{g=1}^k \frac{w_g I_{g,0}}{L(I_{g,T}, I_{g,0}(R_{int})_{0,T})}} \quad (22)$$

The term s_i may be interpreted as the variation quota of component i , which measures the action intensity of this component over the total. Evidently, $\sum_{i=1}^k s_i = 1$.

3.2. Multi-period attribution analysis

According to the definition of chained real energy intensity index:

$$(C_{int})_{0,T} = (R_{int})_{0,1} (R_{int})_{1,2} \cdots (R_{int})_{T-1,T} \quad (23)$$

the identity giving the difference representation of a chain index is obtained:

$$\begin{aligned}
(C_{int})_{0,T} - 1 &= \frac{R_{int T}}{R_{int 0}} - 1 = \frac{R_{int T}}{R_{int 0}} - \frac{R_{int 0}}{R_{int 0}} = \\
&\left(\frac{R_{int T}}{R_{int 0}} - \frac{R_{int T-1}}{R_{int 0}} \right) + \left(\frac{R_{int T-1}}{R_{int 0}} - \frac{R_{int T-2}}{R_{int 0}} \right) + \left(\frac{R_{int T-2}}{R_{int 0}} - \frac{R_{int T-3}}{R_{int 0}} \right) + \dots + \\
&\left(\frac{R_{int 1}}{R_{int 0}} - \frac{R_{int 0}}{R_{int 0}} \right) = \\
&\frac{R_{int T-1}}{R_{int 0}} \left(\frac{R_{int T}}{R_{int T-1}} - 1 \right) + \frac{R_{int T-2}}{R_{int 0}} \left(\frac{R_{int T-1}}{R_{int T-2}} - 1 \right) + \frac{R_{int T-3}}{R_{int 0}} \left(\frac{R_{int T-2}}{R_{int T-3}} - 1 \right) + \dots + \\
&\frac{R_{int 0}}{R_{int 0}} \left(\frac{R_{int 1}}{R_{int 0}} - 1 \right)
\end{aligned}$$

Therefore:

$$(C_{int})_{0,T} - 1 = \frac{R_{int T}}{R_{int 0}} - 1 = \sum_{t=1}^T \frac{R_{int t-1}}{R_{int 0}} \left(\frac{R_{int t}}{R_{int t-1}} - 1 \right) \quad (24)$$

Equation (24) shows that the percent change of a chain index is a cumulative sum of single-period percent changes multiplied by $\frac{R_{int t-1}}{R_{int 0}}$.

Inserting (21) in (24), the following definition for the multi-period attribution analysis of Divisia chain indices is obtained:

$$\left(\frac{R_{int T}}{R_{int 0}} - 1 \right) = \sum_{t=1}^T \frac{R_{int t-1}}{R_{int 0}} \left(\frac{R_{int t}}{R_{int t-1}} - 1 \right) = \sum_{i=1}^k \sum_{t=1}^T \frac{R_{int t-1}}{R_{int 0}} (s_i)_{t-1,t} \left(\frac{I_{i,t}}{I_{i,t-1}} - 1 \right) \quad (25)$$

where

$$(s_i)_{t-1,t} = \frac{\frac{(w_i)_{t-1,t} I_{i,t-1}}{L(I_{i,t}, I_{i,t-1} (R_{int})_{t-1,t})}}{\sum_{g=1}^k \frac{(w_g)_{t-1,t} I_{g,t-1}}{L(I_{g,t}, I_{g,t-1} (R_{int})_{t-1,t})}} \quad (26)$$

The value of $\frac{R_{int t-1}}{R_{int 0}} (s_i)_{t-1,t} \left(\frac{I_{i,t}}{I_{i,t-1}} - 1 \right)$ in (25) may be interpreted as the contribution of sector i during period $[t-1, t]$, evaluated from period 0.

4. Empirical Analysis

We present a case study conducted on the 20 European Union member states³, for the period from 1995 to 2010. Time series data on added value in real terms⁴ and energy consumption⁵, both by sector and country, have been obtained from the Publications Office of the European Union (Eurostat [22]). Four different sectors have been considered: agriculture/fishing, industry (including construction), services, and transport plus hotels and restaurants.

From 1995 to 2010 AEI has significantly decreased in all member states (see Figure 1). Some cases such as Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Romania and Slovakia are especially significant, as these Central and Eastern European countries⁶ achieved the highest reductions in their aggregate energy intensities. On the contrary, Italy, Portugal and Spain have experienced the lowest ones.

³ Belgium, Bulgaria, Czech Republic, Denmark, Estonia, France, Germany, Hungary, Ireland, Italy, Lithuania, Netherlands, Poland, Portugal, Romania, Slovenia, Slovakia, Spain, Sweden and the United Kingdom.

⁴ Gross Value Added measured in euro at basic prices in purchasing power parity.

⁵ In million tonnes of oil equivalent.

⁶ In this paper the denomination “Central and Eastern countries” basically applies to ex-communist EU countries, whereas the label “Western countries” mainly refers to former European members of the Western block.

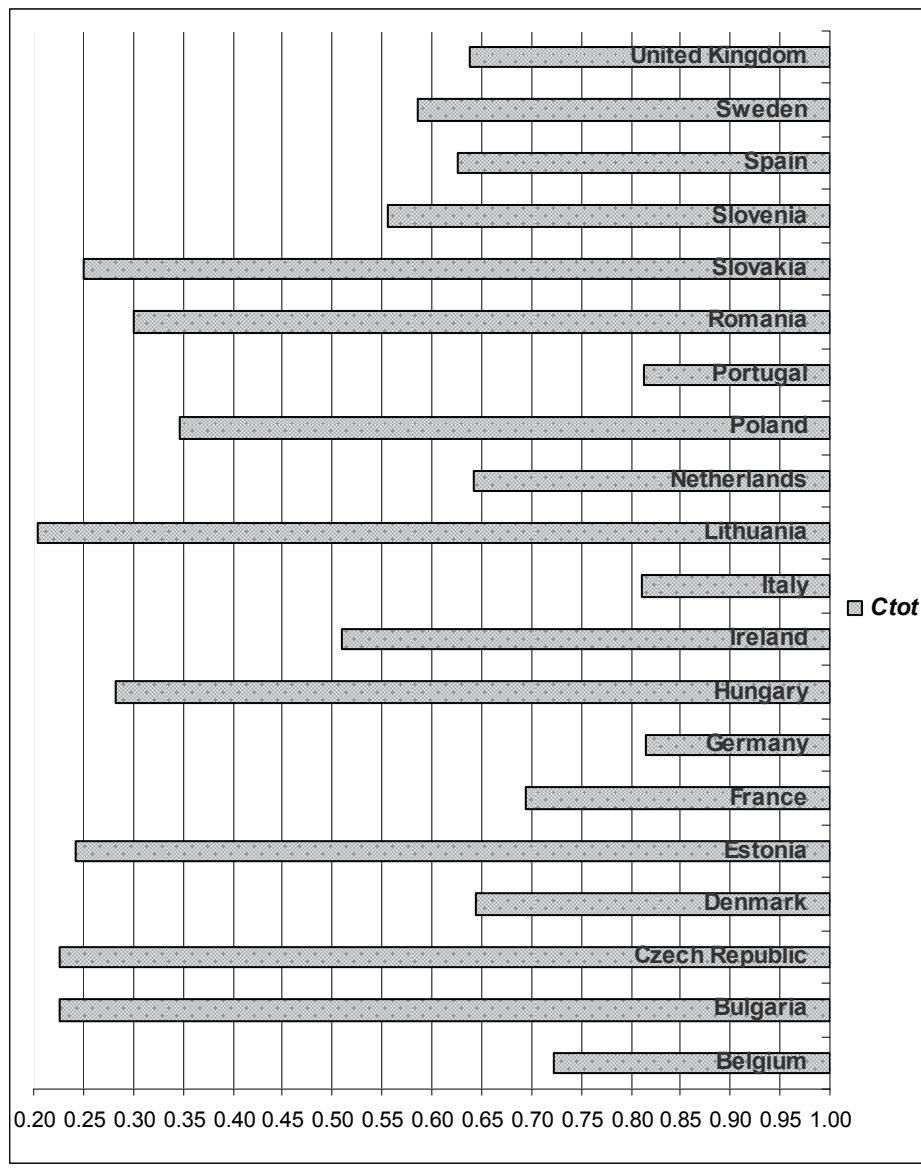


Figure 1. Total effect (C_{tot}) in aggregate energy intensities from 1995 to 2010.

4.1. Decomposition of aggregate energy intensity

We apply the LMDI-II method to multiplicatively decompose the above changes of AEI into the contributions of the structural and the real intensity factors in the 20 European countries. We carry out both a single-period/periodwise decomposition (the base year is the immediately preceding period) and a multi-period/time-series decomposition (the initial year is chosen as the base).

For the sake of brevity we shall focus on the Spanish case. The results appear in Table 1 and Figure 2. Results for the other EU members are summarized in Figure 3.⁷ This allows us to make a comparison analysis across the countries under study.

Focusing on the cumulative effects for the global period (base year 1995), Spanish AEI exhibits a fall of 37.360%. Both the structural and the intensity effects are negative, contributing to this reduction by 5.264% and 33.879%, respectively (see Table 1).

Table 1. Multiplicative LMDI-II decomposition of Spanish aggregate energy intensity change.^a

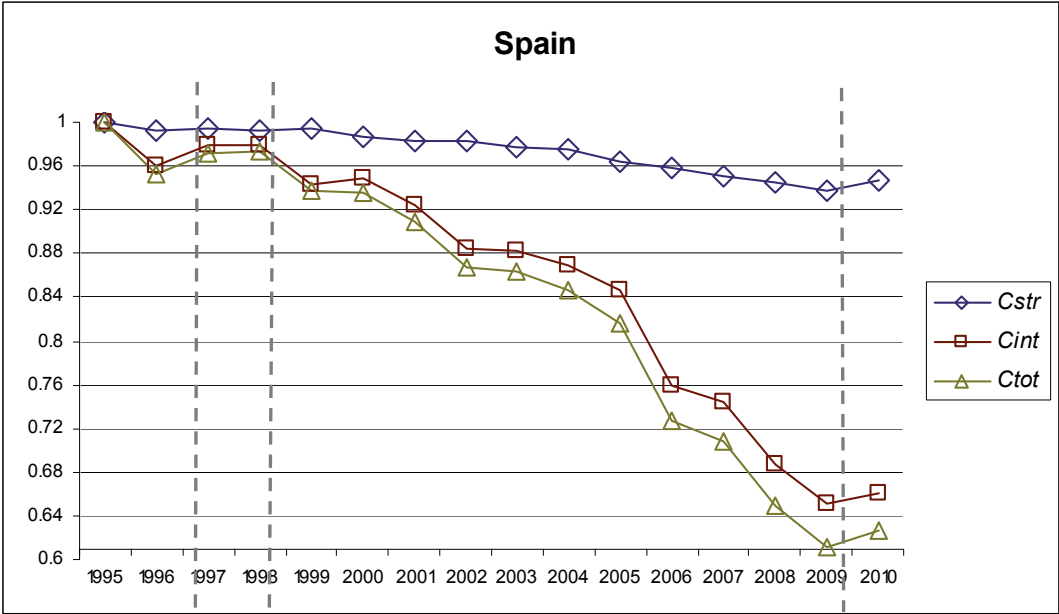
Years	(1)	(2)	(3)	(4)	(5)	(6)
	R_{str}	R_{int}	R_{tot}	C_{str}	C_{int}	C_{tot}
	<i>Structural</i>	<i>Real</i>	<i>Aggregate</i>	<i>Structural</i>	<i>Real</i>	<i>Aggregate</i>
1995	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1996	0.99315	0.95940	0.95283	0.99315	0.95940	0.95283
1997	1.00031	1.02003	1.02036	0.99347	0.97862	0.97223
1998	0.99981	1.00104	1.00084	0.99327	0.97964	0.97305
1999	1.00108	0.96323	0.96427	0.99435	0.94362	0.93829
2000	0.99230	1.00467	0.99694	0.98669	0.94803	0.93541
2001	0.99704	0.97537	0.97248	0.98377	0.92468	0.90967
2002	0.99865	0.95568	0.95439	0.98244	0.88369	0.86818
2003	0.99502	0.99958	0.99460	0.97755	0.88332	0.86349
2004	0.99731	0.98376	0.98111	0.97491	0.86898	0.84718
2005	0.98971	0.97414	0.96412	0.96488	0.84651	0.81678
2006	0.99303	0.89610	0.88986	0.95816	0.75856	0.72682
2007	0.99180	0.98111	0.97307	0.95031	0.74423	0.70725
2008	0.99365	0.92351	0.91765	0.94427	0.68731	0.64901
2009	0.99306	0.94771	0.94114	0.93772	0.65137	0.61080
2010	1.01027	1.01510	1.02553	0.94736	0.66121	0.62640

^(a) Values of columns (1)-(3) report periodwise results, (the base year is the immediately preceding year), while values of columns (4)-(6) display the time series results, with 1995 being the base year.

⁷ Detailed results for the other EU countries are provided as electronic supplementary materials.

When the immediately preceding year is taken as the base period, it is observed that the evolution of AEI has had several stages (see Figure 2).

Figure 2. Results of multiplicative LMDI-II decomposition of the change in Spanish aggregate energy intensity, 1995-2010. Base year 1995.



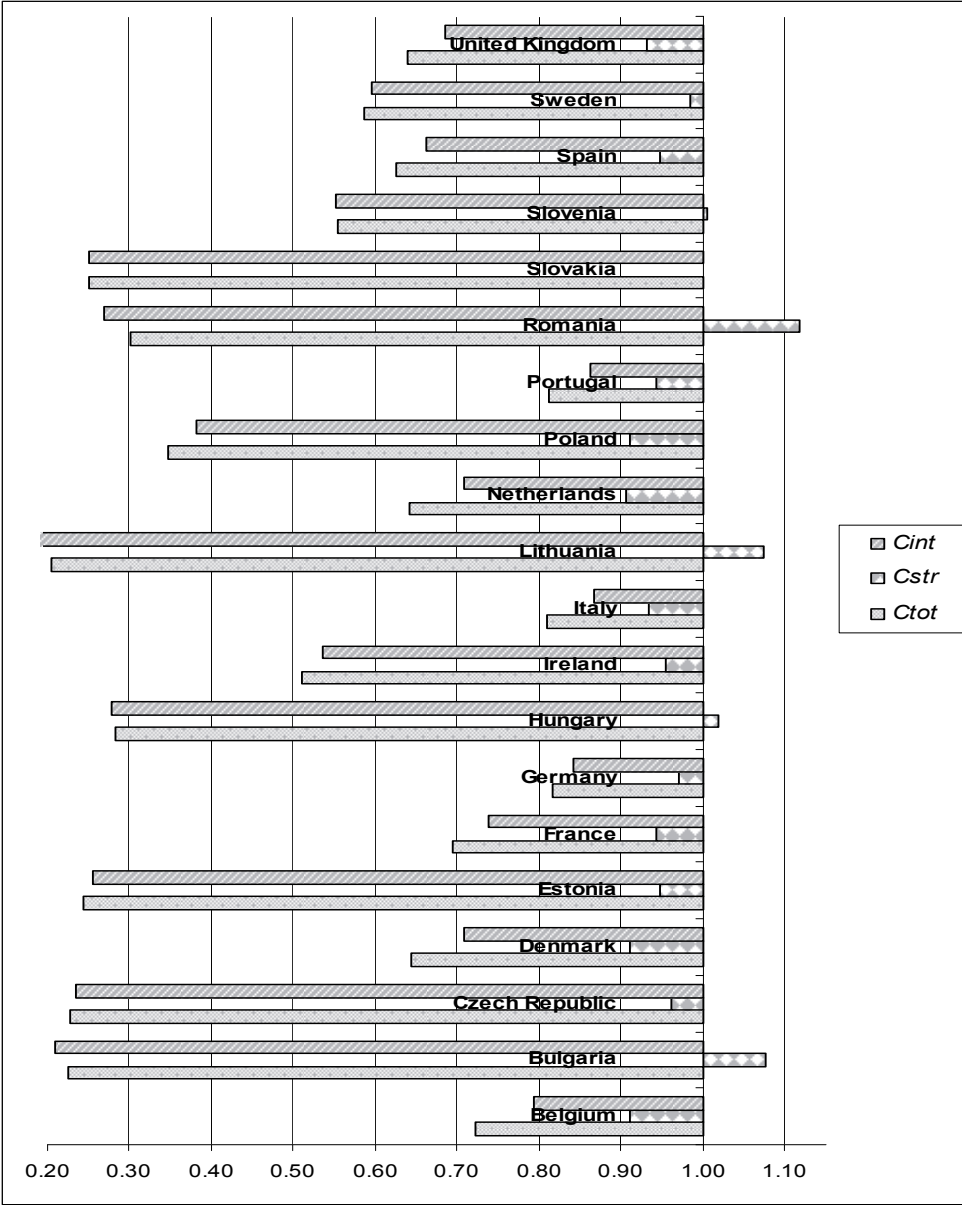
At a glance, we note the similar paths of the C_{tot} and C_{int} lines (see Figure 2). It is also remarkable the higher relative importance of C_{int} (as compared with C_{str}) in C_{tot} . Similar results have been obtained by authors like Mulder and de Groot [23] for most of OECD countries.

In general, we observe a sharp drop in AEI, motivated both by structural and intensity effects (the exceptions would be the 1999-2000 period, when this reduction was only caused by the contribution of one of the effects, the structural in the former and the intensity in the latter). However, in some specific years (namely, 1997 and 2010) AEI increased as a consequence of both effects. Particularly remarkable is year 2010 in which the economic crisis has negatively influenced R&D expenditure, technical change, higher value added products, public promotion of green attitudes, et cetera.

We also applied the multiplicative time series LMDI-II method to decomposing changes in AEI in the rest of the European countries under study (detailed results appear in the electronic supplementary materials). When comparing results across

the EU member states (see Figure 3), we observe that all of them exhibit a similar behaviour. The intensity effect is strongly negative, particularly in Central and Eastern countries, contributing by about 70-80% to the AEI reduction. The structural effect is milder but mostly negative (excepting some former communist countries as Romania, Lithuania, Bulgaria, Slovenia, Slovakia and Hungary), contributing to AEI reduction by about 2-10%. The overall result is an important decrease in the aggregates of each country. However, the improvement effort in real energy intensity was stronger in Central and Eastern European countries than in the Western ones. This was due to the intensity effect.

Figure 3. Multiplicative LMDI-II time series decomposition for period 1995-2010. (Base year 1995).



4.2. Attribution of the real energy intensity index

We now extend the above analysis, by attributing the percent changes of estimated real energy intensity to the four pre-defined sectors of each country. This analysis provides additional information on how much each sector has contributed to the percent change of real energy intensity over the 1995-2010 period. By definition, the sum of all attributions must equal the real energy intensity percent change.

Again, we shall focus on the Spanish case for brevity. According to the results of annual attribution analysis (Table 2), real energy intensity has fallen for most of the years. The exceptions are 1997, 1998, 2000 and 2010, when increases were observed. In these years (excepting 1998) sectors 2 and 3 - industry (including construction) and services – were the most important contributors to the real energy intensity increase.

Table 2. Attribution results of multiplicative LMDI-II real energy intensity in the Spanish case, period 1995-2010 (base year = previous year).^a

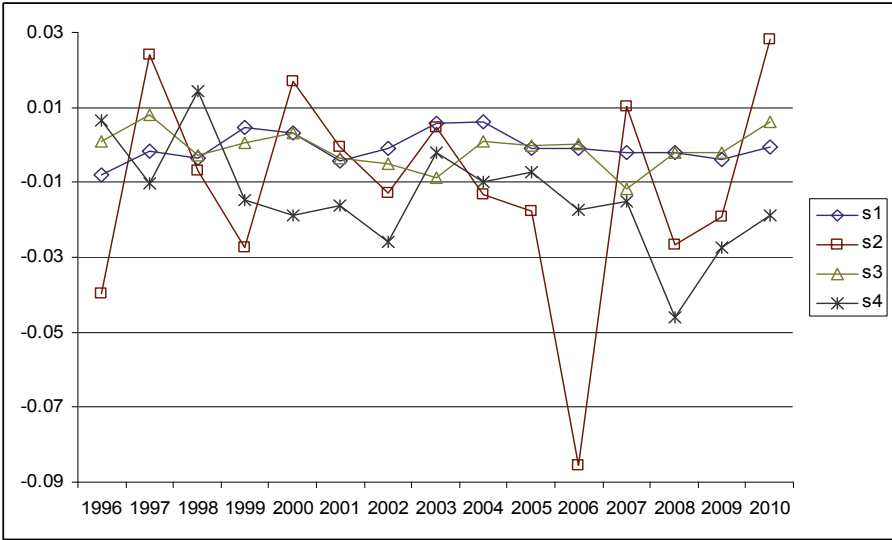
	(1)	(2)	(3)	(4)	(5)
Years	R_{int}	s_1	s_2	s_3	s_4
	<i>Real</i>				
1996	-0.04060	-0.00802	-0.03987	0.00079	0.00650
1997	0.02003	-0.00175	0.02415	0.00796	-0.01032
1998	0.00104	-0.00348	-0.00706	-0.00279	0.01437
1999	-0.03677	0.00459	-0.02729	0.00068	-0.01475
2000	0.00467	0.00323	0.01713	0.00330	-0.01899
2001	-0.02463	-0.00431	-0.00057	-0.00366	-0.01609
2002	-0.04432	-0.00083	-0.01274	-0.00490	-0.02584
2003	-0.00042	0.00596	0.00466	-0.00886	-0.00218
2004	-0.01624	0.00597	-0.01313	0.00075	-0.00982
2005	-0.02586	-0.00082	-0.01784	-0.00006	-0.00714
2006	-0.10390	-0.00111	-0.08557	0.00024	-0.01746
2007	-0.01889	-0.00215	0.01023	-0.01188	-0.01508
2008	-0.07649	-0.00200	-0.02665	-0.00190	-0.04593
2009	-0.05229	-0.00390	-0.01921	-0.00194	-0.02724
2010	0.01510	-0.00050	0.02812	0.00623	-0.01875
Mean	-0.02664	-0.00061	-0.01104	-0.00107	-0.01392

^(a) Values in column (1) (previously multiplied by 100) show the estimated percent change of real energy intensity over the preceding year. Values of columns (2)-(5) report the attributions corresponding to each sector (s_1 =agriculture/fishing, s_2 =industry and construction, s_3 =services, and s_4 =transport, hotels and restaurants) to this change.

The last row of Table 2 gives the average annual percent change in real energy intensity, showing an annual decrease of 2.664% along the analysed period. As above commented, all the pre-defined sectors contributed to this reduction, although sectors 2 and 4 were the main ones. On the one hand, sector 1, due to its low relative weight in the Spanish economy, has a mild impact on real energy intensity. On the other hand, sector 3 is quite relevant in the Spanish economy, although it is less energy-intensive than industry or transport.

When observing Figure 4, it is detected that, in absolute terms, the most changing attributes are sectors 2 and 4. On the contrary, sectors 1 and 3 have a smaller and more stable influence -due to the modest economic weight of the former and the lower energy-intensity of the latter. Similar results have been observed for all Western countries.

Figure 4. Evolution of sector attributions in percent changes of the Spanish real energy intensity in period 1995-2010 (base year=previous year).



The results of multi-period attribution analysis (chain method) are summarized in Table 3. For the overall period, the cumulative percent change in real energy intensity gives a reduction of 33.879%. The percent change attribution to sector 4 in the drop of real energy intensity is 17.417%. This attribution represents the biggest contribution among the pre-defined sectors (superior to 51%). The attribution of sector 2 is also remarkable (14.284%), contributing more than 42% to the AEI drop.

The other sectors (1 and 3) are modest contributors to decreasing real energy intensity and improving energy efficiency.

Another remarkable issue is that sector 3 (services) has inverted its impact along the time. Before 2003, it contributed to increasing real energy intensity, whereas its contribution became negative after that date.

Finally, the attribution of the percent decrease in real energy intensity has been more variable for sector 2 than for sector 4 (Table 3). For instance, industry (including construction) gained much relevance in 2006 and lost some in 2007 and 2010. On the contrary, sector 4 has continuously gained since 1995.

Table 3. Attribution of multiplicative LMDI-II real energy intensity by the chain method (Base year 1995).^a

Years	(1)	(2)	(3)	(4)	(5)
	C_{int} <i>Real</i>	s_1	s_2	s_3	s_4
1996	-0.04060	-0.00802	-0.03987	0.00079	0.00650
1997	-0.02138	-0.00967	-0.01648	0.00835	-0.00358
1998	-0.02036	-0.01301	-0.02358	0.00570	0.01053
1999	-0.05638	-0.00771	-0.05070	0.00615	-0.00412
2000	-0.05197	-0.00463	-0.03387	0.00923	-0.02270
2001	-0.07532	-0.00886	-0.03411	0.00602	-0.03837
2002	-0.11631	-0.00944	-0.04551	0.00157	-0.06294
2003	-0.11668	-0.00382	-0.04143	-0.00653	-0.06490
2004	-0.13102	0.00141	-0.05323	-0.00566	-0.07354
2005	-0.15349	0.00066	-0.06918	-0.00572	-0.07926
2006	-0.24144	0.00057	-0.14806	-0.00429	-0.08966
2007	-0.25577	-0.00216	-0.13660	-0.01401	-0.10300
2008	-0.31269	-0.00380	-0.15602	-0.01498	-0.13789
2009	-0.34863	-0.00707	-0.16906	-0.01602	-0.15647
2010	-0.33879	-0.00828	-0.14284	-0.01350	-0.17417

^(a) Values of column (1) (previously multiplied by 100) show the estimated percent change of real energy intensity over the base year (1995). Values in columns (2)-(5) report the corresponding attributions of each sector (s_1 =agriculture/fishing, s_2 =industry and construction, s_3 =services, and s_4 =transport plus hotels and restaurants) to this change.

In order to facilitate comparisons across member states, we briefly summarize the attribution of percent changes in real energy intensity for each European country in year 2010 with respect to 1995 (see Table 4 and Figure 5).⁸

Table 4. Attribution of multiplicative LMDI-II real energy intensity in 2010 (base year 1995).^a

	(1)	(2)	(3)	(4)	(5)
Countries	Real	s₁	s₂	s₃	s₄
Belgium	-0.20720	0.00081	-0.08361	-0.03551	-0.08708
Bulgaria	-0.79154	-0.01374	-0.63127	0.00826	-0.15471
Czech Republic	-0.76486	-0.04651	-0.53335	-0.10693	-0.07807
Denmark	-0.28899	0.03053	-0.11707	-0.07845	-0.12400
Estonia	-0.74894	-0.02752	-0.42587	-0.07537	-0.22018
France	-0.27971	0.00610	-0.07137	-0.08509	-0.12935
Germany	-0.15686	-0.01037	-0.04428	-0.01876	-0.08346
Hungary	-0.72289	-0.00566	-0.62248	-0.05534	-0.03941
Ireland	-0.46350	0.02003	-0.20136	-0.13827	-0.14389
Italy	-0.33321	-0.00077	-0.15630	-0.02551	-0.15063
Lithuania	-0.80646	-0.02592	-0.26121	-0.20784	-0.31149
Netherlands	-0.28961	-0.00768	-0.10864	-0.07123	-0.10206
Poland	-0.62843	-0.03838	-0.44284	-0.05856	-0.08865
Portugal	-0.22069	-0.00447	-0.10942	-0.00598	-0.10083
Romania	-0.72797	-0.05141	-0.36294	-0.01298	-0.30063
Slovakia	-0.75055	-0.02467	-0.34648	-0.28424	-0.09516
Slovenia	-0.44737	-0.00129	-0.16535	-0.07398	-0.20675
Spain	-0.33879	-0.00828	-0.14284	-0.01350	-0.17417
Sweden	-0.40584	-0.00571	-0.19151	-0.09308	-0.11554
United Kingdom	-0.41501	-0.00019	-0.10160	-0.12023	-0.19299

^(a) Values of column (1) (previously multiplied by 100) show the estimated percent change of real energy intensity in 2010 over the base year (1995). Values of columns (2)-(5) report the corresponding attributions of each sector (s_1 =agriculture/fishing, s_2 =industry and construction, s_3 =services, and s_4 =transport plus hotels and restaurants) to this change.

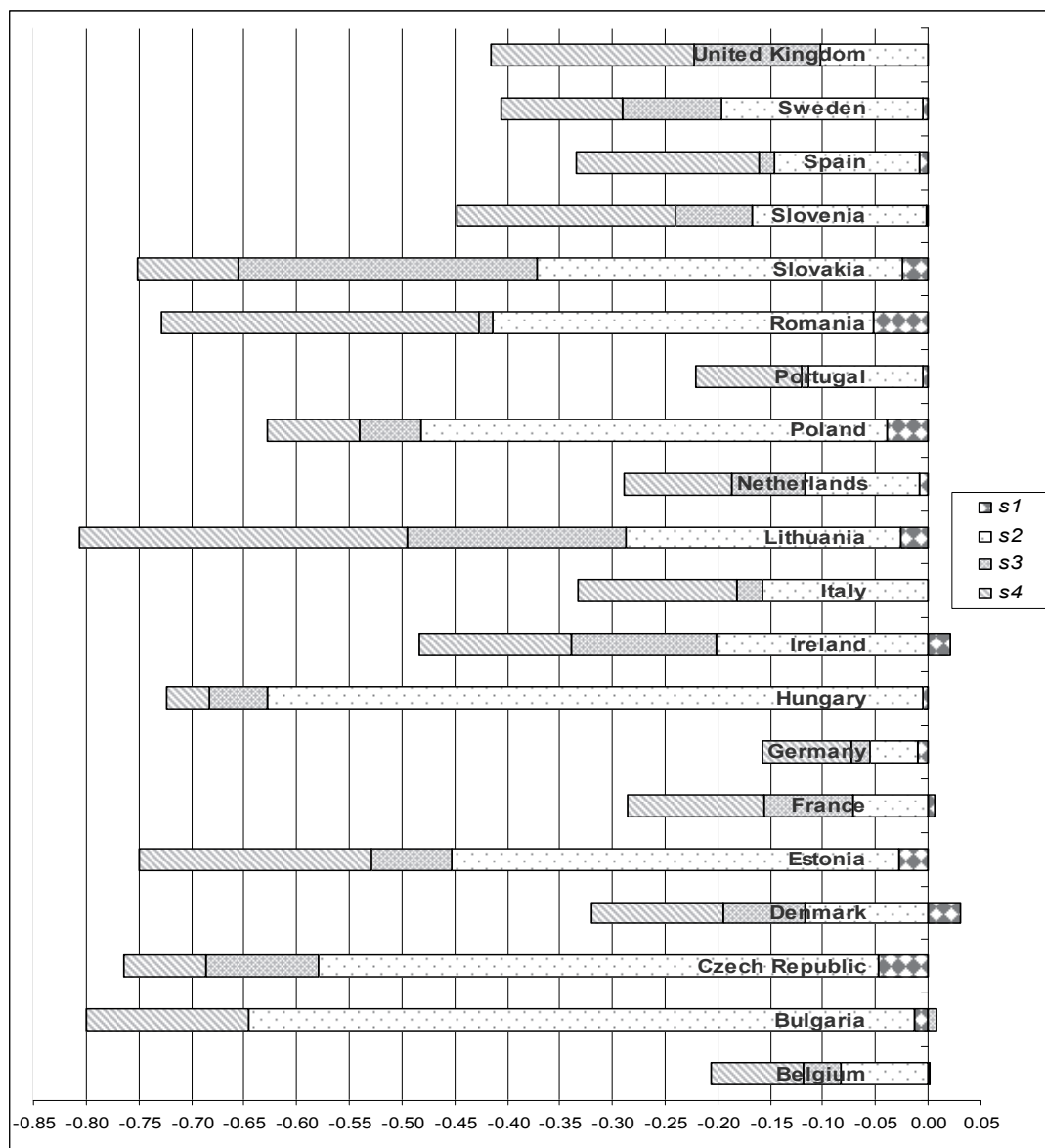
⁸ Detailed results (for countries) of single-period and annual average attributions, including some graphical analyses, are electronically available as supplementary material.

First, sector 2 has been the biggest contributor to real energy intensity reduction in most of the countries under study, such as Bulgaria (63.127%), Hungary (62.248%), Czech Republic (53.335%), Estonia (42.587%), Poland (44.284%) and Romania (36.294%). That is, the industry (including construction) has contributed to a very important percent change of real energy intensity in most of the EU members, especially in ex-communist Central and Eastern countries (see Table 4).

On the other hand, sector 4 has also been a notable contributor to the real energy intensity drop in most of the countries under study (30.063% in Romania, 31.149% in Lithuania, 20.675% in Slovenia, 19.299% in the United Kingdom and 17.462% in Spain). In addition, sector 4 had a stronger relative impact in Western EU states than in Central and Eastern countries.

Another remarkable fact is the mild contribution of sector 1 (agriculture/fishing) to the decrease in real energy intensity in most of the countries, especially in Western EU member states. Moreover, for some of them (such as France, Denmark and Ireland) it has even contributed to increase it. Again, we find that the agriculture/fishing sector was not a very helpful factor –even opposite in some Western countries- for the improvement in energy efficiency.

Figure 5. Contribution to the percent change of real energy intensity in 2010 (base year = 1995).^a



^a s₁=agriculture/fishing, s₂=industry and construction, s₃=services, and s₄=transport, plus hotels and restaurants.

5. Conclusions

Aggregate energy intensity has experienced a remarkable reduction in the European Union along the 1995-2010 period, particularly in former communist member states. When decomposing their corresponding reductions by using the multiplicative LMDI-II method, a very strong negative intensity effect was detected. Concerning the structural effect, it has been modest in magnitude, and negative in most of the

analysed countries (excepting some former communist states). Consequently, both factors –the structural and the intensity effects – have contributed to decreasing AEI. However, the energy efficiency impact has had a bigger contribution than the change in production structure.

Regarding the geographic areas under study, two distinct patterns are observed. First, the intensity effect has been more influential on AEI reductions in ex-communist countries than in Western states. On the contrary, for the former, the structural effect has been less relevant (or even opposite) to these decreases. In any case, the real energy intensity effort appears to be stronger in Central and Eastern European countries than in Western ones.

When analysing the attribution to the sectors of the percent decrease in real energy intensity, we observe that sector 2 (industry including construction) was particularly relevant. Sector 4 (transport, hotels and restaurants) also was quite important an attribute in all the countries under study. However, when comparing these two attributions by geographic areas some differences emerge. Whereas in Eastern and Central European countries the attribution of percent changes in real energy intensity to sector 2 clearly exceeds other sectors, in Western member states the attributions to sectors 2 and 4 are balanced.

Finally, the sectors of services and agriculture (plus fishing) were poor contributors, or even non contributors, to the drop in real energy intensity, as occurred in some Western countries as Denmark, Ireland and France.

By way of summary, the analysis of real energy intensity shows that the European Union countries, especially the Eastern and Central (former communist) ones, have made an important effort to improve energy efficiency. Our analysis suggests some general ideas in order to enhance real energy efficiency. Action lines such as promotion and adaptation to more efficient techniques, innovation, improved use of technologies, R&D, and substitution for higher quality energies in sectors such as industry (including construction) would be particularly interesting in the case of Eastern and Central EU countries. As for the Western member states, the efforts would rather focus on sectors like industry (including construction), and transport,

hotels and restaurants. These action lines, more than naive reliance on changes in production structure, would lead to a sensible reduction in real energy intensity in European countries.

References

- [1] Choi KH, Ang BW. Attribution of changes in Divisia real energy intensity index – An extension to index decomposition analysis. *Energy Economics* 2012; 34: 171-176.
- [2] Ang BW, Lee SY. Decomposition of industrial energy consumption: Some methodological and application issues. *Energy Economics* 1994; 16(2): 83-92.
- [3] Fisher I. *The making of index numbers*. 3rd ed. London: Houghton Mifflin; 1927.
- [4] Diewert WE. Recent developments in the economic theory of index numbers: capital and the theory of productivity. *American Economic Review* 1980; 70(2): 260-267.
- [5] Ang BW, Choi KH. Decomposition of aggregate energy and gas emission intensities for industry: a refined Divisia index method. *The Energy Journal* 1997; 18(3): 59-73.
- [6] Siegel IH. The generalized “ideal” index-number formula. *Journal of the American Statistical Association* 1945; 40: 520-523.
- [7] Shapley LS. A value for n-person games. In: Kuhn H, Tucker AW, editors. *Contributions to the theory of games II*. Princeton: Princeton University Press; 1953, p. 307-317.
- [8] Ang BW. Decomposition in policymaking in energy: which is the preferred method. *Energy Policy* 2004; 32: 1131-1139.
- [9] De Boer P. Generalized Fisher index or Siegel-Shapley decomposition. *Energy Economics* 2009; 31: 810-814.
- [10] Ang BW, Zhang FQ. A survey in index decomposition analysis in energy and environmental studies. *Energy* 2000;25:1149-1176.
- [11] Ang BW, Liu FL, Chew EP. Perfect decomposition techniques in energy and environmental analysis. *Energy Policy* 2003; 31(14): 1561-1566.
- [12] Ang BW. The LMDI approach to decomposition analysis: a practical guide. *Energy Policy* 2005; 33(7): 867-871.
- [13] Montgomery JK. *The mathematical problem of the price index*. London: P.S. King & Son; 1937.

- [14] Vartia YO. Relative changes and economic indices. Licentiate Thesis, Department of Statistics. University of Helsinki; 1974.
- [15] Vartia YO. Ideal-log change index numbers. *Scandinavian Journal of Statistics* 1976; 3: 121-126.
- [16] Sato K. The ideal log-change index number. *The Review of Economics and Statistics* 1976; 58: 223-228.
- [17] Ang BW. Decomposition of industrial energy consumption: the energy intensity approach. *Energy Economics* 1994;16(3):163-174.
- [18] Liu XQ, Ang BW, Ong HL. The application of the Divisia index to the decomposition of changes in industrial energy consumption *The Energy Journal* 1992; 13(4): 161-177.
- [19] Balk BM. Decomposition of Fisher indices. *Economics Letters* 2004; 82: 107-113.
- [20] Ang BW, Mu AR, Zhou P. Accounting frameworks for tracking energy efficiency trends. *Energy Economics* 2010; 32(5): 1209-1219.
- [21] Reinsdorf MB. Log-change indexes in fixed basket form Working paper 278. U.S. Bureau of Labor Statistics, Washington, D.C.; 1996.
- [22] European Commission (2012). *European Economic Statistics*. Publications Office of the European Union: Luxembourg; 2011 (see also http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database, 2012).
- [23] Mulder P, de Groot HLF. Structural change and convergence of energy intensity across OECD countries, 1970-2005. *Energy Economics* 2012;34:1910-1921.

FUNDACIÓN DE LAS CAJAS DE AHORROS

DOCUMENTOS DE TRABAJO

Últimos números publicados

- 159/2000 Participación privada en la construcción y explotación de carreteras de peaje
Ginés de Rus, Manuel Romero y Lourdes Trujillo
- 160/2000 Errores y posibles soluciones en la aplicación del *Value at Risk*
Mariano González Sánchez
- 161/2000 Tax neutrality on saving assets. The spanish case before and after the tax reform
Cristina Ruza y de Paz-Curbera
- 162/2000 Private rates of return to human capital in Spain: new evidence
F. Barceinas, J. Oliver-Alonso, J.L. Raymond y J.L. Roig-Sabaté
- 163/2000 El control interno del riesgo. Una propuesta de sistema de límites
riesgo neutral
Mariano González Sánchez
- 164/2001 La evolución de las políticas de gasto de las Administraciones Públicas en los años 90
Alfonso Utrilla de la Hoz y Carmen Pérez Esparrells
- 165/2001 Bank cost efficiency and output specification
Emili Tortosa-Ausina
- 166/2001 Recent trends in Spanish income distribution: A robust picture of falling income inequality
Josep Oliver-Alonso, Xavier Ramos y José Luis Raymond-Bara
- 167/2001 Efectos redistributivos y sobre el bienestar social del tratamiento de las cargas familiares en
el nuevo IRPF
Nuria Badenes Plá, Julio López Laborda, Jorge Onrubia Fernández
- 168/2001 The Effects of Bank Debt on Financial Structure of Small and Medium Firms in some Euro-
pean Countries
Mónica Melle-Hernández
- 169/2001 La política de cohesión de la UE ampliada: la perspectiva de España
Ismael Sanz Labrador
- 170/2002 Riesgo de liquidez de Mercado
Mariano González Sánchez
- 171/2002 Los costes de administración para el afiliado en los sistemas de pensiones basados en cuentas
de capitalización individual: medida y comparación internacional.
José Enrique Devesa Carpio, Rosa Rodríguez Barrera, Carlos Vidal Meliá
- 172/2002 La encuesta continua de presupuestos familiares (1985-1996): descripción, representatividad
y propuestas de metodología para la explotación de la información de los ingresos y el gasto.
Llorenç Pou, Joaquín Alegre
- 173/2002 Modelos paramétricos y no paramétricos en problemas de concesión de tarjetas de crédito.
Rosa Puertas, María Bonilla, Ignacio Olmeda

- 174/2002 Mercado único, comercio intra-industrial y costes de ajuste en las manufacturas españolas.
José Vicente Blanes Cristóbal
- 175/2003 La Administración tributaria en España. Un análisis de la gestión a través de los ingresos y de los gastos.
Juan de Dios Jiménez Aguilera, Pedro Enrique Barrilao González
- 176/2003 The Falling Share of Cash Payments in Spain.
Santiago Carbó Valverde, Rafael López del Paso, David B. Humphrey
Publicado en "Moneda y Crédito" nº 217, pags. 167-189.
- 177/2003 Effects of ATMs and Electronic Payments on Banking Costs: The Spanish Case.
Santiago Carbó Valverde, Rafael López del Paso, David B. Humphrey
- 178/2003 Factors explaining the interest margin in the banking sectors of the European Union.
Joaquín Maudos y Juan Fernández Guevara
- 179/2003 Los planes de stock options para directivos y consejeros y su valoración por el mercado de valores en España.
Mónica Melle Hernández
- 180/2003 Ownership and Performance in Europe and US Banking – A comparison of Commercial, Co-operative & Savings Banks.
Yener Altunbas, Santiago Carbó y Phil Molyneux
- 181/2003 The Euro effect on the integration of the European stock markets.
Mónica Melle Hernández
- 182/2004 In search of complementarity in the innovation strategy: international R&D and external knowledge acquisition.
Bruno Cassiman, Reinhilde Veugelers
- 183/2004 Fijación de precios en el sector público: una aplicación para el servicio municipal de suministro de agua.
M^a Ángeles García Valiñas
- 184/2004 Estimación de la economía sumergida en España: un modelo estructural de variables latentes.
Ángel Alañón Pardo, Miguel Gómez de Antonio
- 185/2004 Causas políticas y consecuencias sociales de la corrupción.
Joan Oriol Prats Cabrera
- 186/2004 Loan bankers' decisions and sensitivity to the audit report using the belief revision model.
Andrés Guiral Contreras and José A. Gonzalo Angulo
- 187/2004 El modelo de Black, Derman y Toy en la práctica. Aplicación al mercado español.
Marta Tolentino García-Abadillo y Antonio Díaz Pérez
- 188/2004 Does market competition make banks perform well?.
Mónica Melle
- 189/2004 Efficiency differences among banks: external, technical, internal, and managerial
Santiago Carbó Valverde, David B. Humphrey y Rafael López del Paso

- 190/2004 Una aproximación al análisis de los costes de la esquizofrenia en España: los modelos jerárquicos bayesianos
F. J. Vázquez-Polo, M. A. Negrín, J. M. Cavasés, E. Sánchez y grupo RIRAG
- 191/2004 Environmental proactivity and business performance: an empirical analysis
Javier González-Benito y Óscar González-Benito
- 192/2004 Economic risk to beneficiaries in notional defined contribution accounts (NDCs)
Carlos Vidal-Meliá, Inmaculada Domínguez-Fabian y José Enrique Devesa-Carpio
- 193/2004 Sources of efficiency gains in port reform: non parametric malmquist decomposition tfp index for Mexico
Antonio Estache, Beatriz Tovar de la Fé y Lourdes Trujillo
- 194/2004 Persistencia de resultados en los fondos de inversión españoles
Alfredo Ciriaco Fernández y Rafael Santamaría Aquilué
- 195/2005 El modelo de revisión de creencias como aproximación psicológica a la formación del juicio del auditor sobre la gestión continuada
Andrés Guiral Contreras y Francisco Esteso Sánchez
- 196/2005 La nueva financiación sanitaria en España: descentralización y prospectiva
David Cantarero Prieto
- 197/2005 A cointegration analysis of the Long-Run supply response of Spanish agriculture to the common agricultural policy
José A. Mendez, Ricardo Mora y Carlos San Juan
- 198/2005 ¿Refleja la estructura temporal de los tipos de interés del mercado español preferencia por la liquidez?
Magdalena Massot Perelló y Juan M. Nave
- 199/2005 Análisis de impacto de los Fondos Estructurales Europeos recibidos por una economía regional: Un enfoque a través de Matrices de Contabilidad Social
M. Carmen Lima y M. Alejandro Cardenete
- 200/2005 Does the development of non-cash payments affect monetary policy transmission?
Santiago Carbó Valverde y Rafael López del Paso
- 201/2005 Firm and time varying technical and allocative efficiency: an application for port cargo handling firms
Ana Rodríguez-Álvarez, Beatriz Tovar de la Fe y Lourdes Trujillo
- 202/2005 Contractual complexity in strategic alliances
Jeffrey J. Reuer y Africa Ariño
- 203/2005 Factores determinantes de la evolución del empleo en las empresas adquiridas por opa
Nuria Alcalde Fradejas y Inés Pérez-Soba Aguilar
- 204/2005 Nonlinear Forecasting in Economics: a comparison between Comprehension Approach versus Learning Approach. An Application to Spanish Time Series
Elena Olmedo, Juan M. Valderas, Ricardo Gimeno and Lorenzo Escot

- 205/2005 Precio de la tierra con presión urbana: un modelo para España
Esther Decimavilla, Carlos San Juan y Stefan Sperlich
- 206/2005 Interregional migration in Spain: a semiparametric analysis
Adolfo Maza y José Villaverde
- 207/2005 Productivity growth in European banking
Carmen Murillo-Melchor, José Manuel Pastor y Emili Tortosa-Ausina
- 208/2005 Explaining Bank Cost Efficiency in Europe: Environmental and Productivity Influences.
Santiago Carbó Valverde, David B. Humphrey y Rafael López del Paso
- 209/2005 La elasticidad de sustitución intertemporal con preferencias no separables intratemporalmente: los casos de Alemania, España y Francia.
Elena Márquez de la Cruz, Ana R. Martínez Cañete y Inés Pérez-Soba Aguilar
- 210/2005 Contribución de los efectos tamaño, book-to-market y momentum a la valoración de activos: el caso español.
Begoña Font-Belaire y Alfredo Juan Grau-Grau
- 211/2005 Permanent income, convergence and inequality among countries
José M. Pastor and Lorenzo Serrano
- 212/2005 The Latin Model of Welfare: Do 'Insertion Contracts' Reduce Long-Term Dependence?
Luis Ayala and Magdalena Rodríguez
- 213/2005 The effect of geographic expansion on the productivity of Spanish savings banks
Manuel Illueca, José M. Pastor and Emili Tortosa-Ausina
- 214/2005 Dynamic network interconnection under consumer switching costs
Ángel Luis López Rodríguez
- 215/2005 La influencia del entorno socioeconómico en la realización de estudios universitarios: una aproximación al caso español en la década de los noventa
Marta Rahona López
- 216/2005 The valuation of spanish ipos: efficiency analysis
Susana Álvarez Otero
- 217/2005 On the generation of a regular multi-input multi-output technology using parametric output distance functions
Sergio Perelman and Daniel Santin
- 218/2005 La gobernanza de los procesos parlamentarios: la organización industrial del congreso de los diputados en España
Gonzalo Caballero Miguez
- 219/2005 Determinants of bank market structure: Efficiency and political economy variables
Francisco González
- 220/2005 Agresividad de las órdenes introducidas en el mercado español: estrategias, determinantes y medidas de performance
David Abad Díaz

- 221/2005 Tendencia post-anuncio de resultados contables: evidencia para el mercado español
Carlos Forner Rodríguez, Joaquín Marhuenda Fructuoso y Sonia Sanabria García
- 222/2005 Human capital accumulation and geography: empirical evidence in the European Union
Jesús López-Rodríguez, J. Andrés Faiña y Jose Lopez Rodríguez
- 223/2005 Auditors' Forecasting in Going Concern Decisions: Framing, Confidence and Information Processing
Waymond Rodgers and Andrés Guiral
- 224/2005 The effect of Structural Fund spending on the Galician region: an assessment of the 1994-1999 and 2000-2006 Galician CSFs
José Ramón Cancelo de la Torre, J. Andrés Faiña and Jesús López-Rodríguez
- 225/2005 The effects of ownership structure and board composition on the audit committee activity: Spanish evidence
Carlos Fernández Méndez and Rubén Arrondo García
- 226/2005 Cross-country determinants of bank income smoothing by managing loan loss provisions
Ana Rosa Fonseca and Francisco González
- 227/2005 Incumplimiento fiscal en el irpf (1993-2000): un análisis de sus factores determinantes
Alejandro Estellér Moré
- 228/2005 Region versus Industry effects: volatility transmission
Pilar Soriano Felipe and Francisco J. Climent Diranzo
- 229/2005 Concurrent Engineering: The Moderating Effect Of Uncertainty On New Product Development Success
Daniel Vázquez-Bustelo and Sandra Valle
- 230/2005 On zero lower bound traps: a framework for the analysis of monetary policy in the 'age' of central banks
Alfonso Palacio-Vera
- 231/2005 Reconciling Sustainability and Discounting in Cost Benefit Analysis: a methodological proposal
M. Carmen Almansa Sáez and Javier Calatrava Requena
- 232/2005 Can The Excess Of Liquidity Affect The Effectiveness Of The European Monetary Policy?
Santiago Carbó Valverde and Rafael López del Paso
- 233/2005 Inheritance Taxes In The Eu Fiscal Systems: The Present Situation And Future Perspectives.
Miguel Angel Barberán Lahuerta
- 234/2006 Bank Ownership And Informativeness Of Earnings.
Víctor M. González
- 235/2006 Developing A Predictive Method: A Comparative Study Of The Partial Least Squares Vs Maximum Likelihood Techniques.
Waymond Rodgers, Paul Pavlou and Andres Guiral.
- 236/2006 Using Compromise Programming for Macroeconomic Policy Making in a General Equilibrium Framework: Theory and Application to the Spanish Economy.
Francisco J. André, M. Alejandro Cardenete y Carlos Romero.

- 237/2006 Bank Market Power And Sme Financing Constraints.
Santiago Carbó-Valverde, Francisco Rodríguez-Fernández y Gregory F. Udell.
- 238/2006 Trade Effects Of Monetary Agreements: Evidence For Oecd Countries.
Salvador Gil-Pareja, Rafael Llorca-Vivero y José Antonio Martínez-Serrano.
- 239/2006 The Quality Of Institutions: A Genetic Programming Approach.
Marcos Álvarez-Díaz y Gonzalo Caballero Miguez.
- 240/2006 La interacción entre el éxito competitivo y las condiciones del mercado doméstico como determinantes de la decisión de exportación en las Pymes.
Francisco García Pérez.
- 241/2006 Una estimación de la depreciación del capital humano por sectores, por ocupación y en el tiempo.
Inés P. Murillo.
- 242/2006 Consumption And Leisure Externalities, Economic Growth And Equilibrium Efficiency.
Manuel A. Gómez.
- 243/2006 Measuring efficiency in education: an analysis of different approaches for incorporating non-discretionary inputs.
Jose Manuel Cordero-Ferrera, Francisco Pedraja-Chaparro y Javier Salinas-Jiménez
- 244/2006 Did The European Exchange-Rate Mechanism Contribute To The Integration Of Peripheral Countries?.
Salvador Gil-Pareja, Rafael Llorca-Vivero y José Antonio Martínez-Serrano
- 245/2006 Intergenerational Health Mobility: An Empirical Approach Based On The Echp.
Marta Pascual and David Cantarero
- 246/2006 Measurement and analysis of the Spanish Stock Exchange using the Lyapunov exponent with digital technology.
Salvador Rojí Ferrari and Ana Gonzalez Marcos
- 247/2006 Testing For Structural Breaks In Variance With additive Outliers And Measurement Errors.
Paulo M.M. Rodrigues and Antonio Rubia
- 248/2006 The Cost Of Market Power In Banking: Social Welfare Loss Vs. Cost Inefficiency.
Joaquín Maudos and Juan Fernández de Guevara
- 249/2006 Elasticidades de largo plazo de la demanda de vivienda: evidencia para España (1885-2000).
Desiderio Romero Jordán, José Félix Sanz Sanz y César Pérez López
- 250/2006 Regional Income Disparities in Europe: What role for location?.
Jesús López-Rodríguez and J. Andrés Faña
- 251/2006 Funciones abreviadas de bienestar social: Una forma sencilla de simultaneizar la medición de la eficiencia y la equidad de las políticas de gasto público.
Nuria Badenes Plá y Daniel Santín González
- 252/2006 "The momentum effect in the Spanish stock market: Omitted risk factors or investor behaviour?".
Luis Muga and Rafael Santamaría
- 253/2006 Dinámica de precios en el mercado español de gasolina: un equilibrio de colusión tácita.
Jordi Perdiguero García

- 254/2006 Desigualdad regional en España: renta permanente versus renta corriente.
José M. Pastor, Empar Pons y Lorenzo Serrano
- 255/2006 Environmental implications of organic food preferences: an application of the impure public goods model.
Ana Maria Aldanondo-Ochoa y Carmen Almansa-Sáez
- 256/2006 Family tax credits versus family allowances when labour supply matters: Evidence for Spain.
José Felix Sanz-Sanz, Desiderio Romero-Jordán y Santiago Álvarez-García
- 257/2006 La internacionalización de la empresa manufacturera española: efectos del capital humano genérico y específico.
José López Rodríguez
- 258/2006 Evaluación de las migraciones interregionales en España, 1996-2004.
María Martínez Torres
- 259/2006 Efficiency and market power in Spanish banking.
Rolf Färe, Shawna Grosskopf y Emili Tortosa-Ausina.
- 260/2006 Asimetrías en volatilidad, beta y contagios entre las empresas grandes y pequeñas cotizadas en la bolsa española.
Helena Chuliá y Hipòlit Torró.
- 261/2006 Birth Replacement Ratios: New Measures of Period Population Replacement.
José Antonio Ortega.
- 262/2006 Accidentes de tráfico, víctimas mortales y consumo de alcohol.
José M^a Arranz y Ana I. Gil.
- 263/2006 Análisis de la Presencia de la Mujer en los Consejos de Administración de las Mil Mayores Empresas Españolas.
Ruth Mateos de Cabo, Lorenzo Escot Mangas y Ricardo Gimeno Nogués.
- 264/2006 Crisis y Reforma del Pacto de Estabilidad y Crecimiento. Las Limitaciones de la Política Económica en Europa.
Ignacio Álvarez Peralta.
- 265/2006 Have Child Tax Allowances Affected Family Size? A Microdata Study For Spain (1996-2000).
Jaime Vallés-Giménez y Anabel Zárate-Marco.
- 266/2006 Health Human Capital And The Shift From Foraging To Farming.
Paolo Rungo.
- 267/2006 Financiación Autonómica y Política de la Competencia: El Mercado de Gasolina en Canarias.
Juan Luis Jiménez y Jordi Perdiguero.
- 268/2006 El cumplimiento del Protocolo de Kyoto para los hogares españoles: el papel de la imposición sobre la energía.
Desiderio Romero-Jordán y José Félix Sanz-Sanz.
- 269/2006 Banking competition, financial dependence and economic growth
Joaquín Maudos y Juan Fernández de Guevara
- 270/2006 Efficiency, subsidies and environmental adaptation of animal farming under CAP
Werner Kleinhanß, Carmen Murillo, Carlos San Juan y Stefan Sperlich

- 271/2006 Interest Groups, Incentives to Cooperation and Decision-Making Process in the European Union
A. Garcia-Lorenzo y Jesús López-Rodríguez
- 272/2006 Riesgo asimétrico y estrategias de momentum en el mercado de valores español
Luis Muga y Rafael Santamaría
- 273/2006 Valoración de capital-riesgo en proyectos de base tecnológica e innovadora a través de la teoría de opciones reales
Gracia Rubio Martín
- 274/2006 Capital stock and unemployment: searching for the missing link
Ana Rosa Martínez-Cañete, Elena Márquez de la Cruz, Alfonso Palacio-Vera and Inés Pérez-Soba Aguilar
- 275/2006 Study of the influence of the voters' political culture on vote decision through the simulation of a political competition problem in Spain
Sagrario Lantarón, Isabel Lillo, M^a Dolores López and Javier Rodrigo
- 276/2006 Investment and growth in Europe during the Golden Age
Antonio Cubel and M^a Teresa Sanchis
- 277/2006 Efectos de vincular la pensión pública a la inversión en cantidad y calidad de hijos en un modelo de equilibrio general
Robert Meneu Gaya
- 278/2006 El consumo y la valoración de activos
Elena Márquez y Belén Nieto
- 279/2006 Economic growth and currency crisis: A real exchange rate entropic approach
David Matesanz Gómez y Guillermo J. Ortega
- 280/2006 Three measures of returns to education: An illustration for the case of Spain
María Arrazola y José de Hevia
- 281/2006 Composition of Firms versus Composition of Jobs
Antoni Cunyat
- 282/2006 La vocación internacional de un holding tranviario belga: la Compagnie Mutuelle de Tramways, 1895-1918
Alberte Martínez López
- 283/2006 Una visión panorámica de las entidades de crédito en España en la última década.
Constantino García Ramos
- 284/2006 Foreign Capital and Business Strategies: a comparative analysis of urban transport in Madrid and Barcelona, 1871-1925
Alberte Martínez López
- 285/2006 Los intereses belgas en la red ferroviaria catalana, 1890-1936
Alberte Martínez López
- 286/2006 The Governance of Quality: The Case of the Agrifood Brand Names
Marta Fernández Barcala, Manuel González-Díaz y Emmanuel Raynaud
- 287/2006 Modelling the role of health status in the transition out of malthusian equilibrium
Paolo Rungo, Luis Currais and Berta Rivera
- 288/2006 Industrial Effects of Climate Change Policies through the EU Emissions Trading Scheme
Xavier Labandeira and Miguel Rodríguez

- 289/2006 Globalisation and the Composition of Government Spending: An analysis for OECD countries
Norman Gemmell, Richard Kneller and Ismael Sanz
- 290/2006 La producción de energía eléctrica en España: Análisis económico de la actividad tras la liberalización del Sector Eléctrico
Fernando Hernández Martínez
- 291/2006 Further considerations on the link between adjustment costs and the productivity of R&D investment: evidence for Spain
Desiderio Romero-Jordán, José Félix Sanz-Sanz and Inmaculada Álvarez-Ayuso
- 292/2006 Una teoría sobre la contribución de la función de compras al rendimiento empresarial
Javier González Benito
- 293/2006 Agility drivers, enablers and outcomes: empirical test of an integrated agile manufacturing model
Daniel Vázquez-Bustelo, Lucía Avella and Esteban Fernández
- 294/2006 Testing the parametric vs the semiparametric generalized mixed effects models
María José Lombardía and Stefan Sperlich
- 295/2006 Nonlinear dynamics in energy futures
Mariano Matilla-García
- 296/2006 Estimating Spatial Models By Generalized Maximum Entropy Or How To Get Rid Of W
Esteban Fernández Vázquez, Matías Mayor Fernández and Jorge Rodríguez-Valez
- 297/2006 Optimización fiscal en las transmisiones lucrativas: análisis metodológico
Félix Domínguez Barrero
- 298/2006 La situación actual de la banca online en España
Francisco José Climent Diranzo y Alexandre Momparler Pechuán
- 299/2006 Estrategia competitiva y rendimiento del negocio: el papel mediador de la estrategia y las capacidades productivas
Javier González Benito y Isabel Suárez González
- 300/2006 A Parametric Model to Estimate Risk in a Fixed Income Portfolio
Pilar Abad and Sonia Benito
- 301/2007 Análisis Empírico de las Preferencias Sociales Respecto del Gasto en Obra Social de las Cajas de Ahorros
Alejandro Esteller-Moré, Jonathan Jorba Jiménez y Albert Solé-Ollé
- 302/2007 Assessing the enlargement and deepening of regional trading blocs: The European Union case
Salvador Gil-Pareja, Rafael Llorca-Vivero y José Antonio Martínez-Serrano
- 303/2007 ¿Es la Franquicia un Medio de Financiación?: Evidencia para el Caso Español
Vanessa Solís Rodríguez y Manuel González Díaz
- 304/2007 On the Finite-Sample Biases in Nonparametric Testing for Variance Constancy
Paulo M.M. Rodrigues and Antonio Rubia
- 305/2007 Spain is Different: Relative Wages 1989-98
José Antonio Carrasco Gallego

- 306/2007 Poverty reduction and SAM multipliers: An evaluation of public policies in a regional framework
Francisco Javier De Miguel-Vélez y Jesús Pérez-Mayo
- 307/2007 La Eficiencia en la Gestión del Riesgo de Crédito en las Cajas de Ahorro
Marcelino Martínez Cabrera
- 308/2007 Optimal environmental policy in transport: unintended effects on consumers' generalized price
M. Pilar Socorro and Ofelia Betancor
- 309/2007 Agricultural Productivity in the European Regions: Trends and Explanatory Factors
Roberto Ezcurra, Belen Iraizoz, Pedro Pascual and Manuel Rapún
- 310/2007 Long-run Regional Population Divergence and Modern Economic Growth in Europe: a Case Study of Spain
María Isabel Ayuda, Fernando Collantes and Vicente Pinilla
- 311/2007 Financial Information effects on the measurement of Commercial Banks' Efficiency
Borja Amor, María T. Tascón and José L. Fanjul
- 312/2007 Neutralidad e incentivos de las inversiones financieras en el nuevo IRPF
Félix Domínguez Barrero
- 313/2007 The Effects of Corporate Social Responsibility Perceptions on The Valuation of Common Stock
Waymond Rodgers , Helen Choy and Andres Guiral-Contreras
- 314/2007 Country Creditor Rights, Information Sharing and Commercial Banks' Profitability Persistence across the world
Borja Amor, María T. Tascón and José L. Fanjul
- 315/2007 ¿Es Relevante el Déficit Corriente en una Unión Monetaria? El Caso Español
Javier Blanco González y Ignacio del Rosal Fernández
- 316/2007 The Impact of Credit Rating Announcements on Spanish Corporate Fixed Income Performance: Returns, Yields and Liquidity
Pilar Abad, Antonio Díaz and M. Dolores Robles
- 317/2007 Indicadores de Lealtad al Establecimiento y Formato Comercial Basados en la Distribución del Presupuesto
Cesar Augusto Bustos Reyes y Óscar González Benito
- 318/2007 Migrants and Market Potential in Spain over The XXth Century: A Test Of The New Economic Geography
Daniel A. Tirado, Jordi Pons, Elisenda Paluzie and Javier Silvestre
- 319/2007 El Impacto del Coste de Oportunidad de la Actividad Emprendedora en la Intención de los Ciudadanos Europeos de Crear Empresas
Luis Miguel Zapico Aldeano
- 320/2007 Los belgas y los ferrocarriles de vía estrecha en España, 1887-1936
Alberte Martínez López
- 321/2007 Competición política bipartidista. Estudio geométrico del equilibrio en un caso ponderado
Isabel Lillo, M^a Dolores López y Javier Rodrigo
- 322/2007 Human resource management and environment management systems: an empirical study
M^a Concepción López Fernández, Ana M^a Serrano Bedía and Gema García Piqueres

- 323/2007 Wood and industrialization. evidence and hypotheses from the case of Spain, 1860-1935.
Iñaki Iriarte-Goñi and María Isabel Ayuda Bosque
- 324/2007 New evidence on long-run monetary neutrality.
J. Cunado, L.A. Gil-Alana and F. Perez de Gracia
- 325/2007 Monetary policy and structural changes in the volatility of us interest rates.
Juncal Cuñado, Javier Gomez Biscarri and Fernando Perez de Gracia
- 326/2007 The productivity effects of intrafirm diffusion.
Lucio Fuentelsaz, Jaime Gómez and Sergio Palomas
- 327/2007 Unemployment duration, layoffs and competing risks.
J.M. Arranz, C. García-Serrano and L. Toharia
- 328/2007 El grado de cobertura del gasto público en España respecto a la UE-15
Nuria Rueda, Begoña Barruso, Carmen Calderón y M^a del Mar Herrador
- 329/2007 The Impact of Direct Subsidies in Spain before and after the CAP'92 Reform
Carmen Murillo, Carlos San Juan and Stefan Sperlich
- 330/2007 Determinants of post-privatisation performance of Spanish divested firms
Laura Cabeza García and Silvia Gómez Ansón
- 331/2007 ¿Por qué deciden diversificar las empresas españolas? Razones oportunistas versus razones económicas
Almudena Martínez Campillo
- 332/2007 Dynamical Hierarchical Tree in Currency Markets
Juan Gabriel Brida, David Matesanz Gómez and Wiston Adrián Risso
- 333/2007 Los determinantes sociodemográficos del gasto sanitario. Análisis con microdatos individuales
Ana María Angulo, Ramón Barberán, Pilar Egea y Jesús Mur
- 334/2007 Why do companies go private? The Spanish case
Inés Pérez-Soba Aguilar
- 335/2007 The use of gis to study transport for disabled people
Verónica Cañal Fernández
- 336/2007 The long run consequences of M&A: An empirical application
Cristina Bernad, Lucio Fuentelsaz and Jaime Gómez
- 337/2007 Las clasificaciones de materias en economía: principios para el desarrollo de una nueva clasificación
Valentín Edo Hernández
- 338/2007 Reforming Taxes and Improving Health: A Revenue-Neutral Tax Reform to Eliminate Medical and Pharmaceutical VAT
Santiago Álvarez-García, Carlos Pestana Barros y Juan Prieto-Rodríguez
- 339/2007 Impacts of an iron and steel plant on residential property values
Celia Bilbao-Terol
- 340/2007 Firm size and capital structure: Evidence using dynamic panel data
Victor M. González and Francisco González

- 341/2007 ¿Cómo organizar una cadena hotelera? La elección de la forma de gobierno
Marta Fernández Barcala y Manuel González Díaz
- 342/2007 Análisis de los efectos de la decisión de diversificar: un contraste del marco teórico “Agencia-
Stewardship”
Almudena Martínez Campillo y Roberto Fernández Gago
- 343/2007 Selecting portfolios given multiple eurostoxx-based uncertainty scenarios: a stochastic goal pro-
gramming approach from fuzzy betas
Enrique Ballester, Blanca Pérez-Gladish, Mar Arenas-Parra and Amelia Bilbao-Terol
- 344/2007 “El bienestar de los inmigrantes y los factores implicados en la decisión de emigrar”
Anastasia Hernández Alemán y Carmelo J. León
- 345/2007 Governance Decisions in the R&D Process: An Integrative Framework Based on TCT and
Knowledge View of The Firm.
Andrea Martínez-Noya and Esteban García-Canal
- 346/2007 Diferencias salariales entre empresas públicas y privadas. El caso español
Begoña Cueto y Nuria Sánchez- Sánchez
- 347/2007 Effects of Fiscal Treatments of Second Home Ownership on Renting Supply
Celia Bilbao Terol and Juan Prieto Rodríguez
- 348/2007 Auditors’ ethical dilemmas in the going concern evaluation
Andres Guiral, Waymond Rodgers, Emiliano Ruiz and Jose A. Gonzalo
- 349/2007 Convergencia en capital humano en España. Un análisis regional para el periodo 1970-2004
Susana Morales Sequera y Carmen Pérez Esparrells
- 350/2007 Socially responsible investment: mutual funds portfolio selection using fuzzy multiobjective pro-
gramming
Blanca M^a Pérez-Gladish, Mar Arenas-Parra , Amelia Bilbao-Terol and M^a Victoria Rodríguez-
Uría
- 351/2007 Persistencia del resultado contable y sus componentes: implicaciones de la medida de ajustes por
devengo
Raúl Iñiguez Sánchez y Francisco Poveda Fuentes
- 352/2007 Wage Inequality and Globalisation: What can we Learn from the Past? A General Equilibrium
Approach
Concha Betrán, Javier Ferri and Maria A. Pons
- 353/2007 Eficacia de los incentivos fiscales a la inversión en I+D en España en los años noventa
Desiderio Romero Jordán y José Félix Sanz Sanz
- 354/2007 Convergencia regional en renta y bienestar en España
Robert Meneu Gaya
- 355/2007 Tributación ambiental: Estado de la Cuestión y Experiencia en España
Ana Carrera Poncela
- 356/2007 Salient features of dependence in daily us stock market indices
Luis A. Gil-Alana, Juncal Cuñado and Fernando Pérez de Gracia
- 357/2007 La educación superior: ¿un gasto o una inversión rentable para el sector público?
Inés P. Murillo y Francisco Pedraja

- 358/2007 Effects of a reduction of working hours on a model with job creation and job destruction
Emilio Domínguez, Miren Ullibarri y Idoya Zabaleta
- 359/2007 Stock split size, signaling and earnings management: Evidence from the Spanish market
José Yagüe, J. Carlos Gómez-Sala and Francisco Poveda-Fuentes
- 360/2007 Modelización de las expectativas y estrategias de inversión en mercados de derivados
Begoña Font-Belaire
- 361/2008 Trade in capital goods during the golden age, 1953-1973
M^a Teresa Sanchis and Antonio Cubel
- 362/2008 El capital económico por riesgo operacional: una aplicación del modelo de distribución de pérdidas
Enrique José Jiménez Rodríguez y José Manuel Fera Domínguez
- 363/2008 The drivers of effectiveness in competition policy
Joan-Ramon Borrell and Juan-Luis Jiménez
- 364/2008 Corporate governance structure and board of directors remuneration policies: evidence from Spain
Carlos Fernández Méndez, Rubén Arrondo García and Enrique Fernández Rodríguez
- 365/2008 Beyond the disciplinary role of governance: how boards and donors add value to Spanish foundations
Pablo De Andrés Alonso, Valentín Azofra Palenzuela y M. Elena Romero Merino
- 366/2008 Complejidad y perfeccionamiento contractual para la contención del oportunismo en los acuerdos de franquicia
Vanessa Solís Rodríguez y Manuel González Díaz
- 367/2008 Inestabilidad y convergencia entre las regiones europeas
Jesús Mur, Fernando López y Ana Angulo
- 368/2008 Análisis espacial del cierre de explotaciones agrarias
Ana Aldanondo Ochoa, Carmen Almansa Sáez y Valero Casanovas Oliva
- 369/2008 Cross-Country Efficiency Comparison between Italian and Spanish Public Universities in the period 2000-2005
Tommaso Agasisti and Carmen Pérez Esparrells
- 370/2008 El desarrollo de la sociedad de la información en España: un análisis por comunidades autónomas
María Concepción García Jiménez y José Luis Gómez Barroso
- 371/2008 El medioambiente y los objetivos de fabricación: un análisis de los modelos estratégicos para su consecución
Lucía Avella Camarero, Esteban Fernández Sánchez y Daniel Vázquez-Bustelo
- 372/2008 Influence of bank concentration and institutions on capital structure: New international evidence
Víctor M. González and Francisco González
- 373/2008 Generalización del concepto de equilibrio en juegos de competición política
M^a Dolores López González y Javier Rodrigo Hitos
- 374/2008 Smooth Transition from Fixed Effects to Mixed Effects Models in Multi-level regression Models
María José Lombardía and Stefan Sperlich

- 375/2008 A Revenue-Neutral Tax Reform to Increase Demand for Public Transport Services
Carlos Pestana Barros and Juan Prieto-Rodriguez
- 376/2008 Measurement of intra-distribution dynamics: An application of different approaches to the European regions
Adolfo Maza, María Hierro and José Villaverde
- 377/2008 Migración interna de extranjeros y ¿nueva fase en la convergencia?
María Hierro y Adolfo Maza
- 378/2008 Efectos de la Reforma del Sector Eléctrico: Modelización Teórica y Experiencia Internacional
Ciro Eduardo Bazán Navarro
- 379/2008 A Non-Parametric Independence Test Using Permutation Entropy
Mariano Matilla-García and Manuel Ruiz Marín
- 380/2008 Testing for the General Fractional Unit Root Hypothesis in the Time Domain
Uwe Hassler, Paulo M.M. Rodrigues and Antonio Rubia
- 381/2008 Multivariate gram-charlier densities
Esther B. Del Brio, Trino-Manuel Níguez and Javier Perote
- 382/2008 Analyzing Semiparametrically the Trends in the Gender Pay Gap - The Example of Spain
Ignacio Moral-Arce, Stefan Sperlich, Ana I. Fernández-Saínz and Maria J. Roca
- 383/2008 A Cost-Benefit Analysis of a Two-Sided Card Market
Santiago Carbó Valverde, David B. Humphrey, José Manuel Liñares Zegarra and Francisco Rodríguez Fernandez
- 384/2008 A Fuzzy Bicriteria Approach for Journal Deselection in a Hospital Library
M. L. López-Avello, M. V. Rodríguez-Uría, B. Pérez-Gladish, A. Bilbao-Terol, M. Arenas-Parra
- 385/2008 Valoración de las grandes corporaciones farmacéuticas, a través del análisis de sus principales intangibles, con el método de opciones reales
Gracia Rubio Martín y Prosper Lamothe Fernández
- 386/2008 El marketing interno como impulsor de las habilidades comerciales de las pyme españolas: efectos en los resultados empresariales
M^a Leticia Santos Vijande, M^a José Sanzo Pérez, Nuria García Rodríguez y Juan A. Trespalacios Gutiérrez
- 387/2008 Understanding Warrants Pricing: A case study of the financial market in Spain
David Abad y Belén Nieto
- 388/2008 Aglomeración espacial, Potencial de Mercado y Geografía Económica: Una revisión de la literatura
Jesús López-Rodríguez y J. Andrés Faíña
- 389/2008 An empirical assessment of the impact of switching costs and first mover advantages on firm performance
Jaime Gómez, Juan Pablo Maícas
- 390/2008 Tender offers in Spain: testing the wave
Ana R. Martínez-Cañete y Inés Pérez-Soba Aguilar

- 391/2008 La integración del mercado español a finales del siglo XIX: los precios del trigo entre 1891 y 1905
Mariano Matilla García, Pedro Pérez Pascual y Basilio Sanz Carnero
- 392/2008 Cuando el tamaño importa: estudio sobre la influencia de los sujetos políticos en la balanza de bienes y servicios
Alfonso Echazarra de Gregorio
- 393/2008 Una visión cooperativa de las medidas ante el posible daño ambiental de la desalación
Borja Montaña Sanz
- 394/2008 Efectos externos del endeudamiento sobre la calificación crediticia de las Comunidades Autónomas
Andrés Leal Marcos y Julio López Laborda
- 395/2008 Technical efficiency and productivity changes in Spanish airports: A parametric distance functions approach
Beatriz Tovar & Roberto Rendeiro Martín-Cejas
- 396/2008 Network analysis of exchange data: Interdependence drives crisis contagion
David Matesanz Gómez & Guillermo J. Ortega
- 397/2008 Explaining the performance of Spanish privatised firms: a panel data approach
Laura Cabeza Garcia and Silvia Gomez Anson
- 398/2008 Technological capabilities and the decision to outsource R&D services
Andrea Martínez-Noya and Esteban García-Canal
- 399/2008 Hybrid Risk Adjustment for Pharmaceutical Benefits
Manuel García-Goñi, Pere Ibern & José María Inoriza
- 400/2008 The Team Consensus–Performance Relationship and the Moderating Role of Team Diversity
José Henrique Dieguez, Javier González-Benito and Jesús Galende
- 401/2008 The institutional determinants of CO₂ emissions: A computational modelling approach using Artificial Neural Networks and Genetic Programming
Marcos Álvarez-Díaz, Gonzalo Caballero Miguez and Mario Soliño
- 402/2008 Alternative Approaches to Include Exogenous Variables in DEA Measures: A Comparison Using Monte Carlo
José Manuel Cordero-Ferrera, Francisco Pedraja-Chaparro and Daniel Santín-González
- 403/2008 Efecto diferencial del capital humano en el crecimiento económico andaluz entre 1985 y 2004: comparación con el resto de España
M^a del Pópulo Pablo-Romero Gil-Delgado y M^a de la Palma Gómez-Calero Valdés
- 404/2008 Análisis de fusiones, variaciones conjeturales y la falacia del estimador en diferencias
Juan Luis Jiménez y Jordi Perdiguero
- 405/2008 Política fiscal en la ue: ¿basta con los estabilizadores automáticos?
Jorge Uxó González y M^a Jesús Arroyo Fernández
- 406/2008 Papel de la orientación emprendedora y la orientación al mercado en el éxito de las empresas
Óscar González-Benito, Javier González-Benito y Pablo A. Muñoz-Gallego
- 407/2008 La presión fiscal por impuesto sobre sociedades en la unión europea
Elena Fernández Rodríguez, Antonio Martínez Arias y Santiago Álvarez García

- 408/2008 The environment as a determinant factor of the purchasing and supply strategy: an empirical analysis
Dr. Javier González-Benito y MS Duilio Reis da Rocha
- 409/2008 Cooperation for innovation: the impact on innovatory effort
Gloria Sánchez González and Liliana Herrera
- 410/2008 Spanish post-earnings announcement drift and behavioral finance models
Carlos Forner and Sonia Sanabria
- 411/2008 Decision taking with external pressure: evidence on football manager dismissals in argentina and their consequences
Ramón Flores, David Forrest and Juan de Dios Tena
- 412/2008 Comercio agrario latinoamericano, 1963-2000: aplicación de la ecuación gravitacional para flujos desagregados de comercio
Raúl Serrano y Vicente Pinilla
- 413/2008 Voter heuristics in Spain: a descriptive approach elector decision
José Luís Sáez Lozano and Antonio M. Jaime Castillo
- 414/2008 Análisis del efecto área de salud de residencia sobre la utilización y acceso a los servicios sanitarios en la Comunidad Autónoma Canaria
Ignacio Abásolo Alessón, Lidia García Pérez, Raquel Aguiar Ibáñez y Asier Amador Robayna
- 415/2008 Impact on competitive balance from allowing foreign players in a sports league: an analytical model and an empirical test
Ramón Flores, David Forrest & Juan de Dios Tena
- 416/2008 Organizational innovation and productivity growth: Assessing the impact of outsourcing on firm performance
Alberto López
- 417/2008 Value Efficiency Analysis of Health Systems
Eduardo González, Ana Cárcaba & Juan Ventura
- 418/2008 Equidad en la utilización de servicios sanitarios públicos por comunidades autónomas en España: un análisis multinivel
Ignacio Abásolo, Jaime Pinilla, Miguel Negrín, Raquel Aguiar y Lidia García
- 419/2008 Piedras en el camino hacia Bolonia: efectos de la implantación del EEES sobre los resultados académicos
Carmen Florido, Juan Luis Jiménez e Isabel Santana
- 420/2008 The welfare effects of the allocation of airlines to different terminals
M. Pilar Socorro and Ofelia Betancor
- 421/2008 How bank capital buffers vary across countries. The influence of cost of deposits, market power and bank regulation
Ana Rosa Fonseca and Francisco González
- 422/2008 Analysing health limitations in Spain: an empirical approach based on the European Community household panel
Marta Pascual and David Cantarero

- 423/2008 Regional productivity variation and the impact of public capital stock: an analysis with spatial interaction, with reference to Spain
Miguel Gómez-Antonio and Bernard Fingleton
- 424/2008 Average effect of training programs on the time needed to find a job. The case of the training schools program in the south of Spain (Seville, 1997-1999).
José Manuel Cansino Muñoz-Repiso and Antonio Sánchez Braza
- 425/2008 Medición de la eficiencia y cambio en la productividad de las empresas distribuidoras de electricidad en Perú después de las reformas
Raúl Pérez-Reyes y Beatriz Tovar
- 426/2008 Acercando posturas sobre el descuento ambiental: sondeo Delphi a expertos en el ámbito internacional
Carmen Almansa Sáez y José Miguel Martínez Paz
- 427/2008 Determinants of abnormal liquidity after rating actions in the Corporate Debt Market
Pilar Abad, Antonio Díaz and M. Dolores Robles
- 428/2008 Export led-growth and balance of payments constrained. New formalization applied to Cuban commercial regimes since 1960
David Matesanz Gómez, Guadalupe Fugarolas Álvarez-Ude and Isis Mañalich Gálvez
- 429/2008 La deuda implícita y el desequilibrio financiero-actuarial de un sistema de pensiones. El caso del régimen general de la seguridad social en España
José Enrique Devesa Carpio y Mar Devesa Carpio
- 430/2008 Efectos de la descentralización fiscal sobre el precio de los carburantes en España
Desiderio Romero Jordán, Marta Jorge García-Inés y Santiago Álvarez García
- 431/2008 Euro, firm size and export behavior
Silviano Esteve-Pérez, Salvador Gil-Pareja, Rafael Llorca-Vivero and José Antonio Martínez-Serrano
- 432/2008 Does social spending increase support for free trade in advanced democracies?
Ismael Sanz, Ferran Martínez i Coma and Federico Steinberg
- 433/2008 Potencial de Mercado y Estructura Espacial de Salarios: El Caso de Colombia
Jesús López-Rodríguez y Maria Cecilia Acevedo
- 434/2008 Persistence in Some Energy Futures Markets
Juncal Cunado, Luis A. Gil-Alana and Fernando Pérez de Gracia
- 435/2008 La inserción financiera externa de la economía francesa: inversores institucionales y nueva gestión empresarial
Ignacio Álvarez Peralta
- 436/2008 ¿Flexibilidad o rigidez salarial en España?: un análisis a escala regional
Ignacio Moral Arce y Adolfo Maza Fernández
- 437/2009 Intangible relationship-specific investments and the performance of r&d outsourcing agreements
Andrea Martínez-Noya, Esteban García-Canal & Mauro F. Guillén
- 438/2009 Friendly or Controlling Boards?
Pablo de Andrés Alonso & Juan Antonio Rodríguez Sanz

- 439/2009 La sociedad Trenor y Cía. (1838-1926): un modelo de negocio industrial en la España del siglo XIX
Amparo Ruiz Llopis
- 440/2009 Continental bias in trade
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez Serrano
- 441/2009 Determining operational capital at risk: an empirical application to the retail banking
Enrique José Jiménez-Rodríguez, José Manuel Fera-Domínguez & José Luis Martín-Marín
- 442/2009 Costes de mitigación y escenarios post-kyoto en España: un análisis de equilibrio general para España
Mikel González Ruiz de Eguino
- 443/2009 Las revistas españolas de economía en las bibliotecas universitarias: ranking, valoración del indicador y del sistema
Valentín Edo Hernández
- 444/2009 Convergencia económica en España y coordinación de políticas económicas. un estudio basado en la estructura productiva de las CC.AA.
Ana Cristina Mingorance Arnáiz
- 445/2009 Instrumentos de mercado para reducir emisiones de co2: un análisis de equilibrio general para España
Mikel González Ruiz de Eguino
- 446/2009 El comercio intra e inter-regional del sector Turismo en España
Carlos Llano y Tamara de la Mata
- 447/2009 Efectos del incremento del precio del petróleo en la economía española: Análisis de cointegración y de la política monetaria mediante reglas de Taylor
Fernando Hernández Martínez
- 448/2009 Bologna Process and Expenditure on Higher Education: A Convergence Analysis of the EU-15
T. Agasisti, C. Pérez Esparrells, G. Catalano & S. Morales
- 449/2009 Global Economy Dynamics? Panel Data Approach to Spillover Effects
Gregory Daco, Fernando Hernández Martínez & Li-Wu Hsu
- 450/2009 Pricing levered warrants with dilution using observable variables
Isabel Abinzano & Javier F. Navas
- 451/2009 Information technologies and financial performance: The effect of technology diffusion among competitors
Lucio Fuentelsaz, Jaime Gómez & Sergio Palomas
- 452/2009 A Detailed Comparison of Value at Risk in International Stock Exchanges
Pilar Abad & Sonia Benito
- 453/2009 Understanding offshoring: has Spain been an offshoring location in the nineties?
Belén González-Díaz & Rosario Gandoy
- 454/2009 Outsourcing decision, product innovation and the spatial dimension: Evidence from the Spanish footwear industry
José Antonio Belso-Martínez

- 455/2009 Does playing several competitions influence a team's league performance? Evidence from Spanish professional football
Andrés J. Picazo-Tadeo & Francisco González-Gómez
- 456/2009 Does accessibility affect retail prices and competition? An empirical application
Juan Luis Jiménez and Jordi Perdiguero
- 457/2009 Cash conversion cycle in smes
Sonia Baños-Caballero, Pedro J. García-Teruel and Pedro Martínez-Solano
- 458/2009 Un estudio sobre el perfil de hogares endeudados y sobreendeudados: el caso de los hogares vascos
Alazne Mujika Alberdi, Iñaki García Arrizabalaga y Juan José Gibaja Martíns
- 459/2009 Imposing monotonicity on outputs in parametric distance function estimations: with an application to the spanish educational production
Sergio Perelman and Daniel Santin
- 460/2009 Key issues when using tax data for concentration analysis: an application to the Spanish wealth tax
José M^a Durán-Cabré and Alejandro Esteller-Moré
- 461/2009 ¿Se está rompiendo el mercado español? Una aplicación del enfoque de feldstein –horioka
Saúl De Vicente Queijeiro□, José Luis Pérez Rivero□ y María Rosalía Vicente Cuervo□
- 462/2009 Financial condition, cost efficiency and the quality of local public services
Manuel A. Muñiz□ & José L. Zafra□□
- 463/2009 Including non-cognitive outputs in a multidimensional evaluation of education production: an international comparison
Marián García Valiñas & Manuel Antonio Muñiz Pérez
- 464/2009 A political look into budget deficits. The role of minority governments and oppositions
Albert Falcó-Gimeno & Ignacio Jurado
- 465/2009 La simulación del cuadro de mando integral. Una herramienta de aprendizaje en la materia de contabilidad de gestión
Elena Urquía Grande, Clara Isabel Muñoz Colomina y Elisa Isabel Cano Montero
- 466/2009 Análisis histórico de la importancia de la industria de la desalinización en España
Borja Montaña Sanz
- 467/2009 The dynamics of trade and innovation: a joint approach
Silviano Esteve-Pérez & Diego Rodríguez
- 468/2009 Measuring international reference-cycles
Sonia de Lucas Santos, Inmaculada Álvarez Ayuso & M^a Jesús Delgado Rodríguez
- 469/2009 Measuring quality of life in Spanish municipalities
Eduardo González Fidalgo, Ana Cárcaba García, Juan Ventura Victoria & Jesús García García
- 470/2009 ¿Cómo se valoran las acciones españolas: en el mercado de capitales doméstico o en el europeo?
Begoña Font Belaire y Alfredo Juan Grau Grau
- 471/2009 Patterns of e-commerce adoption and intensity. evidence for the european union-27
María Rosalía Vicente & Ana Jesús López

- 472/2009 On measuring the effect of demand uncertainty on costs: an application to port terminals
Ana Rodríguez-Álvarez, Beatriz Tovar & Alan Wall
- 473/2009 Order of market entry, market and technological evolution and firm competitive performance
Jaime Gomez, Gianvito Lanzolla & Juan Pablo Maicas
- 474/2009 La Unión Económica y Monetaria Europea en el proceso exportador de Castilla y León (1993-2007): un análisis de datos de panel
Almudena Martínez Campillo y M^a del Pilar Sierra Fernández
- 475/2009 Do process innovations boost SMEs productivity growth?
Juan A. Mañez, María E. Rochina Barrachina, Amparo Sanchis Llopis & Juan A. Sanchis Llopis
- 476/2009 Incertidumbre externa y elección del modo de entrada en el marco de la inversión directa en el exterior
Cristina López Duarte y Marta M^a Vidal Suárez
- 477/2009 Testing for structural breaks in factor loadings: an application to international business cycle
José Luis Cendejas Bueno, Sonia de Lucas Santos, Inmaculada Álvarez Ayuso & M^a Jesús Delgado Rodríguez
- 478/2009 ¿Esconde la rigidez de precios la existencia de colusión? El caso del mercado de carburantes en las Islas Canarias
Juan Luis Jiménez y Jordi Perdiguero
- 479/2009 The poni test with structural breaks
Antonio Aznar & María-Isabel Ayuda
- 480/2009 Accuracy and reliability of Spanish regional accounts (CRE-95)
Verónica Cañal Fernández
- 481/2009 Estimating regional variations of R&D effects on productivity growth by entropy econometrics
Esteban Fernández-Vázquez y Fernando Rubiera-Morollón
- 482/2009 Why do local governments privatize the provision of water services? Empirical evidence from Spain
Francisco González-Gómez, Andrés J. Picazo-Tadeo & Jorge Guardiola
- 483/2009 Assessing the regional digital divide across the European Union-27
María Rosalía Vicente & Ana Jesús López
- 484/2009 Measuring educational efficiency and its determinants in Spain with parametric distance functions
José Manuel Cordero Ferrera, Eva Crespo Cebada & Daniel Santín González
- 485/2009 Spatial analysis of public employment services in the Spanish provinces
Patricia Suárez Cano & Matías Mayor Fernández
- 486/2009 Trade effects of continental and intercontinental preferential trade agreements
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez-Serrano
- 487/2009 Testing the accuracy of DEA for measuring efficiency in education under endogeneity
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez-Serrano
- 488/2009 Measuring efficiency in primary health care: the effect of exogenous variables on results
José Manuel Cordero Ferrera, Eva Crespo Cebada & Luis R. Murillo Zamorano

- 489/2009 Capital structure determinants in growth firms accessing venture funding
Marina Balboa, José Martí & Álvaro Tresierra
- 490/2009 Determinants of debt maturity structure across firm size
Victor M. González
- 491/2009 Análisis del efecto de la aplicación de las NIIF en la valoración de las salidas a bolsa
Susana Álvarez Otero y Eduardo Rodríguez Enríquez
- 492/2009 An analysis of urban size and territorial location effects on employment probabilities: the spanish case
Ana Viñuela-Jiménez, Fernando Rubiera-Morollón & Begoña Cueto
- 493/2010 Determinantes de la estructura de los consejos de administración en España
Isabel Acero Fraile□ y Nuria Alcalde Fradejas
- 494/2010 Performance and completeness in repeated inter-firm relationships: the case of franchising
Vanessa Solis-Rodriguez & Manuel Gonzalez-Diaz
- 495/2010 A Revenue-Based Frontier Measure of Banking Competition
Santiago Carbó, David Humphrey & Francisco Rodríguez
- 496/2010 Categorical segregation in social networks
Antoni Rubí-Barceló
- 497/2010 Beneficios ambientales no comerciales de la directiva marco del agua en condiciones de escasez: análisis económico para el Guadalquivir
Julia Martin-Ortega, Giacomo Giannoccaro y Julio Berbel Vecino
- 498/2010 Monetary integration and risk diversification in eu-15 sovereign debt markets
Juncal Cuñado & Marta Gómez-Puig
- 499/2010 The Marshall Plan and the Spanish autarky: A welfare loss analysis
José Antonio Carrasco Gallego
- 500/2010 The role of learning in firm R&D persistence
Juan A. Mañez, María E. Rochina-Barrachina, Amparo Sanchis-Llopis & Juan A. Sanchis-Llopis
- 501/2010 Is venture capital more than just money?
Marina Balboa, José Martí & Nina Zieling
- 502/2010 On the effects of supply strategy on business performance: do the relationships among generic competitive objectives matter?
Javier González-Benito
- 503/2010 Corporate cash holding and firm value
Cristina Martínez-Sola, Pedro J. García-Teruel & Pedro Martínez-Solano
- 504/2010 El impuesto de flujos de caja de sociedades: una propuesta de base imponible y su aproximación contable en España
Lourdes Jerez Barroso y Joaquín Texeira Quirós
- 505/2010 The effect of technological, commercial and human resources on the use of new technology
Jaime Gómez & Pilar Vargas

- 506/2010 ¿Cómo ha afectado la fiscalidad a la rentabilidad de la inversión en vivienda en España?
Un análisis para el periodo 1996 y 2007
Jorge Onrubia Fernández y María del Carmen Rodado Ruiz
- 507/2010 Modelización de flujos en el análisis input-output a partir de la teoría de redes
Ana Salomé García Muñiz
- 508/2010 Export-led-growth hypothesis revisited. a balance of payments approach for Argentina, Brazil, Chile and Mexico
David Matesanz Gómez & Guadalupe Fugarolas Álvarez-Ude
- 509/2010 Realised hedge ratio properties, performance and implications for risk management: evidence from the spanish ibex 35 spot and futures markets
David G McMillan & Raquel Quiroga García
- 510/2010 Do we sack the manager... or is it better not to? Evidence from Spanish professional football
Francisco González-Gómez, Andrés J. Picazo-Tadeo & Miguel Á. García-Rubio
- 511/2010 Have Spanish port sector reforms during the last two decades been successful? A cost frontier approach
Ana Rodríguez-Álvarez & Beatriz Tovar
- 512/2010 Size & Regional Distribution of Financial Behavior Patterns in Spain
Juan Antonio Maroto Acín, Pablo García Estévez & Salvador Roji Ferrari
- 513/2010 The impact of public reforms on the productivity of the Spanish ports: a parametric distance function approach
Ramón Núñez-Sánchez & Pablo Coto-Millán
- 514/2010 Trade policy versus institutional trade barriers: an application using “good old” ols
Laura Márquez-Ramos, Inmaculada Martínez-Zarzoso & Celestino Suárez-Burguet
- 515/2010 The “Double Market” approach in venture capital and private equity activity: the case of Europe
Marina Balboa & José Martí
- 516/2010 International accounting differences and earnings smoothing in the banking industry
Marina Balboa, Germán López-Espinosa & Antonio Rubia
- 517/2010 Convergence in car prices among European countries
Simón Sosvilla-Rivero & Salvador Gil-Pareja
- 518/2010 Effects of process and product-oriented innovations on employee downsizing
José David Vicente-Lorente & José Ángel Zúñiga-Vicente
- 519/2010 Inequality, the politics of redistribution and the tax-mix
Jenny De Freitas
- 520/2010 Efectos del desajuste educativo sobre el rendimiento privado de la educación: un análisis para el caso español (1995-2006)
Inés P. Murillo, Marta Rahona y M^a del Mar Salinas
- 521/2010 Structural breaks and real convergence in opec countries
Juncal Cuñado
- 522/2010 Human Capital, Geographical location and Policy Implications: The case of Romania
Jesús López-Rodríguez□, Andres Faiña y Bolea Cosmin-Gabriel

- 523/2010 Organizational unlearning context fostering learning for customer capital through time: lessons from SMEs in the telecommunications industry
Anthony K. P. Wensley, Antonio Leal-Millán, Gabriel Cepeda-Carrión & Juan Gabriel Cegarra-Navarro
- 524/2010 The governance threshold in international trade flows
Marta Felis-Rota
- 525/2010 The intensive and extensive margins of trade decomposing exports growth differences across Spanish regions
Asier Minondo Uribe-Etxeberria & Francisco Requena Silvente
- 526/2010 Why do firms locate r&d outsourcing agreements offshore? the role of ownership, location, and externalization advantages
Andrea Martínez-Noya, Esteban García-Canal & Mauro f. Guillén
- 527/2010 Corporate Taxation and the Productivity and Investment Performance of Heterogeneous Firms: Evidence from OECD Firm-Level Data
Norman Gemmell, Richard Kneller, Ismael Sanz & José Félix Sanz-Sanz
- 528/2010 Modelling Personal Income Taxation in Spain: Revenue Elasticities and Regional Comparisons
John Creedy & José Félix Sanz-Sanz
- 529/2010 Mind the Remoteness!. Income disparities across Japanese Prefectures
Jesús López-Rodríguez□, Daisuke Nakamura
- 530/2010 El nuevo sistema de financiación autonómica: descripción, estimación empírica y evaluación
Antoni Zabalza y Julio López Laborda
- 531/2010 Markups, bargaining power and offshoring: an empirical assessment
Lourdes Moreno & Diego Rodríguez
- 532/2010 The snp-dcc model: a new methodology for risk management and forecasting
Esther B. Del Brio, Trino-Manuel Níguez & Javier Perote
- 533/2010 El uso del cuadro de mando integral y del presupuesto en la gestión estratégica de los hospitales públicos
David Naranjo Gil
- 534/2010 Análisis de la efectividad de las prácticas de trabajo de alta implicación en las fábricas españolas
Daniel Vázquez-Bustelo□□ y Lucía Avella Camarero
- 535/2010 Energía, innovación y transporte: la electrificación de los tranvías en España, 1896-1935
Alberte Martínez López
- 536/2010 La ciudad como negocio: gas y empresa en una región española, Galicia 1850-1936
Alberte Martínez López y Jesús Mirás Araujo
- 537/2010 To anticipate or not to anticipate? A comparative analysis of opportunistic early elections and incumbents' economic performance
Pedro Riera Sagrera
- 538/2010 The impact of oil shocks on the Spanish economy
Ana Gómez-Loscós, Antonio Montañés & María Dolores Gadea

- 539/2010 The efficiency of public and publicly-subsidized high schools in Spain. evidence from pisa-2006
María Jesús Mancebón, Jorge Calero, Álvaro Choi & Domingo P. Ximénez-de-Embún
- 540/2010 Regulation as a way to force innovation: the biodiesel case
Jordi Perdigueró & Juan Luis Jiménez
- 541/2010 Pricing strategies of Spanish network carrier
Xavier Fageda, Juan Luis Jiménez & Jordi Perdigueró
- 542/2010 Papel del posicionamiento del distribuidor en la relación entre la marca de distribuidor y lealtad al establecimiento comercial
Oscar González-Benito y Mercedes Martos-Partal
- 543/2010 How Bank Market Concentration, Regulation, and Institutions Shape the Real Effects of Banking Crises
Ana I. Fernández, Francisco González & Nuria Suárez
- 544/2010 Una estimación del comercio interregional trimestral de bienes en España mediante técnicas de interpolación temporal
Nuria Gallego López, Carlos Llano Verduras y Julián Pérez García
- 545/2010 Puerto, empresas y ciudad: una aproximación histórica al caso de Las Palmas de Gran Canaria
Miguel Suárez, Juan Luis Jiménez y Daniel Castillo
- 546/2010 Multinationals in the motor vehicles industry: a general equilibrium analysis for a transition economy
Concepción Latorre & Antonio G. Gómez-Plana
- 547/2010 Core/periphery scientific collaboration networks among very similar researchers
Antoni Rubí-Barceló
- 548/2010 Basic R&D in vertical markets
Miguel González-Maestre & Luis M. Granero
- 549/2010 Factores condicionantes de la presión fiscal de las entidades de crédito españolas, ¿existen diferencias entre bancos y cajas de ahorros?
Ana Rosa Fonseca Díaz, Elena Fernández Rodríguez y Antonio Martínez Arias
- 550/2010 Analyzing an absorptive capacity: Unlearning context and Information System Capabilities as catalysts for innovativeness
Gabriel Cepeda-Carrión, Juan Gabriel Cegarra-Navarro & Daniel Jimenez-Jimenez
- 551/2010 The resolution of banking crises and market discipline: international evidence
Elena Cubillas, Ana Rosa Fonseca & Francisco González
- 552/2010 A strategic approach to network value in information markets
Lucio Fuentelsaz, Elisabet Garrido & Juan Pablo Maicas
- 553/2010 Accounting for the time pattern of remittances in the Spanish context
Alfonso Echazarra
- 554/2010 How to design franchise contracts: the role of contractual hazards and experience
Vanesa Solis-Rodriguez & Manuel Gonzalez-Diaz

- 555/2010 Una teoría integradora de la función de producción al rendimiento empresarial
Javier González Benito
- 556/2010 Height and economic development in Spain, 1850-1958
Ramón María-Dolores & José Miguel Martínez-Carrión
- 557/2010 Why do entrepreneurs use franchising as a financial tool? An agency explanation
Manuel González-Díaz & Vanesa Solís-Rodríguez
- 558/2010 Explanatory Factors of Urban Water Leakage Rates in Southern Spain
Francisco González-Gómez, Roberto Martínez-Espiñeira, Maria A. García-Valiñas & Miguel Á. García Rubio
- 559/2010 Los rankings internacionales de las instituciones de educación superior y las clasificaciones universitarias en España: visión panorámica y prospectiva de futuro.
Carmen Pérez-Esparrells y José M^a Gómez-Sancho.
- 560/2010 Análisis de los determinantes de la transparencia fiscal: Evidencia empírica para los municipios catalanes
Alejandro Esteller Moré y José Polo Otero
- 561/2010 Diversidad lingüística e inversión exterior: el papel de las barreras lingüísticas en los procesos de adquisición internacional
Cristina López Duarte y Marta M^a Vidal Suárez
- 562/2010 Costes y beneficios de la competencia fiscal en la Unión Europea y en la España de las autonomías
José M^a Cantos, Agustín García Rico, M^a Gabriela Lagos Rodríguez y Raquel Álamo Cerrillo
- 563/2010 Customer base management and profitability in information technology industries
Juan Pablo Maicas y Francisco Javier Sese
- 564/2010 Expansión internacional y distancia cultural: distintas aproximaciones —hofstede, schwartz, globe
Cristina López Duarte y Marta M^a Vidal Suárez
- 565/2010 Economies of scale and scope in service firms with demand uncertainty: An application to a Spanish port
Beatriz Tovar & Alan Wall
- 566/2010 Fiscalidad y elección entre renta vitalicia y capital único por los inversores en planes de pensiones: el caso de España
Félix Domínguez Barrero y Julio López Laborda
- 567/2010 Did the cooperative start life as a joint-stock company? Business law and cooperatives in Spain, 1869–1931
Timothy W. Guinnan & Susana Martínez-Rodríguez
- 568/2010 Predicting bankruptcy using neural networks in the current financial crisis: a study for US commercial banks
Félix J. López-Iturriaga, Óscar López-de-Foronda & Iván Pastor Sanz
- 569/2010 Financiación de los cuidados de larga duración en España
Raúl del Pozo Rubio y Francisco Escribano Sotos

- 570/2010 Is the Border Effect an Artefact of Geographic Aggregation?
Carlos Llano-Verduras, Asier Minondo-Urbe & Francisco Requena-Silvente
- 571/2010 Notes on using the hidden asset or the contribution asset to compile the actuarial balance for pay-as-you-go pension systems
Carlos Vidal-Meliá & María del Carmen Boado-Penas
- 572/2010 The Real Effects of Banking Crises: Finance or Asset Allocation Effects? Some International Evidence
Ana I. Fernández, Francisco González & Nuria Suárez Carlos
- 573/2010 Endogenous mergers of complements with mixed bundling
Ricardo Flores-Fillol & Rafael Moner-Colonques
- 574/2010 Redistributive Conflicts and Preferences for Tax Schemes in Europe
Antonio M. Jaime-Castillo & Jose L. Saez-Lozano
- 575/2010 Spanish emigration and the setting-up of a great company in Mexico: bimbo, 1903-2008
Javier Moreno Lázaro
- 576/2010 Mantenimiento temporal de la equidad horizontal en el sistema de financiación autonómica
Julio López Laborda y Antoni Zabalza
- 577/2010 Sobreeducación, Educación no formal y Salarios: Evidencia para España
Sandra Nieto y Raúl Ramos
- 578/2010 Dependencia y empleo: un análisis empírico con la encuesta de discapacidades y atención a la dependencia (edad) 2008.
David Cantarero-Prieto y Patricia Moreno-Mencía
- 579/2011 Environment and happiness: new evidence for Spain
Juncal Cuñado & Fernando Pérez de Gracia
- 580/2011 Aanalysis of emerging barriers for e-learning models. a case of study
Nuria Calvo & Paolo Rungo
- 581/2011 Unemployment, cycle and gender
Amado Peiró, Jorge Belaire-Franch, & Maria Teresa Gonzalo
- 582/2011 An Analytical Regions Proposal for the Study of Labour Markets: An Evaluation for the Spanish Territory
Ana Viñuela Jiménez & Fernando Rubiera Morollón
- 583/2011 The Efficiency of Performance-based-fee Funds
Ana C. Díaz-Mendoza, Germán López-Espinosa & Miguel A. Martínez-Sedano
- 584/2011 Green and good?. The investment performance of US environmental mutual funds
Francisco J. Climent-Diranzo & Pilar Soriano-Felipe
- 585/2011 El fracaso de Copenhague desde la teoría de juegos.
Yolanda Fernández Fernández, M^a Ángeles Fernández López y Blanca Olmedillas Blanco
- 586/2011 Tie me up, tie me down! the interplay of the unemployment compensation system, fixed-term contracts and rehiring
José M. Arranz & Carlos García-Serrano

- 587/2011 Corporate social performance, innovation intensity and their impacts on financial performance: evidence from lending decisions
Andrés Guiral
- 588/2011 Assessment of the programme of measures for coastal lagoon environmental restoration using cost-benefit analysis.
José Miguel Martínez Paz & Ángel Perni Llorente
- 589/2011 Illicit drug use and labour force participation: a simultaneous equations approach
Berta Rivera, Bruno Casal, Luis Currais & Paolo Rungo
- 590/2011 Influencia de la propiedad y el control en la puesta en práctica de la rsc en las grandes empresas españolas
José-Luis Godos-Díez, Roberto Fernández-Gago y Laura Cabeza-García
- 591/2011 Ownership, incentives and hospitals
Xavier Fageda & Eva Fiz
- 592/2011 La liberalización del ferrocarril de mercancías en europa: ¿éxito o fracaso?
Daniel Albalade del Sol, Maria Lluïsa Sort García y Universitat de Barcelona
- 593/2011 Do nonreciprocal preference regimes increase exports?
Salvador Gil-Pareja, Rafael Llorca-Vivero & José Antonio Martínez-Serrano
- 594/2011 Towards a dynamic analysis of multiple-store shopping: evidence from Spanish panel data
Noemí Martínez-Caraballo, Manuel Salvador, Carmen Berné & Pilar Gargallo
- 595/2011 Base imponible y neutralidad del impuesto de sociedades: alternativas y experiencias
Lourdes Jerez Barroso
- 596/2011 Cambio técnico y modelo de negocio: las compañías de transporte urbano en España, 1871-1989
Alberte Martínez López
- 597/2011 A modified dickey-fuller procedure to test for stationarity
Antonio Aznar, María-Isabel Ayuda
- 598/2011 Entorno institucional, estructura de propiedad e inversión en I+D: Un análisis internacional
Félix J. López Iturriaga y Emilio J. López Millán
- 599/2011 Factores competitivos y oferta potencial del sector lechero en Navarra
Valero L. Casanovas Oliva y Ana M. Aldanondo Ochoa
- 600/2011 Política aeroportuaria y su impacto sobre la calidad percibida de los aeropuertos
Juan Luis Jiménez y Ancor Suárez
- 601/2011 Regímenes de tipo de cambio y crecimiento económico en países en desarrollo
Elena Lasarte Navamuel y José Luis Pérez Rivero
- 602/2011 La supervivencia en las empresas de alta tecnología españolas: análisis del sector investigación y desarrollo
Evangelina Baltar Salgado, Sara Fernández López, Isabel Neira Gómez y Milagros Vivel Búa
- 603/2011 Análisis económico y de rentabilidad del sistema financiero español, por tipo de entidades y tamaño, después de cuatro años de crisis y ante los retos de la reestructuración financiera
Salvador Climent Serrano

- 604/2011 Does competition affect the price of water services? Evidence from Spain
Germà Bel, Francisco González-Gómez & Andrés J Picazo-Tadeo
- 605/2011 The Effects of Remoteness in Japanese Educational Levels
Jesús López-Rodríguez & Daisuke Nakamura
- 606/2011 The money market under information asymmetries and imperfectly competitive loan and deposit markets
Aday Hernández
- 607/2011 The effects of airline and high speed train integration
M. Pilar Socorro & M. Fernanda Viéens
- 608/2011 Consecuencias de la imbricación de los clientes en la dirección medioambiental: un análisis empírico
Jesús Ángel del Brío González, Esteban Fernández Sánchez y Beatriz Junquera Cimadevilla
- 609/2011 Revenue autonomy and regional growth: an analysis for the 25 year-process of fiscal decentralisation in Spain
Ramiro Gil-Serrate, Julio López-Laborda & Jesús Mur
- 610/2011 The accessibility to employment offices in the Spanish labor market: Implications in terms of registered unemployment
Patricia Suárez, Matías Mayor & Begoña Cueto
- 611/2011 Time-varying integration in European government bond markets
Pilar Abad, Helena Chuliá & Marta Gómez-Puig
- 612/2011 Production networks and EU enlargement: is there room for everyone in the automotive industry?
Leticia Blázquez, Carmen Díaz-Mora & Rosario Gandoy
- 613/2011 Los factores pronóstico económico, estructura productiva y capacidad de innovar en la valoración de activos españoles
M^a Begoña Font Belaire y Alfredo Juan Grau Grau
- 614/2011 Capital structure adjustment process in firms accessing venture funding
Marina Balboa, José Martí & Álvaro Tresierra
- 615/2011 Flexibilidad Contable en la Valoración de Instrumentos Financieros Híbridos
Jacinto Marabel-Romo, Andrés Guiral-Contreras & José Luis Crespo-Espert
- 616/2011 Why are (or were) Spanish banks so profitable?
Antonio Trujillo-Ponce
- 617/2011 Extreme value theory versus traditional garch approaches applied to financial data: a comparative evaluation
Dolores Furió & Francisco J. Climent
- 618/2011 La restricción de balanza de pagos en la España del euro. Un enfoque comparativo.
David Matesanz Gómez, Guadalupe Fugarolas Álvarez-Ude y Roberto Bande Ramudo
- 619/2011 Is inefficiency under control in the justice administration?
Marta Espasa & Alejandro Esteller-Moré
- 620/2011 The evolving patterns of competition after deregulation
Jaime Gómez Villascuerna, Raquel Orcos Sánchez & Sergio Palomas Doña

- 621/2011 Análisis pre y post-fusiones del sector compuesto por las cajas de ahorros españolas: el tamaño importa
Antonio A. Golpe, Jesús Iglesias y Juan Manuel Martín
- 622/2011 Evaluating three proposals for testing independence in non linear spatial processes
Fernando A. López-Hernández, M. Luz Maté-Sánchez-Val & Andrés Artal-Tur
- 623/2011 Valoración del Mercado de los Activos Éticos en España: una Aplicación del Método de los Precios Hedónicos
Celia Bilbao-Terol y Verónica Cañal-Fernández
- 624/2011 Happiness beyond Material Needs: The Case of the Mayan People
Jorge Guardiola, Francisco González-Gómez & Miguel A. García-Rubio
- 625/2011 Stock characteristics, investor type and market myopia
Cristina Del Rio-Solano & Rafael Santamaria-Aquilué
- 626/2011 Is mistrust under control in the justice administration?
Alejandro Esteller-Moré
- 627/2011 Working capital management, corporate performance, and financial constraints
Sonia Baños-Caballero, Pedro J. García-Teruel & Pedro Martínez-Solano
- 628/2011 On the optimal distribution of traffic of network airlines
Xavier Fageda & Ricardo Flores-Fillol
- 629/2011 Environmental tax and productivity in a subcentral context: new findings on the porter hypothesis
Jaime Vallés- Giménez & Anabel Zárate-Marco
- 630/2011 The impact of scale effects on the prevailing internet-based banking model in the US
Alexandre Momparlera, Francisco J. Climentb & José M. Ballesterb
- 631/2011 Student achievement in a cross-country perspective: a multilevel analysis of pisa2006 data for Italy and Spain
Tommaso Agasisti & Jose Manuel Cordero-Ferrera
- 632/2011 Banking liberalization and firms' debt structure: International evidence
Víctor M. González & Francisco González
- 633/2011 Public sector contingent liabilities in Spanish toll roads
Carlos Contreras
- 634/2011 Fiscal Sustainability and Immigration in the Madrid Region
Luis Miguel Doncel, Pedro Durá, Pilar Grau-Carles & Jorge Sainz
- 635/2011 Las desviaciones presupuestarias del gasto del estado en el periodo 1990-2009: un análisis desde las perspectivas agregada y de programas.
Valentín Edo Hernández
- 636/2011 A network approach to services internationalization
Stefano Visintin
- 637/2011 Factors behind the presence of agricultural credit cooperatives in Spain, 1900-1935: an econometric model
Ángel Pascual Martínez-Soto, Ildefonso Méndez- Martínez & Susana Martínez-Rodríguez.

- 638/2011 La eficiencia técnica en la industria de agua latinoamericana medida a través de la función de distancia
 Angel Higuerey Gómez , Lourdes Trujillo Castellano y María Manuela González Serrano
- 639/2011 Urban Patterns, Population Density and the Cost of Providing Basic Infrastructure: A Frontier Approach
 Inmaculada C. Álvarez, Ángel M. Prieto & José L. Zofío
- 640/2011 A comparison of national vs. multinational firms' performance using a general equilibrium perspective
 María C. Latorre
- 641/2011 A computable general equilibrium evaluation of market performance after the entry of multinationals
 María C. Latorre
- 642/2011 Competition for procurement shares
 José Alcalde & Matthias Dahm
- 643/2011 Air services on thin routes: regional versus low-cost airlines
 Xavier Fageda & Ricardo Flores-Fillol
- 644/2011 Efficiency and Stability in a Strategic Model of Hedonic Coalitions
 Antoni Rubí-Barceló
- 645/2011 An analysis of the cost of disability across Europe using the standard of living approach
 José-Ignacio Antón, Francisco-Javier Braña & Rafael Muñoz de Bustillo
- 646/2011 Estimating the gravity equation with the actual number of exporting firms
 Asier Minondo & Francisco Requena
- 647/2011 New public management-delivery forms, quality levels and political factors on solid management waste costs in Spanish local governments
 José Luis Zafra-Gómez, Diego Prior Jiménez, Ana María Plata Díaz & Antonio M López Hernández
- 648/2011 El sector financiero como factor desestabilizador para la economía a partir del análisis de Hyman Minsky
 Isabel Gimenez Zuriaga
- 649/2011 Determinantes de la prima de riesgo en las emisiones de bonos de titulización hipotecaria en España (1993-2011)
 Miguel Ángel Peña Cerezo, Arturo Rodríguez Castellanos y Francisco Jaime Ibáñez Hernández
- 650/2011 Does complexity explain the structure of trade?
 Asier Minondo & Francisco Requenz
- 651/2011 Supplementary pensions and saving: evidence from Spain
 José-Ignacio Antón, Rafael Muñoz de Bustillo & Enrique Fernández-Macías
- 652/2011 The role of destination spatial spillovers and technological intensity in the location of manufacturing and services firms
 Andrés Artal-Tur, José Miguel Navarro-Azorín & María Luisa Alamá-Sabater

- 653/2011 El papel de los márgenes extensivo e intensivo en el crecimiento de las exportaciones manufactureras españolas por sectores tecnológico
Juan A. Máñez, Francisco Requena-Silvente, María E. Rochina-Barrachina y Juan A. Sanchis-Llopis
- 654/2011 Incumbents and institutions: how the value of resources varies across markets
Lucio Fuentelsaz, Elisabet Garrido & Juan Pablo Maicas
- 655/2011 Price differences between domestic and international air markets: an empirical application to routes from Gran Canaria
Xavier Fageda, Juan Luis Jiménez & Carlos Díaz Santamaría
- 656/2012 The role of accruals quality in the access to bank debt
Pedro J. García-Teruel, Pedro Martínez-Solano and Juan P. Sánchez-Ballesta
- 657/2012 Trade Under Uncertainty: Legal Institutions Matter
Lisa Kolovich & Isabel Rodríguez-Tejedo
- 658/2012 La relación bidireccional entre la rsc y el resultado empresarial: conclusiones de un estudio empírico el sector de las cajas de ahorros
Almudena Martínez Campillo, Laura Cabeza García y Federico Marbella Sánchez
- 659/2012 Consejos de administración y performance de la empresa: efecto de la pertenencia a múltiples consejos
Félix J. López Iturriaga y Ignacio Morrós Rodríguez
- 660/2012 Análisis comparado de los sistemas eléctricos en España y Argentina, 1890-1950. Estrategias globales y experiencias divergentes de la electrificación en dos países de industrialización tardía
Isabel Bartolomé y Norma Silvana Lanciotti
- 661/2012 Leverage and corporate performance: International evidence
Víctor M. González
- 662/2012 Procesos de prociclicidad crediticia e impacto de la provisión estadística en España
Francisco Jaime Ibáñez Hernández, Miguel Ángel Peña Cerezo y Andrés Araujo de la Mata
- 663/2012 Policy success or economic slowdown?. Effects of the 80 km•h-1 speed limit on air pollution in the Barcelona metropolitan area
Germà Bel i Queralt & Jordi Rosell i Segura
- 664/2012 Modelos regulatorios en las telecomunicaciones fijas de banda ancha: competencia en redes frente a competencia en servicios. la evidencia empírica en la OCDE y España
Juan Rubio Martín y César Sánchez Pérez
- 665/2012 Regional export promotion offices and trade margins
Salvador Gil-Pareja, Rafael Llorca-Vivero, José Antonio Martínez-Serrano & Francisco Requena-Silvente
- 666/2012 An Experimental Study of Gender Differences in Distributive Justice
Ismael Rodríguez-Lara
- 667/2012 Spanish savings banks in the credit crunch: could distress have been predicted before the crisis? A multivariate statistical analysis
Martí Sagarra, Cecilio Mar-Molinero & Miguel García-Cestona

- 668/2012 Cities to live or to work in: an input-output model of migration and commuting
Ana Viñuela & Esteban Fernández-Vázquez
- 669/2012 Non-linear Dynamics in Discretionary Accruals: An Analysis of Bank Loan-Loss Provisions
Marina Balboa, Germán López-Espinosa & Antonio Rubia
- 670/2012 Iniciación, persistencia e intensificación en la realización de actividades de I+D en España
Dolores Añón Higón, Juan A. Máñez and y Juan A. Sanchis-Llopis
- 671/2012 La neutralidad financiera en el impuesto sobre sociedades: microsimulación de las opciones de reforma para España
Lourdes Jerez Barroso y Fidel Picos Sánchez
- 672/2012 When trains go faster than planes: The strategic reaction of airlines in Spain
Juan Luis Jiménez and Ofelia Betancor
- 673/2012 Distribución del gasto sanitario público por edad y sexo en España: Análisis de la década 1998-2008
Ángela Blanco Moreno, Rosa Urbanos Garrido y Israel John Thuissard Vasallo
- 674/2012 Does school ownership matter? An unbiased efficiency comparison for Spain regions
Eva Crespo-Cebada, Francisco Pedraja-Chaparro and Daniel Santín
- 675/2012 Factores condicionantes de la desigualdad educativa: un análisis para el caso español
Crespo Cebada, Eva, Díaz Caro, Carlos y Jesús Pérez Mayo
- 676/2012 Integrating network analysis and interregional trade to study the spatial impact of transport infrastructure using production functions
Inmaculada C. Álvarez-Ayuso, Ana M. Condeço-Melhorado, Javier Gutiérrez y Jose L. Zofío
- 677/2012 An actuarial balance model for DB PAYG pension systems with disability and retirement contingencies
Manuel Ventura-Marco & Carlos Vidal-Meliá
- 678/2012 Will it last? An assessment of the 2011 Spanish pension reform using the Swedish system as benchmark
Carlos Vidal-Meliá
- 679/2012 Iniciativas educativas en las universidades mexicanas: un análisis estadístico multivariante
Martí Sagarra, Cecilio Mar-Molinero & Herberto Rodríguez-Regordosa
- 680/2012 Tributación y política de dividendos de las sociedades no financieras, 2000-2010
Félix Domínguez Barrero y Julio López Laborda
- 681/2012 Lending relationships and credit rationing: the impact of securitization
Santiago Carbó-Valverde, Hans Degryse & Francisco Rodriguez-Fernandez
- 682/2012 Percepciones de los ciudadanos sobre las haciendas regionales: quién es y quién debería ser responsable de los servicios e impuestos autonómicos
Julio López Laborda y Fernando Rodrigo
- 683/2012 Trade credit, the financial crisis, and firm access to finance
Santiago Carbó-Valverde, Francisco Rodríguez-Fernández & Gregory F. Udell
- 684/2012 Changing market potentials and regional growth in Poland
Jesús López-Rodríguez & Malgorzata Runiewicz-Wardyn

- 685/2012 Firm boundaries and investments in information technologies in Spanish manufacturing firms
Jaime Gómez, Idana Salazar & Pilar Vargas
- 686/2012 Movimientos de capital, inserción en el mercado mundial y fluctuaciones financieras de la economía cubana: la bolsa de la habana, 1910-1959
Javier Moreno Lázaro
- 687/2012 El impacto de la inmigración sobre el crecimiento económico español. un enfoque contable
Rodrigo Madrazo García de Lomana
- 688/2012 Structural equivalence in the input-output field
Ana Salomé García Muñiz
- 689/2012 Testing the expectations hypothesis in euro overnight interest swap rates
Lucía Hernandis & Hipòlit Torró
- 690/2012 Bank asset securitization before the crisis: Liquidity, bank type and risk transfer as determinants
Martí Sagarra, Miguel García-Cestona & Josep Rialp
- 691/2012 Análisis del riesgo soberano utilizando mapas auto-organizativos. el caso de europa, España y Alemania
Félix J. López Iturriaga e Iván Pastor Sanz
- 692/2012 Economic forecasting with multivariate models along the business cycle
Carlos Cuerpo & Pilar Poncela
- 693/2012 Testing opvar accuracy: an empirical back-testing on the loss distribution approach
José Manuel Feria-Domínguez, Enrique J. Jiménez-Rodríguez & M^a Paz Rivera-Pérez
- 694/2012 Is the boost in oil prices affecting the appreciation of real exchange rate?: Empirical evidence of “Dutch disease” in Colombia
Pilar Poncela, Eva Senra & Lya Paola Sierra
- 695/2012 Market efficiency and lead-lag relationships between spot, futures and forward prices: The case of the Iberian Electricity Market (MIBEL)
Jose María Ballester, Francisco Climent & Dolores Furió
- 696/2012 Complementarities in the innovation strategy: do intangibles play a role in enhancing the impact of r&d on firm performance?
Dolores Añón, Jaime Gómez & Pilar Vargas
- 697/2012 The real effects of bank branch deregulation at various stages of economic development: The European experience
José Manuel Pastor, Lorenzo Serrano & Emili Tortosa-Ausina
- 698/2012 Effects of the financial crisis on the european integration process: relevance of exchange rate, inflation and domestic risks
Alfredo J. Grau-Grau
- 699/2012 Las Preferencias por la Redistribución: Teoría y Evidencia para España
Julio López Laborda y Eduardo Sanz Arcega
- 700/2012 Firm boundaries and investments in information technologies in spanish manufacturing firms
Jaime Gómez, Idana Salazar and Pilar Vargas

- 701/2012 Oil Prices and Inflation in the Euro Area and its Main Countries: Germany, France, Italy and Spain
César Castro, Pilar Poncela and Eva Senra
- 702/2012 Oportunismo y sistemas de gestión medioambiental: las certificaciones como cortina de humo ante los grupos de interés
Gustavo Lannelongue Nieto y Javier González Benito
- 703/2012 Variance Swaps and Gamma Swaps. The Theory and Reality of Model-Free Replication
Jacinto Marabel-Romo
- 704/2013 Business Ties in Boards: the influence of institutional directors on Financial Policy
Emma García-Meca, Felix López Iturriaga and Fernando Tejerina Gaité
- 705/2013 Análisis jerárquico de la evolución del desempeño económico de las comunidades españolas en el período 1955-2009
Juan Gabriel Brida, Nicolás Garrido & David Matesanz Gómez
- 706/2013 Attribution of changes in divisia real energy intensity indices in several european countries from 1995 to 2010
Paula Fernández González, Manuel Landajo & M^aJosé Presno