Reforma fiscal verde en España: Reflexiones tras veinticinco años

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A Panorama on Energy Taxes and Green Tax Reforms*

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Summary

This article provides an overview of specific and systemic applications of energy taxes and environmental (or green) tax reforms. To do so it combines a theoretical and empirical assessment of the literature, with a non-exhaustive description of the practice of these instruments and packages in the real world. Besides yielding a comprehensive approximation to the specific and systemic use of energy taxes, the paper contributes to the research in this area by reflecting on the present and future of these instruments in a particularly shifting world.

Keywords: Taxes, Energy, Environment, Externalities, Natural Resources.

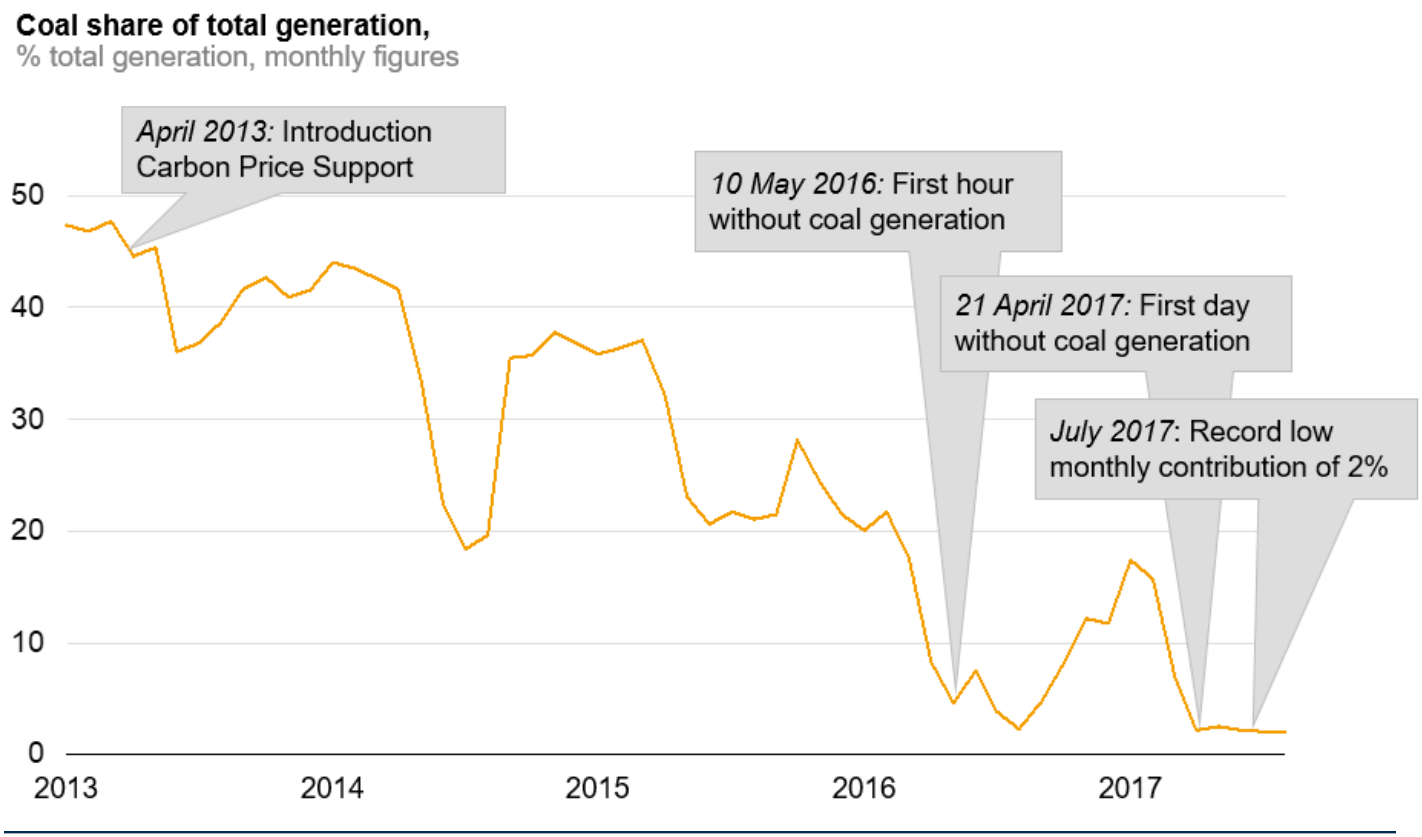
JEL classification: H21, H23, Q48, Q58.

1. Introduction

Energy issues play an increasingly important role in contemporary developed and developing societies. This is due to the fact that the availability of reliable and sufficient energy is crucial for the development of economic activities and, therefore, the energy sector is nowadays very relevant and quite sizeable in most economies. But energy is also the source of important external (negative) environmental effects, particularly those related to the emissions of greenhouse gases (GHG) that are the cause of climate change phenomena. Moreover, the varying availability of energy resources across the globe brings about dependence relationships among countries that give prominence to energy security concerns.

- **Por qué impuestos ambientales?**
  - ‘Poner los precios bien’
  - Coste-efectividad
  - Inversión e innovación
  - Energía: dependencia
  - Cambio de ‘entorno’
- **Por qué reformas fiscales verdes?**
  - Recaudación: doble dividendo
  - Compensaciones distributivas
  - Afectación ambiental
  - Marketing político

Can carbon prices work? The Carbon Price Floor in the UK has gradually wiped out coal



Source: Aurora analysis

Fuente: Hepburn (2017)

- **Luces**
  - Las demandas de las políticas climáticas
  - Consenso académico: el Manifiesto de París
  - Instituciones internacionales: BM, FMI, OCDE
  - El tirón del norte de Europa
  - Plataformas empresariales

- **Sombras**
  - No se cumplen expectativas
  - El fiasco del Manifiesto de París
  - Instrumentos impopulares y no comprendidos
  - Dificultades en la gestión de problemas globales

- **Novedades**
  - Un entorno cambiante: tecnología, crisis, etc.
  - Revolución (fiscal) en el transporte
  - Reformas fiscales verdes heterodoxas
  - Precio mínimo de carbono?
  - Ajustes en frontera?
  - Atención a sinergias e interacciones
  - Soluciones federales

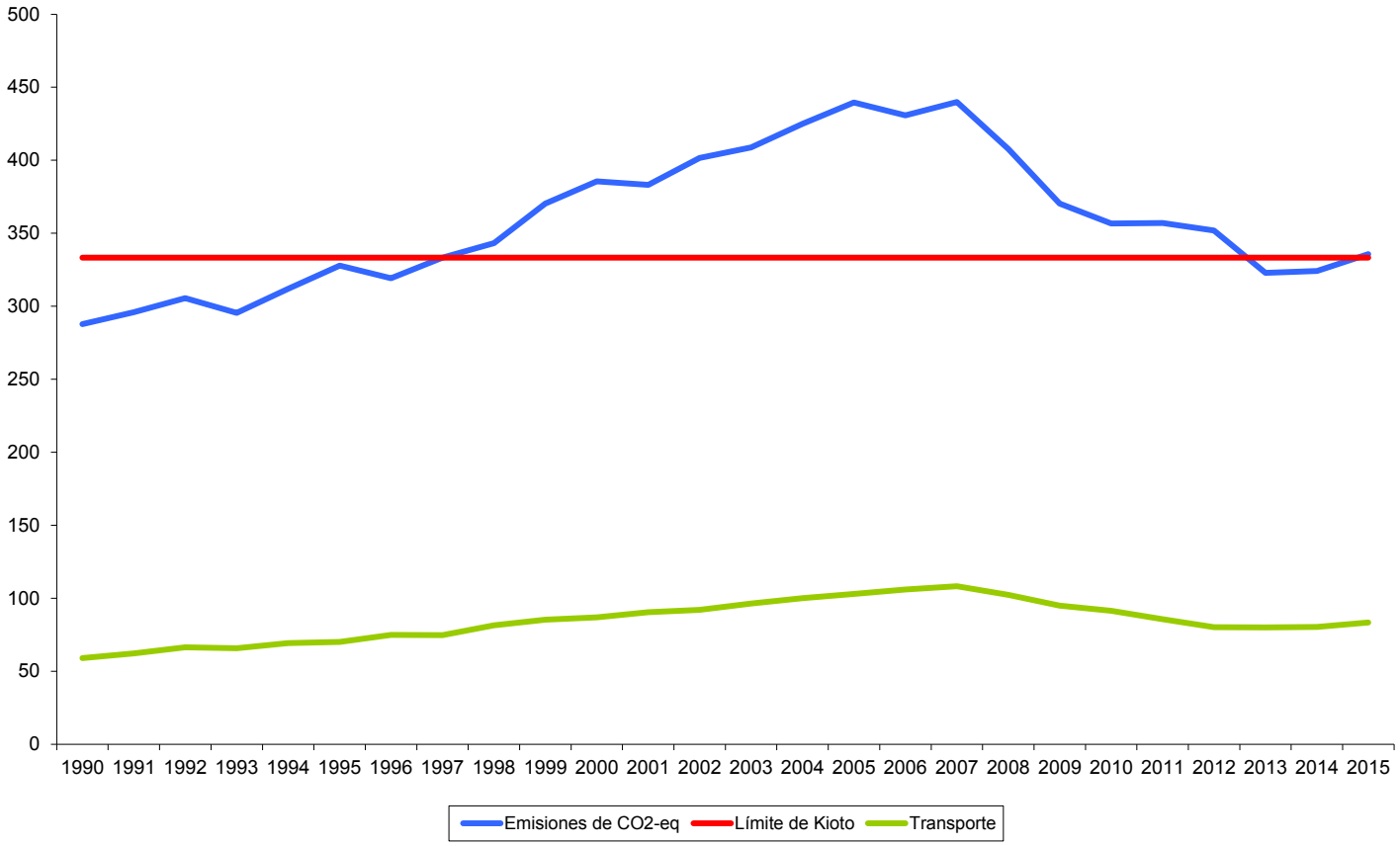

economics for energy
This working paper has been developed within the Alcoa Advancing Sustainability Initiative to Research and Leverage Actionable Solutions on Energy and Environmental Economics
ALCOA FOUNDATION
WP FA04/2012
Climate Change, Buildings and Energy Prices
Alberto Gago, Michael Hanemann, Xavier Labandeira, Ana Ramos

- **La Paradoja española**

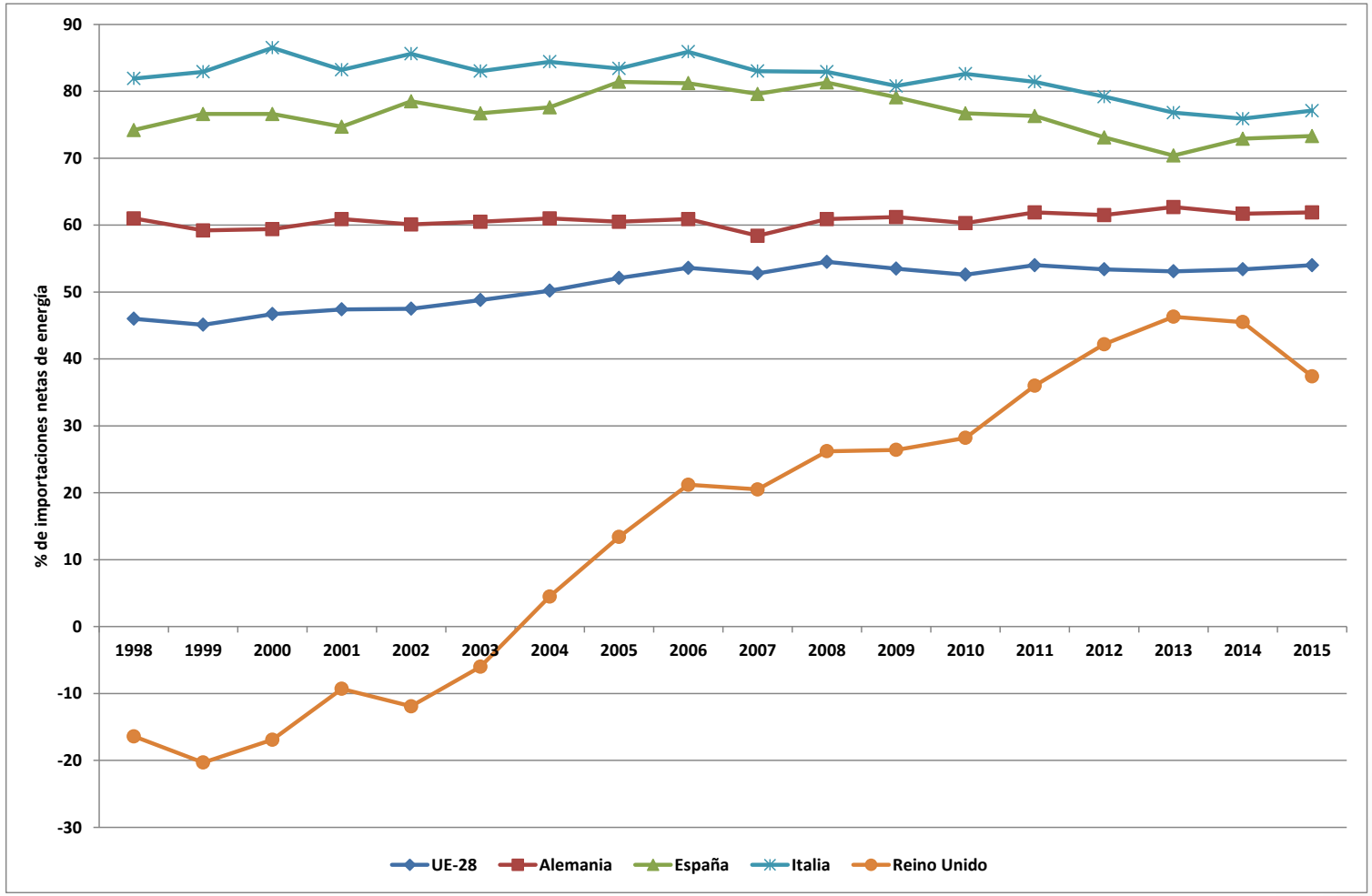
  - Necesidad de reducir emisiones
  - Alta dependencia energética
  - Necesidades fiscales
  - Baja presión fiscal energético-ambiental… que no en la imposición del trabajo, IRPF, etc.
  - Elevados potenciales de eficiencia energética
  - Estudios ex-ante positivos
  - Recomendaciones internacionales…

  - No materializadas (nunca es el momento?)

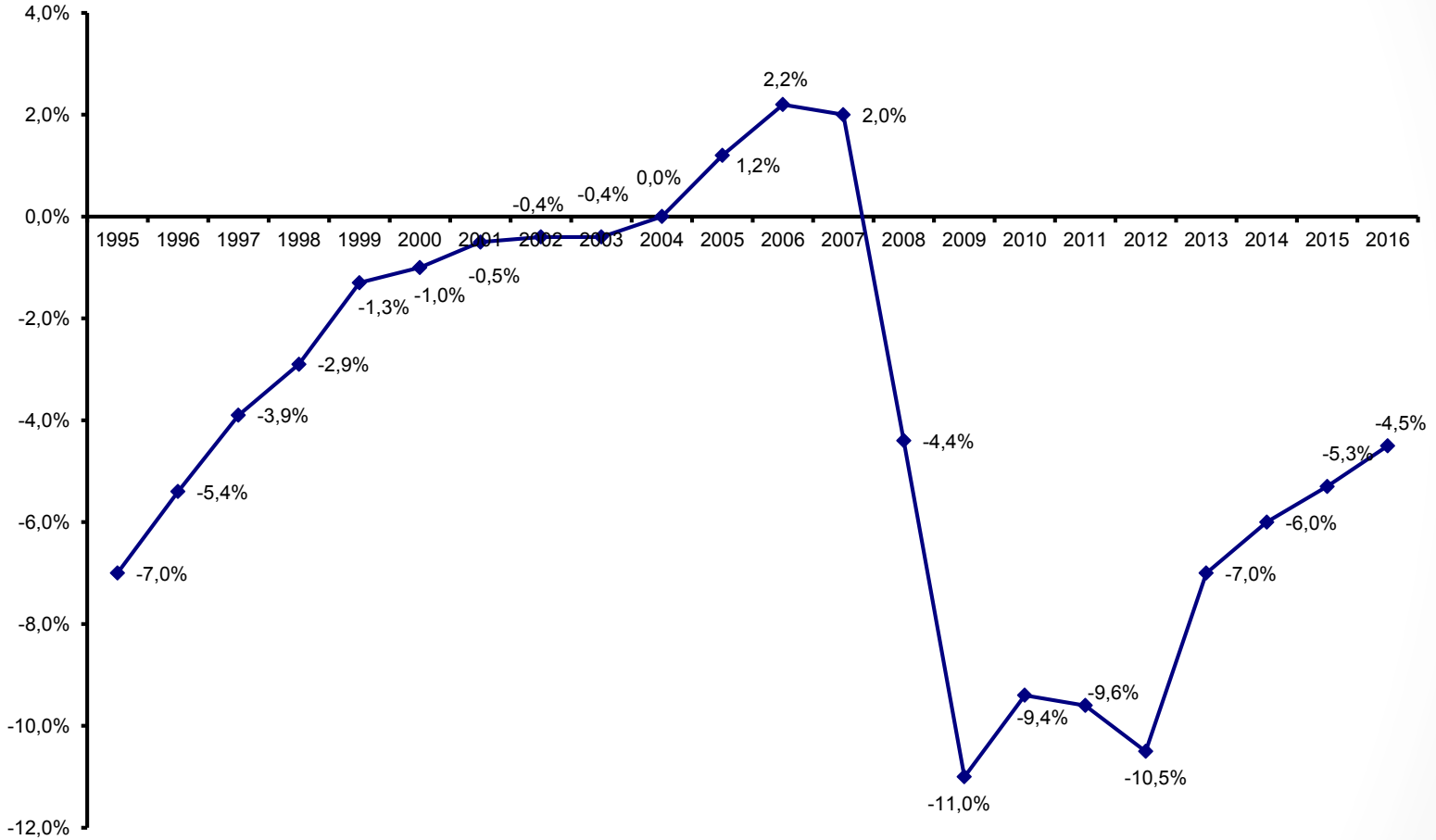
Emisiones CO_2



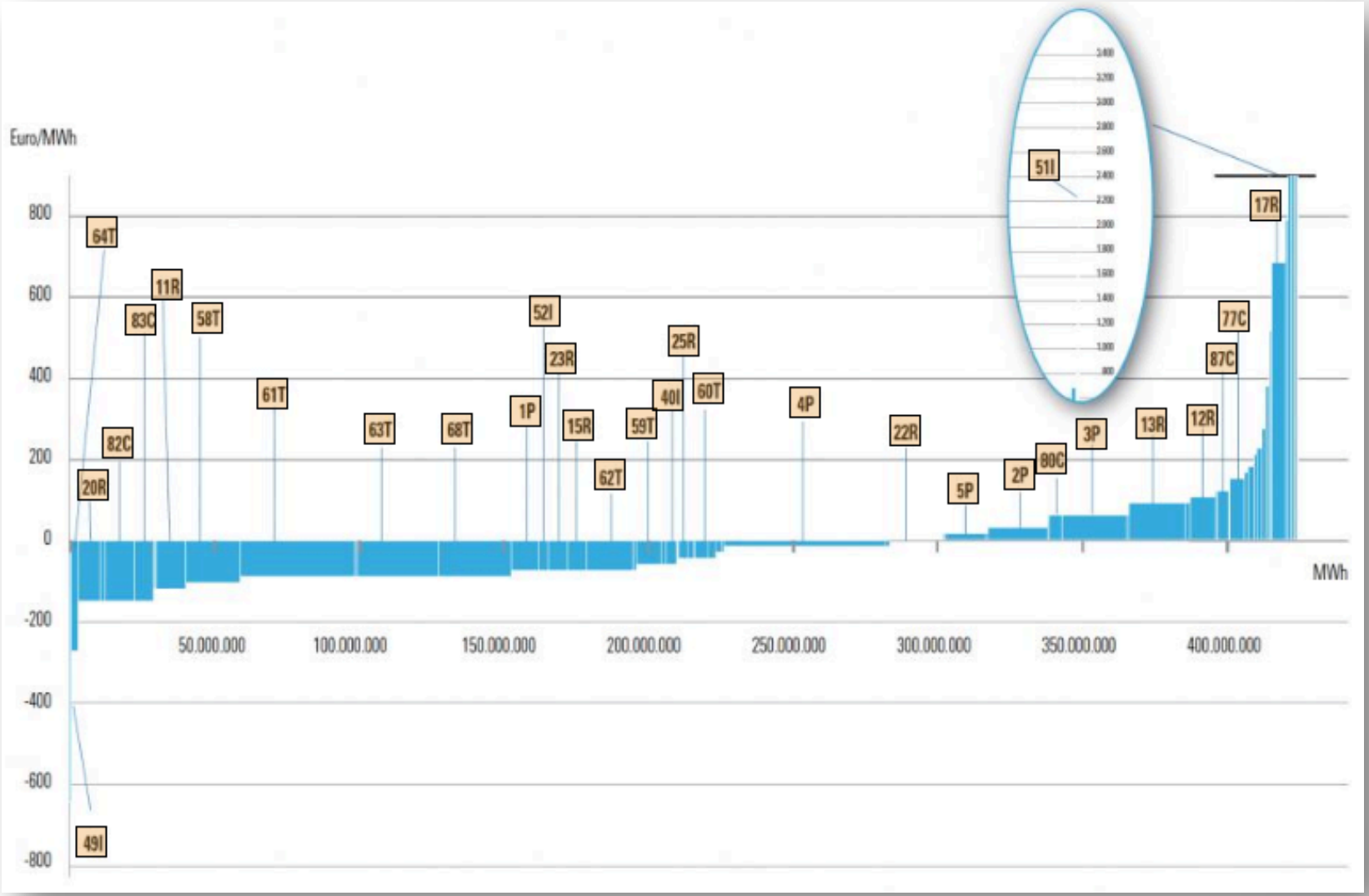
Dependencia energética



Cuentas públicas

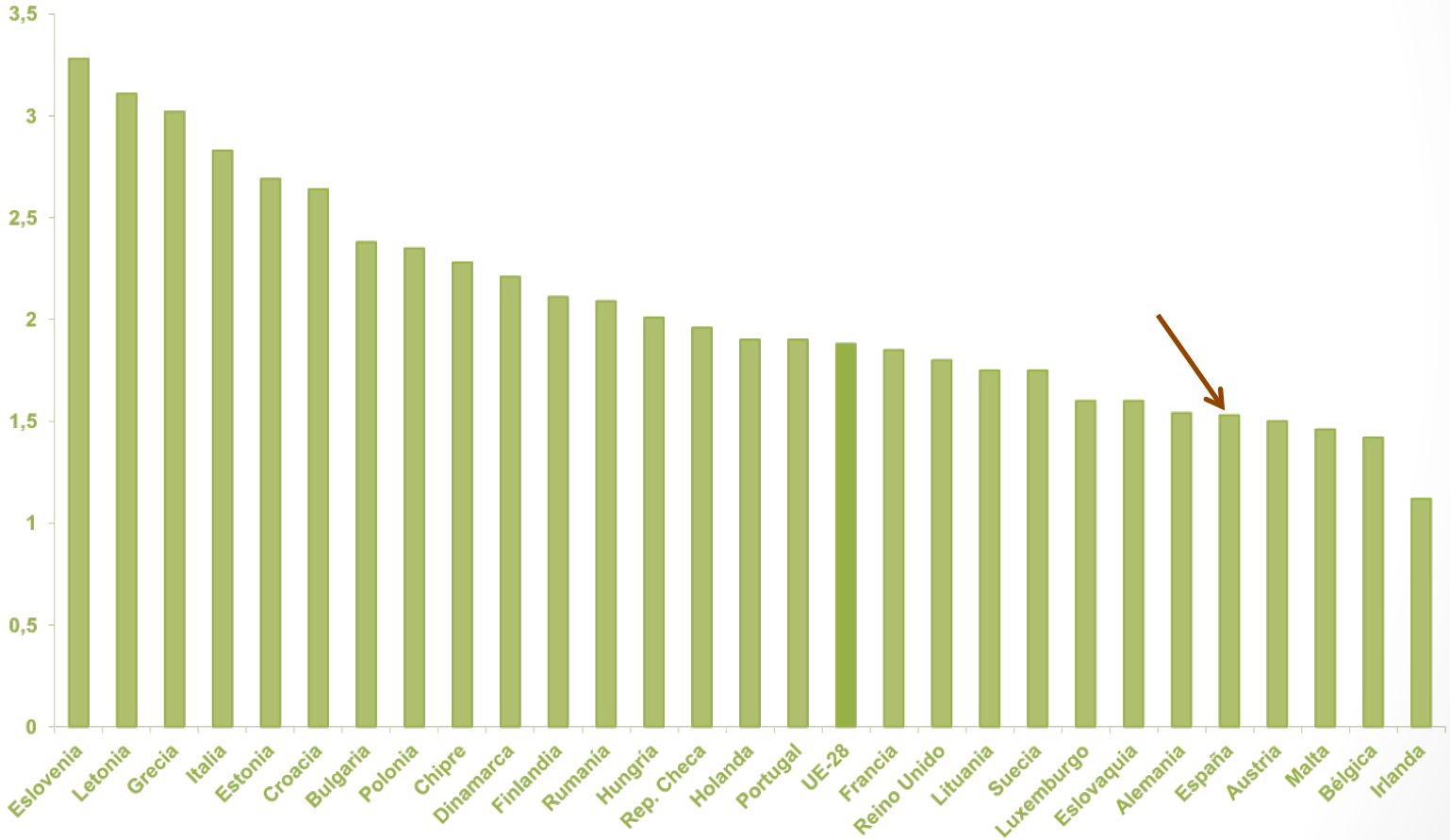


Eficiencia energética



Baja fiscalidad energético-ambiental

Impuestos sobre la energía en la UE-28. 2016 (%PIB)



Impuestos sobre la energía en Europa. 2016 (US$ PPP)

	Fueóleo ligero para hogares (por cada 1000 litros)				Gasóleo de automoción para uso no comercial (por litro)				Gasolina sin plomo (95 octanos) (por litro)				Gas Natural para hogares (por cada MWh GCV)				Electricidad para hogares (por MWh)			
	Accisa	IVA (%)	Total	% carga fiscal media ponderada de la UE-22	Accisa	IVA (%)	Total	% carga fiscal media ponderada de la UE-22	Accisa	IVA (%)	Total	% carga fiscal media ponderada de la UE-22	Accisa	IVA (%)	Total	% carga fiscal media ponderada de la UE-22	Accisa	IVA (%)	Total	% carga fiscal media ponderada de la UE-22
Alemania	77,66	19	177,01	47,66%	0,59	19	0,81	84,50%	0,83	19	1,09	94,69%	6,96	19	20,82	95,93%	140,13	19	200,13	219,53%
Austria	133,15	20	256,82	69,14%	0,50	20	0,71	73,89%	0,60	20	0,83	71,75%	9,28	20	24,63	113,49%	53,62	20	94,63	103,81%
Bélgica	22,76	21	120,53	32,45%	0,58	21	0,82	85,83%	0,75	21	1,03	89,60%	4,76	21	16,10	74,16%	59,39	21	108,78	119,33%
Dinamarca	329,73	25	540,53	145,53%	0,42	25	0,64	66,57%	0,61	25	0,88	76,47%	28,48	25	42,72	196,83%	118,00	25	179,02	196,38%
Eslovaquia	n.d.	n.d.	n.d.		0,74	20	1,09	113,45%	1,03	20	1,44	124,79%	0,00	20	16,48	75,92%	0,00	20	51,00	55,95%
Eslovenia	406,67	22	620,44	167,04%	0,80	22	1,12	116,95%	0,94	22	1,30	112,43%	10,84	22	28,81	132,71%	35,28	22	83,94	92,08%
España	131,94	21	277,46	74,70%	0,55	21	0,81	84,67%	0,69	21	0,99	85,62%	3,49	21	24,36	112,22%	13,13	21	61,34	67,29%
Estonia	198,13	20	384,38	103,48%	0,70	20	1,01	105,40%	0,76	20	1,07	92,98%	6,27	20	18,11	83,42%	25,18	20	48,21	52,89%
Finlandia	230,14	24	383,66	103,29%	0,55	24	0,79	82,08%	0,73	24	1,02	88,12%	n.d.	n.d.	n.d.		24,19	24	55,99	61,41%
Francia	117,44	20	245,89	66,20%	0,62	20	0,85	88,42%	0,79	20	1,05	91,54%	5,43	20	14,16	65,23%	42,40	20	72,98	80,06%
Grecia	323,94	24	516,23	138,98%	0,46	24	0,74	77,49%	0,94	24	1,31	113,43%	7,61	13	24,22	111,59%	50,85	13	79,44	87,14%
Hungría	n.d.	n.d.	n.d.		0,83	27	1,35	140,55%	0,91	27	1,43	123,94%	0,00	27	17,74	81,73%	0,00	27	56,22	61,67%
Irlanda	143,86	13,5	221,88	59,74%	0,59	13,5	0,84	87,30%	0,72	13,5	0,99	86,34%	4,35	13,5	14,82	68,27%	0,00	13,5	31,18	34,20%
Italia	537,61	22	796,60	214,47%	0,82	22	1,13	117,79%	0,97	22	1,32	114,13%	20,29	22	34,81	160,39%	92,00	10	122,67	134,56%
Letonia	86,86	21	283,59	76,35%	0,69	21	1,01	105,49%	0,87	21	1,24	107,20%	n.d.	n.d.	n.d.		52,55	21	107,84	118,30%
Luxemburgo	11,11	14	71,08	19,14%	0,37	17	0,52	54,17%	0,51	17	0,69	59,69%	1,20	8	4,90	22,57%	27,22	8	40,67	44,61%
Países Bajos	593,34	21	782,11	210,57%	0,59	21	0,83	86,43%	0,94	21	1,24	107,90%	31,71	21	47,60	219,31%	-1,20	21	32,05	35,16%
Polonia	128,89	23	391,85	105,50%	0,81	23	1,23	128,30%	0,93	23	1,37	118,99%	0,00	23	22,04	101,53%	11,11	23	74,43	81,64%
Portugal	588,14	23	887,63	238,97%	0,77	23	1,12	117,10%	1,13	23	1,57	135,96%	3,59	23	32,53	149,85%	1,69	23	76,10	83,48%
Reino Unido	161,45	5	189,47	51,01%	0,84	20	1,10	114,92%	0,84	20	1,10	95,33%	0,00	5	3,15	14,51%	0,00	5	10,58	11,61%
Rep. Checa	50,00	21	377,60	101,66%	0,83	21	1,18	123,70%	0,97	21	1,34	116,72%	0,00	21	20,78	95,72%	2,12	21	52,27	57,34%
Suecia	428,26	25	720,26	193,92%	0,59	25	0,87	91,28%	0,66	25	0,94	81,60%	29,92	25	52,92	243,82%	30,23	25	61,45	67,40%
Media ponder.	216,04	18,70	371,43	100,00%	0,68	20,96	0,96	100,00%	0,84	20,96	1,15	100,00%	7,76	18,56	21,71	100,00%	50,51	17,10	91,16	100,00%

Tabla 4. Efectos de la fiscalidad energético-ambiental en el caso español

Artículo	Reforma simulada	PIB	Empleo	Emisiones
Carraro *et al.* (1996)	Reducción CC.SS	0,00%	0,70%	2,00%
Barker y Köhler (1998)	No Reducción CC.SS	-0,20% 1,20%	-0,40% 1,40%	-8,70% -11,40%
Conrad y Schmidt (1998)	Reducción CC.SS	0,03%	[0,37%, 0,40%]	[-10,64%, -10,00%]
Labandeira y Labeaga (1999)	No	-	-	-3,00%
Labandeira y Labeaga (2000)	No	-	-	-7,30%
Bosello y Carraro (2001)	Reducción CC.SS (trabajo no cualificado) Reducción CC.SS (trabajo no cualificado)	-0,20% 3,60%	0,30% 0,80%	0,10% 3,60%
Labandeira y López-Nicolás (2002)	No	-	-	[-1,52%, -0,28%]
Labandeira *et al.* (2004)	Reducción CC.SS	0,20%	0,10%	-7,70%
Labandeira *et al.* (2005)	Reducción CC.SS	0,16%	0,10%	-7,68%
Manresa y Sancho (2005)	No Reducción CC.SS	- -	[-0,82%, 0,00%] [0, 06%]	[-3,81%,-0,77%] [-3,21%, -0,70%]
Labandeira *et al.* (2007)	Reducción IVA	1,00%	0,00%	-5,70%
Labandeira y Rodríguez (2006)	No	[-1,60%, -0,20%]	[-0,80%, -0,10%]	[-16,00%, -2,00%]
Labandeira y Rodríguez (2010)	No	[-0,70%, -0,42%]	-	-16,00%
González-Eguino (2011)	No	[-2,25%, -0,38%]	[-1,74%, -0,35%]	-15,00%
Gallastegui *et al.* (2012)	No	[-1,60%, -0,60%]	-	-30,00%
Markandya *et al.* (2013)	No Reducción CC.SS Reducción impuestos capital	-1,55% 7,65% -1,55%	-1,40% 0,10% -1,50%	-15,00% -15,00% -15,00%

Fuente: Elaboración propia a partir de la literatura citada

Cómo explicarlo?

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Transport and low-carbon fuel: A study of public preferences in Spain

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R48

Keywords:
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Contingent valuation

ABSTRACT

Transport is essential for the control of future greenhouse gas (GHG) emissions and thus a target for active policy intervention in the future. Yet, social preferences for policies are likely to play an important role. In this paper we first review the existing literature on preferences regarding low-GHG car fuels, but also covering policy instruments and strategies in this area. We then present the results of a survey of Spanish households aimed at measuring preferences for climate change policies. We find a positive willingness to pay (WTP) (in the form of higher car fuel prices) for a policy to reduce GHG emissions through biofuels. There is, however, significant heterogeneity in public preferences due to personal motivations (accounted for via factor analysis of responses to attitudinal questions) and to socio-demographic variables.

1. Introduction

Economic development has been historically associated with an increase in personal mobility. Industrialized countries have satisfied such a growing demand for mobility through larger transport infrastructures, public transport networks and, above all, mass private motorization. Yet, given the traditional high reliance of private transport on oil products, the so-called 'energy problems' of transport are a growing concern (Proost and Van Dender, 2012). Acute energy dependence, for instance, has prompted most oil importers to introduce various regulations (e.g. taxes, speed limits, energy efficiency standards) to deal with energy security concerns and reduce the export of rents to petroleum producing countries. Another pressing issue is local pollution (e.g. volatile organic compounds, nitrogen oxides, noise), which produces significant welfare impacts mainly through health-related morbidity and mortality effects (Krzyzanowski et al., 2005).

Transport is also a major contributor to greenhouse gas (GHG) energy-related emissions, which have been identified as a cause of climate change. Indeed, in most developed countries GHG emissions from transportation are not only quite sizable (approximately 20% of total EU emissions in 2010, as reported by the EEA, 2012), but also are growing rapidly. This is due mainly to the rising demand for personal mobility, as noted above, the difficulty of switching to low-GHG technologies in this sector (when compared, for example, to switching the fuel source in electricity generation) and to the limited effectiveness of regulations. The latter is illustrated by the tendency for recent, mostly standard-related, energy-efficiency gains in cars to be partially or completely offset by the purchase of larger and more powerful automobiles (see e.g. Knittel, 2012) and by the growth in fleet size and vehicle usage.

How to deal with the problem of energy use in transportation, and particularly with its considerable GHG emissions? Public intervention should obviously play an important role, given the externalities involved. However, many options are available: pricing (e.g. fuel taxes), design standards (e.g. minimum miles-per-gallon standards), information (e.g. energy efficiency labels), promotion of public transit, subsidies to vehicles running on renewables or non-fossil fuels, etc. Despite the existence of such policy options, many countries seem to be failing to cope with the problem, given the continuing rise in vehicle usage and transportation fuel consumption (see e.g. IEA, 2012). Apart from possible failures of policy design and negative interactions among policy instruments, there seem to be social constraints on introducing stronger or more restrictive policies in this area because those would be seen as an outright attack on current lifestyles (Sandmo, 2009).

This is the general context for the paper, which focuses on the role of public preferences in explaining regulatory limits in this area. We deal with just one of the 'energy problems' of transport, namely GHG emissions, and with a policy to foster the production of low-GHG fuels by current suppliers. Although we recognize other options to mitigate GHG emissions from private transport (mostly behavioral changes and replacement of high-consuming cars for more efficient conventional units or for new technological alternatives, as briefly discussed in Section 2), our main focus is on the use of biofuels since this is currently

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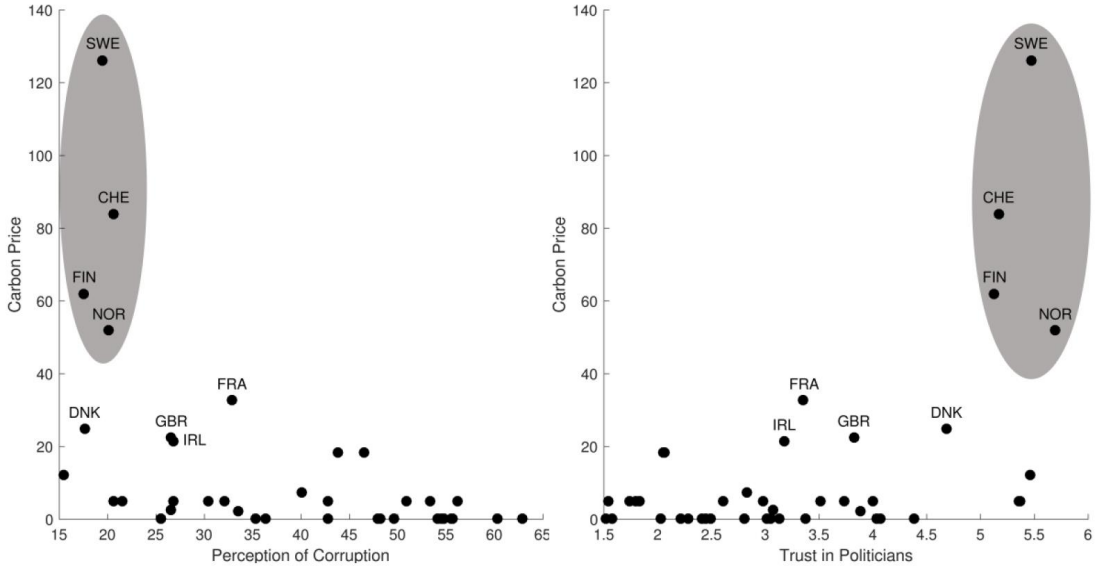
Political science suggests trust and corruption perceptions are correlated with high carbon prices

1. Support for carbon tax in Sweden **not** explained by generalised trust, but trust in politicians **is** a significant explanatory variable (Hammar & Jagers, 2006)
2. Party dynamics suggest stability in carbon prices can be achieved by sharing benefits with future powerful constituencies (Aklin & Urpelainen, 2013)



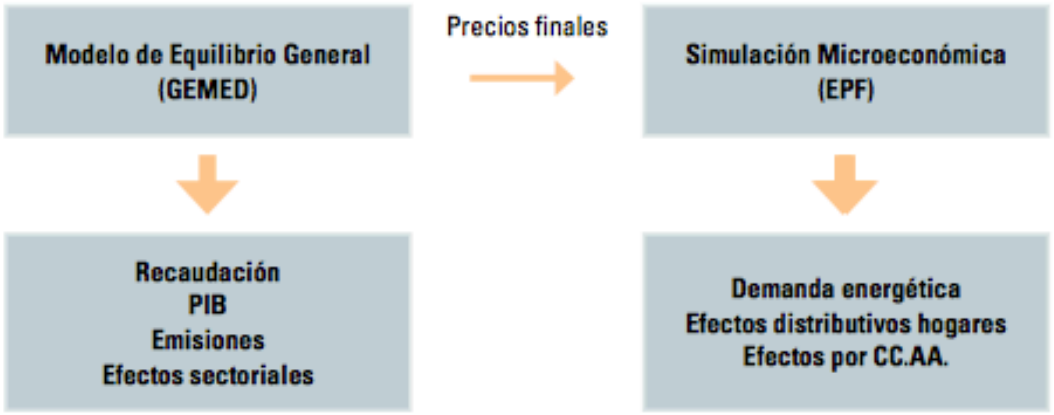
Source: Klenert et al (in review)

Fuente: Hepburn (2017)

Fiscalidad energético-ambiental autonómica

	Emisiones	Instalaciones y actividades que inciden en el medio ambiente	Canon eólico	Aguas embalsadas	Hidrocarburos
Andalucía	2004 (4,63)				
Aragón	2006 (2,13)	2016 (1,45)		2016 (14,91)	
Asturias		2011 (2,64)		2014 (n.d.)	
Canarias		2013 (-)			1987 (327,1)
Castilla y León		2012 (20,83*)	2012 (20,83*)	2012 (20,83*)	
Castilla LM	2001 (0,61)		2012 (14,02)		
Cataluña	2014 (3,98)	2017 (60)		2003 (n.d)	
Extremadura		1997 (40,25)			
Galicia	1995 (3,88)		2010 (23,23)	2009 (13,99)	
Murcia	2006 (1,13)				
La Rioja		2013 (2,45)			
C. Valenciana	2013 (9,99*)	2013 (9,99*)			
R. Total	26,35	137,61	58,08	49,73	327,1

Figura 12. Métodos de simulación



Fuente: Elaboración propia

Tabla 44. Resumen de los datos empleados en el modelo GEMED

Tipo de datos	Descripción	Fuente
Macroeconómicos	• Matriz de Contabilidad Social (Tablas input-output y agregados macroeconómicos) • Elasticidades (entre factores de producción, bienes importados y exportados)	• Instituto Nacional de Estadística • Global Trade Analysis Project
Tecnológicos y Microeconómicos	• Perfiles de demanda de electricidad • Tecnologías de generación eléctrica (tiempo de construcción, vida útil, costes de construcción, costes de operación y mantenimiento, factores de disponibilidad, eficiencia termodinámica, precios del del combustible, emisiones de contaminantes, capacidad instalada, ...)	• Base de datos e-sios (REE) • Comisión Nacional de Energía • Atlas de la Demanda Eléctrica Española (REE) • Base de datos e-sios (REE) • European Union Joint Research Centre • U.S. Energy Information Agency

Fuente: Rodrigues y Linares (2013b)

Tabla 41. Simulaciones de la fiscalidad energético-ambiental para España

Simulación 1	Propuesta de Directiva de fiscalidad energética	1A. Niveles mínimos 2018
		1B. Convergencia principales países europeos
Simulación 2	Impuesto sobre las emisiones de SO_2 y NOx	2A. 1.000 €/tonelada
		2B. 2.000 €/tonelada
Simulación 3	Impuesto sobre el CO_2 aplicado sobre los sectores difusos	3A. 10 €/tonelada
		3B. 30 €/tonelada
Simulación 4	Financiación del coste de apoyo a las renovables mediante impuestos	4A. Impuestos sobre sectores energéticos
		4B. Impuesto sobre todos los sectores

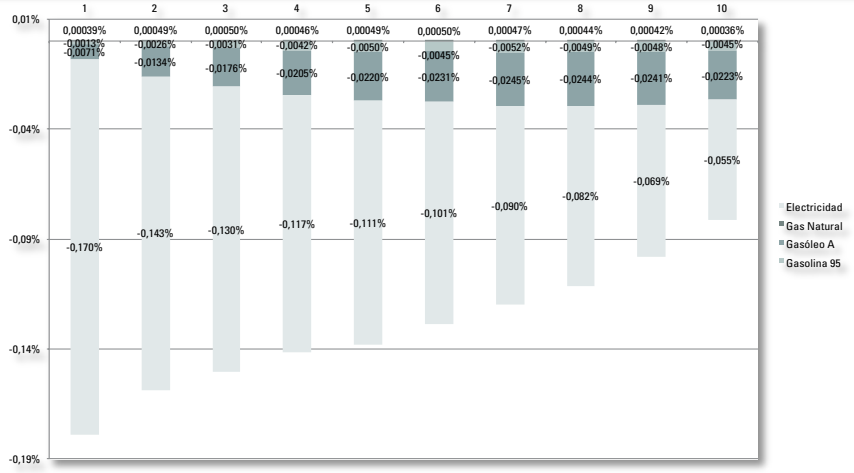
Fuente: Elaboración propia

Tabla 64. Resumen de los efectos de las distintas simulaciones

	Recaudación (millones de €)	Variación consumo energético	Variación PIB			Variación emisiones CO_2		
			DP	CC.SS	SP	DP	CC.SS	SP
Simulación 1								
1A	1.659	-0,38%	-0,174%	-0,171%	-0,179%	-0,51%	-0,50%	-0,45%
1B	5.283	-1,19%	-0,404%	-0,396%	-0,419%	-1,72%	-1,70%	-1,55%
Simulación 2								
2A	2.696	-0,41%	-0,068%	-0,063%	-0,077%	- 0,56%	-0,55%	-0,47%
2B	5.354	-0,83%	-0,137%	-0,128%	-0,155%	-1,09%	-1,06%	-0,91%
Simulación 3								
3A	2.214	0,01%	-0,057%	-0,053%	-0,064%	-0,10%	-0,09%	-0,04%
3B	6.620	0,03%	-0,169%	-0,159%	-0,191%	-0,30%	-0,26%	-0,07%
Simulación 4								
4A	7.477	0,15%		-0,288%			-0,41%	
4B	7.477	2,44%		0,000%			1,97%	

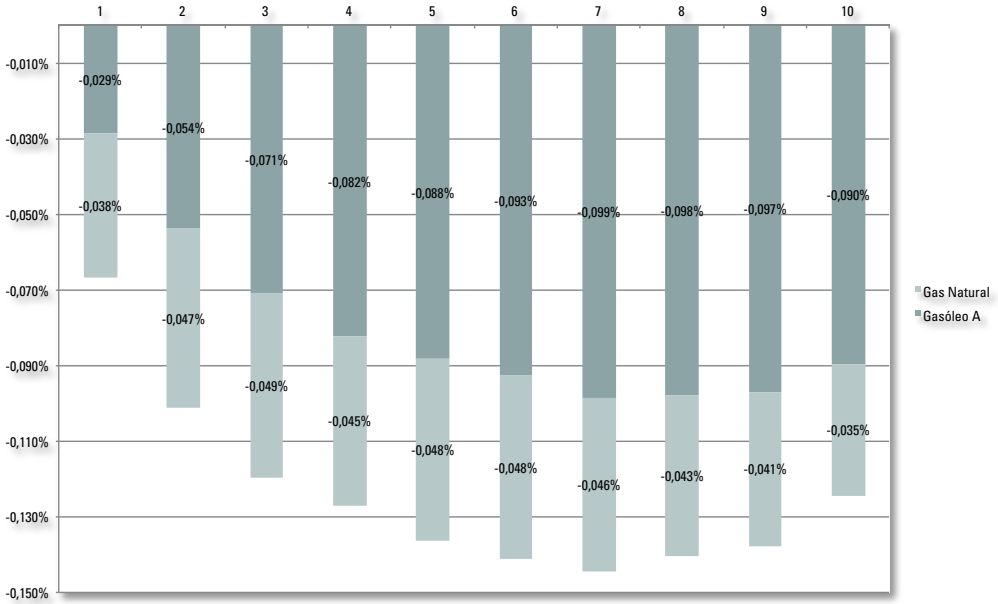
Fuente: Elaboración propia

Figura 5. Simulación 2A. Efecto total por decilas de renta



Fuente: Elaboración propia.

Figura 3. Simulación 1A. Efecto total por decilas de renta



Fuente: Elaboración propia.

Potencial recaudatorio

Informe	Incremento recaudatorio (millones de €)	Incremento recaudatorio (% recaudación 2015)
VividEconomics (2012)	4000 (2013) 10584 (2020)	2,20 (2013) 5,82 (2020)
Economics for Energy (2013)	1659 (Reforma 1A) 5283 (Reforma 1B) 2696 (Reforma 2A) 5354 (Reforma 2B) 2214 (Reforma 3A) 6620 (Reforma 3B) 7477 (Reforma 4A) 7477 (Reforma 4B)	0,91 (Reforma 1A) 2,90 (Reforma 1B) 1,48 (Reforma 2A) 2,94 (Reforma 2B) 1,22 (Reforma 3A) 3,64 (Reforma 3B) 4,11 (Reforma 4A) 4,11 (Reforma 4B)
Comisión Europea (2016)	13365 (2018) 24429 (2020) 27348 (2025) 29923 (2030) 32801 (2035)	7,34 (2018) 13,42 (2020) 15,03 (2025) 16,44 (2030) 18,02 (2035)

Cambios fiscales reales

Año	Variación recaudatoria
2011	7853
2012	11237
2013	11897
2014	125
2015	-7846

En resumen,

- **Una buena alternativa**
- **No ha cumplido expectativas**
- **Nuevas oportunidades en la lucha contra el cambio climático: Transición**
- **Paradoja española**
- **Ser conscientes de las barreras**

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economics for energy

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