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Analysis of environmental financial reporting in the Spanish toll roads sector

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ABSTRACT

There is a great variety of environmental financial reporting as regards content, extension and how it is included in the annual accounts. Spain and, in particular, the toll roads sector was amongst the first to be required to disclose environmental information. These concessionaires have also been affected by changes in domestic and international accounting regulation.

The first objective of the paper is to analyse the quality of environmental financial reporting in the Spanish toll roads sector and its evolution after International Financial Reporting Standards (IFRS) implementation. The second is to compare the reporting behaviour of concessionaires with that of their parent companies. The third is to test what institutional mechanisms influence environmental disclosure. Content analysis has been applied for the period 1999–2015.

Results show a minimum environmental reporting level focused merely on complying with regulation requirements, without a useful content revealing the integration of environmental issues into the companies' management. The implementation of IFRS has not improved environmental disclosure and, in some cases, has even worsened it. In addition, under institutional theory, results show that some institutional factors (regulation and subsector) explain the environmental financial reporting behaviour of the companies analysed.

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ANÁLISIS DE LA INFORMACIÓN FINANCIERA MEDIOAMBIENTAL EN EL SECTOR DE LAS AUTOPISTAS DE PEAJE ESPAÑOLAS

RESUMEN

Hay una gran variedad de información financiera medioambiental según su contenido, extensión y cómo se incluye en las cuentas anuales. España y, en particular, el sector de las autopistas de peaje han estado entre los primeros en exigir la revelación de información medioambiental. Estas empresas concesionarias también se han visto afectadas por cambios en la regulación contable nacional e internacional.

El primer objetivo de este trabajo es analizar la calidad de la información financiera medioambiental en el sector de las autopistas de peaje españolas y su evolución tras la implementación de las Normas Internacionales de Información Financiera (NIIF). El

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segundo objetivo es comparar el comportamiento informativo de las empresas concesionarias con el de sus empresas matriz. El tercer objetivo consiste en verificar qué mecanismos institucionales influyen en la revelación de información medioambiental. El análisis de contenidos se ha aplicado al periodo 1999-2015. Los resultados muestran un nivel de información medioambiental mínimo que se limita a cumplir con los requisitos de la regulación contable, sin unos contenidos suficientes que revelen la integración de las cuestiones medioambientales en la gestión de las empresas. La implementación de las NIIF tampoco ha mejorado la revelación de información medioambiental y, en algunos casos, incluso ha empeorado. Además, de acuerdo con la teoría institucional, los resultados señalan que algunos factores institucionales (la regulación y el sub-sector) explican el comportamiento de las compañías analizadas respecto a la información financiera medioambiental.

1. Introduction

The environmental impact of economic activities is, to a greater or lesser extent, on the agendas of governments and major organisations all over the world (European Commission, 2014; United Nations, 1992). Concerns about climate change and biodiversity preservation require great efforts from corporations to minimise the effects of their activities on the environment. Echoing this issue, governments and international institutions have promoted sustainable actions to preserve the planet.[1] To reach the global objective of sustainability, the focus relies on several productive sectors, because of their impact on environment. Accountability and transparency are amongst the actions to control environmental sustainability (Asociación Española de Contabilidad y Auditoría (AECA), 2004) and, as a result, the elaboration and disclosure of environmental reporting, in both financial and non-financial terms (Deegan, 2002; Larrinaga, Moneva, Llena, Carrasco, & Correa, 2002).

Accordingly, the disclosure of environmental reporting of companies has evolved over time, increasing its quantity, and both voluntary and compulsory. But this increase in quantity has not always been matched with higher levels of usefulness and quality of information (Llena, Moneva, & Hernández, 2007). Usually, environmental information included in financial statements corresponds to compulsory disclosures regulated by accounting standards. This information is often focused on financial issues and tends to be located in the notes to the annual accounts and in the management report (PricewaterhouseCoopers (PwC), 2004).

Although all industries have an influence on environment, there are some of them whose negative impact seems more clear, such as power, chemicals, construction and transport and they have been the main focus of attention of governments and major international organisations (Aerts & Cormier, 2009; Cho & Patten, 2007), by means of environmental regulations and agreements.

Related to the construction and transport industries, the Spanish toll motorway concessions sector is a major international player, given that five of the top ten international toll motorway concession companies are from Spain (PWF-Public Works Financing, 2017). The Spanish toll roads sector was amongst the first industries in disclosing environmental information about the activity of concessionaires with a specific accounting regulation.

This sector has been affected by changes in accounting regulation: in 2005, International Financial Reporting Standards (IFRS) became compulsory for European corporate groups and the IFRS's framework and principles became indirectly compulsory for individual Spanish companies after the adaptation of the Spanish General Accounting Plan (SGAP) to them, in 2007.

The sector is divided into two sub-sectors real and shadow toll roads, extending prior research that was focused exclusively on real toll roads (Stafford, Acerete, & Stapleton, 2010). This extension is not only in the data, but also in the underlying philosophy that Public Private Partnerships (PPPs) bring to the management of public infrastructure by means of shadow toll concessions.

In addition, there has been a change in the shareholding structure of concessionaires, from being dominated by public administrations to being controlled by building and infrastructure management parent companies. The comparison of the disclosure of environmental issues by individual concessionaires and by their parent companies has not been analysed previously. This comparison also enables to compare domestic *vs.* international environmental accounting requirements.

Aiming to reconcile the numerical data with theoretical views, we examine the influence of some institutional mechanisms on the quality of environmental financial reporting behaviour of Spanish toll sector entities, using the institutional theory to carry out this analysis.

On the basis of the foregoing, the objective of the paper is threefold. First, to analyse the quality of environmental financial reporting in the Spanish toll roads sector and its evolution after IFRS implementation. Second, to compare the reporting behaviour of concessionaires with their parent companies. Third, to explore which institutional mechanisms affect environmental disclosures of Spanish toll roads.

The paper is organised as follows. Section 2 provides a brief background of features and evolution of toll roads sector in Spain and its environmental financial reporting. Section 3 sets out the theoretical framework and hypothesis to carry out the analysis, preceded by a review of literature on environmental financial reporting. Section 4 explains the methodology and research design. Section 5 presents the results. Section 6 discusses the results and Section 7 draws out the main conclusions.

2. Research framework

2.1. *Features and evolution of toll road concessions in Spain*

Spain was an early pioneer of private finance for real toll roads (Acerete, Gasca, & Stafford, forthcoming; Villalba-Romero, 2014). In the 1960s, Spain's government sought to modernise transport infrastructure but, due to its economic isolation, there was no public money available and the State turned to the private sector. In the 1980s, this toll policy was abandoned when a socialist government, ideologically opposed to using private finance, came to power. In addition, in 1986, when Spain joined the EU, it became eligible to receive EU funds for road infrastructure, so private finance was not needed. In 1996, Spain returned to the use of private finance to meet the convergence criteria (public deficit and public debt) for joining the Economic and Monetary Union.

During these decades a devolution process from central government to regional governments took place, and they tried to manage their road infrastructure needs using private finance. But, despite Spain's long experience with real toll roads, regional governments tried to avoid the politically controversial problem of real tolling by implementing shadow toll roads (Acerete et al., forthcoming).

Two phases can be differentiated in the period of analysis (1999–2015) regarding the economic and sectoral context: (i) (1999–2007) with economic growth under the shelter of the Economic and Monetary Union and the development of the last toll roads projects; and (ii) (2008–2015) with the crisis which has resulted in a fall in economic activity, several concessionaires entering into bankruptcy proceedings[2] as a result of poor traffic forecasts.

Concessions are a form of PPP[3] that are a third way for governments to deliver public services and to provide public infrastructure, such as roads.

One of the most outstanding features of PPP arrangements is the flexibility to use out-of-the-box solutions to solve the challenges that arise in day-to-day operations. As a result, PPP give operators the freedom to come up with innovative solutions for a more effective and efficient delivery of services than conventional public procurement, for instance, with respect to embedding environmental safeguards (Klijn, Edelenbos, Kort, & van Twist, 2008).

PPP in the road sector consist of two types of concessions: real toll roads and shadow toll roads. Both of them are contracts signed by the public administration with private sector operators (concessionaires) to build, finance and operate roads. But, whereas real toll roads give the concessionaires the right to charge vehicles to use the roads, shadow toll roads are funded by taxpayers on the basis of the level of traffic using the roads (Stafford et al., 2010).

Although the concept of PPP was implemented for the first time 25 years ago, real toll road concessions date back to the late 1960s. The concession model found a new life with PPP and the devising of shadow toll concessions. Shadow toll agreements incorporated the innovative philosophy of PPP, so they were supposed to be free from the constraints of conventional public procurement, and environmental questions, amongst other issues, could be more easily included as key matters that private operators should consider when preparing their projects.

It is also relevant that, in the Spanish toll roads sector, there has been a consolidation of individual concessionaire companies under the umbrella of big international construction and infrastructure groups. So there is a duality in financial reporting in this sector: individual concessionaires only need to comply with national accounting regulations because they are not listed on the stock market, but their parent companies are listed on national and international stock exchanges, so they must present their financial information according to IFRS.

2.2. *Financial reporting regulation of Spanish toll roads sector*

Spain was amongst the first countries that issued regulation on environmental accounting information (Fédération des Experts comptables Européens (FEE), 2008). In 1998, an amendment to the SGAP for the toll concession[4] sector regulating the environmental accounting reporting to be included in compulsory financial statements was issued. This amendment included the requirements to disclose information – both financial and non-financial – about the environmental impact of companies' activities.

In 2002, the Spanish accounting regulator issued a Resolution[5] extending the requirement for disclosing environmental accounting information in financial statements to all Spanish companies, regardless of the sector they belong to. Likewise, Law 62/2003 required companies to include environmental information in their management reports from 2005 onward. Law 16/2007 about the adaptation of the accounting regulations to the IFRS (art. 49 and 202) incorporated the requirements of the superseded regulation on environmental accounting reporting. These requirements made it compulsory to include, in the notes to the financial statements, a note about the recognition and measurement of assets and liabilities of an environmental nature and another note about environmental information.

As regards corporate groups, Law 62/2003 made it compulsory to apply International Accounting Standards passed by the European Commission to the consolidated financial statements of listed corporate groups from 2005 onward. But, as international accounting standards do not regulate the disclosure of environmental information in the notes to the financial statements, Spanish corporate groups have had to face the dilemma of whether to disclose the corresponding environmental accounting issues required by the SGAP, which were not unknown for them. This fact has led to a wide variability in the way that corporate groups disclose environmental reporting in the financial statements.

Directive 2013/34/EU on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings stated that the information should not be restricted to the financial aspects of the undertaking's business and that there should be an analysis of environmental and social aspects of the business necessary for an understanding of the undertaking's development, performance or position. For this reason, the management report must include information relating to environmental matters.

The European Commission amended Directive 2014/95/EU about the disclosure of non-financial and diversity information by certain large undertakings and groups because the Commission identified the need to raise the transparency of the social and environmental information provided by undertakings in all sectors to a similarly high level across all Member States (European Union, 2014). The European Commission undertook this amendment as it considered that the disclosure of non-financial information is vital for managing change towards a sustainable global economy by combining long-term profitability with social justice and environmental protection. In order to enhance the consistency and comparability of the non-financial information disclosed throughout the EU, certain large undertakings[6] should prepare a non-financial statement, to be included in the management report, containing information relating to at least environmental matters, social and employee-related matters and, in particular, detailing the current and foreseeable impact of the undertaking's operations on the environment.

The draft of the Spanish law to implement the transposition of the Directives includes their content completely, although this information is not the objective of this work as it has not been transposed yet. Nevertheless, it is going to provoke a change in the way financial and non-financial environmental reporting is disclosed by large European undertakings.

3. Theoretical framework and hypotheses

3.1. *Literature review*

Environmental accounting reporting has been under the scrutiny of researchers for many years. One of the first papers to measure the environmental disclosures in financial statements was written by Wiseman (1982). Since then, there has been an increase of international analysis on corporate environmental reporting. Different approaches have been used in studies to analyse the corporate environmental reporting. Several studies have analysed publicly-traded companies from different industries (Archel, 2003; Barbu, Dumontier, Feleaga, & Feleaga, 2014; Campbell, 2004; Cormier, Magnan, & Van Velthoven, 2005; Frost, 2007; Husillos, 2007; Moneva & Llena, 2000).

The main results show that disclosure is limited and narrative, but it is increasing its presence. Furthermore, the sectors that are the most sensitive to social and environmental issues seem to disclose more detailed information.

The enactment of mandatory CSR guidelines or environmental reporting is necessary to reach a higher level of quality and quantity of environmental disclosure. Several researchers have analysed the effect of the introduction of new regulations for this type of reporting (Bebbington, Kirk, & Larrinaga, 2012; Frost, 2007; Larrinaga et al., 2002).

Larrinaga et al. (2002) carry out a research on Spanish regulation which requires the Spanish companies to disclose financial environmental information in the financial statements. Although mandatory environmental disclosure is considered a way to improve accountability of companies, the low level of compliance shows that regulation is not enough to improve environmental accountability. These authors conclude that to reach an effective implementation of regulation, a discursive dialogue that enables the institutional reform is necessary.

Llena et al. (2007) analyse a sample of large Spanish companies and the results show a sharp increase of environmental reporting in the notes to the financial statements, due to the new regulation arising from the EU's Recommendation issued in 2001. Frost (2007) and Senn (2018) obtain similar results about the increase of environmental disclosure after the introduction of the regulation in Australia and France, respectively, and discuss on normativity in a changing regulatory framework. In addition, Llena et al. (2007) analyse some factors that influence the level of information (stock exchange listing, belonging to regulated sectors, nationality of the parent company, belonging to environmental sensitive sectors). Only belonging to an environmental sensitive sector shows an influence on the level of environmental disclosure.

Barbu et al. (2014) investigate the effects of adopting a single set of accounting standards in a sample made up of large German, French and the United Kingdom listed companies that are potentially concerned with environmental issues. They conclude '*that environmental disclosures imposed by IFRSs increase with firm size, and that firms domiciled in countries with constraining environmental disclosure regulations report* *more on environmental issues than firms domiciled in countries with weakly constraining regulations*' (Barbu et al., 2014, p. 231).

Bebbington et al. (2012) analyse the production of normativity comparing two different reporting regimes such as Spain and the United Kingdom. They suggest that the success in applying regulation does not only depend on authority, but on characteristics and procedures for creating the regulation. They conclude that '*the internal legitimacy of the law is crucial in the construction of normativity*' (Bebbington et al., 2012, p. 78). The analysis is focused in three aspects that determine the success on the observance of the regulations: congruence with the underlying values, integration of the rules in a coherent framework and clarity provided by rules. This constructivist approach of law takes into account both regulatees and the capacity of influence of other agents, such as auditors.

Chauvey, Giordano-Spring, Cho, and Patten (2015) analyse the evolution of CSR reporting in French companies given the concept of normativity proposed by Bebbington et al. (2012). Results show that CSR disclosure has increased in terms of space and breadth, indicating an evolution to a greater normativity of regulations. Nevertheless, reporting does not reach a quality level that allows complying with the goal of transparency set up by regulations.

Based on the institutional theory, García Sánchez, Prado, and Frías (2013) analyse the influence of countries' legal system on corporate transparency and its relationship with sustainability. This study concludes that the national legal system as institutional factor has a direct influence on the sustainability reporting.

Aranguren (2016) studies the disclosure of environmental and social reporting of big publicly traded German, British and Spanish companies. She analyses the reporting behaviour and the institutional factors that affect each type of reporting. She finds differences between the British companies and the German and Spanish firms. Institutional pressures at societal level influence corporate reporting on community and ethical issues, but do not influence reporting on employee and environmental issues. Institutional factors at organisational level, such as industry sector and country, affect environmental reporting, but cancel each other out.

Other studies have explored the environmental disclosure of key items in environmentally sensitive sectors such as oil gas, chemical, electricity, forestry (Acerete, Llena, & Moneva, 2011; Deegan & Gordon, 1996; Frost & Wilmshurst, 2000; Larrinaga et al., 2002; Llena et al., 2007), and even in industries that seem to be far from having an impact on environment such as financial and insurance services.

However, there have been few works that have analysed companies belonging to public infrastructure concessions, especially in the toll roads or construction sectors (Acerete et al., 2011). Our study is focused on the analysis of the disclosure of environmental reporting issues in the financial statements, as it is one of the most relevant fields of study (see Alin, 2006; Bartolomeo, Bouma, Heydkamp, James, & Wolters, 2000; Gamble, Hsu, Jackson, & Tollerson, 1996; Harte & Owen, 1991; Holland & Foo, 2003; Yusoff, Othman, & Yatim, 2013), and on the coercive institutional factors that determine the environmental reporting behaviour (Bebbington et al., 2012; Higgins & Larrinaga, 2014).

3.2. *Theory and hypothesis*

The environmental information included in financial statements usually corresponds to compulsory disclosures regulated by accounting standards. This information is often focused on financial issues and there is little opportunity for manipulation. Financial statements are audited in large companies, so it is more difficult for the company to manipulate them. Typically, financial environmental disclosures are located in the notes to the annual accounts and in the management report (PricewaterhouseCoopers (PwC), 2004).

The environmental reporting corresponding to mandatory disclosures that is included in the financial statements seems to be governed by one of the systems-oriented financial accounting theories: the institutional theory. Authors such as DiMaggio and Powell (1983) and Campbell (2007) state that social and environmental responsible behaviour can be explained from the institutional theory's approach. In this way, transparency and sustainability reporting are matters linked with a socially responsible behaviour (Asociación Española de Contabilidad y Auditoría (AECA), 2004).

The institutional theory focuses on the interaction between an organisation and its institutional environment (Scott, 1995/2013). According to this framework, organisations change their structure or operations to meet external expectations about what structures are acceptable or legitimate. Furthermore, organisations try to comply with regulations by disclosing only what is required or they tend to imitate the behaviour of other pioneering and successful entities (DiMaggio & Powell, 1983).

Several authors have analysed the institutional features that determine a socially responsible corporate behaviour (Campbell, 2007; Higgins & Larrinaga, 2014; Scott, 1995/2013). These features or mechanisms can be grouped into three categories: (i) coercive, (ii) normative mechanisms and (iii) mimetic mechanisms (DiMaggio & Powell, 1983). The level and extent of mandatory environmental financial reporting of the toll roads sector could be the consequence of some changes in the institutional mechanisms: new accounting regulation, ownership concentration or organisational changes in the sector (Higgins & Larrinaga, 2014; Scott, 1995/2013).

3.3. *Coercive and normative mechanisms*

Coercive and normative mechanisms are those that establish some *modus operandi* that cannot be avoided because they are compulsory due to the power of the entity that promotes them (DiMaggio & Powell, 1983). These mechanisms include government regulation and the forms of action enforced by the parent company, auditors or other professional associations that have an influence on companies (Scott, 1995/2013).

DiMaggio and Powell (1983) named institutional isomorphism the homogenisation of the behaviour or the structure of organisations under three categories: coercive, normative and mimetic. Coercive isomorphism arises from '*pressures from other organisations upon which they are dependent and by cultural expectations of society*' (DiMaggio & Powell, 1983, p. 150). These pressures come from governmental mandates (e.g. environmental regulation), legal and technical requirements to receive public funds or contracts (e.g. financial reporting requirements, annual reports, amongst others). Normative isomorphism emerges from professionalisation. Isomorphic mechanisms include formal education by universities and other institutions, like professional bodies, that expand their norms and standards to their members.

Campbell (2007) classifies the factors that may affect the level to which companies act in a socially responsible way into two basic categories:

- Economic conditions: financial performance, level of competition.
- Institutional conditions: state regulations; private associations guidelines; membership in associations, trade unions, employees, community groups and other stakeholders that promote socially responsible behaviour.

Scott (1995/2013) considers three types of features (the so-called '*three pillars of institutions*') to explain the differences of organisations' behaviour: regulative, normative and cultural-cognitive systems. Based on Scott's (1995/2013) proposal, Higgins and Larrinaga (2014, p. 276) state that:

> '*Sustainability reporting would consist of regulative, normative and cognitive structures and activities which would describe what type of reporting is produced, for who, by whom and with what assumed purpose*'.

The regulative pillar is based on legislation and experience is the basis of compliance. The indicators used are rules, laws and sanctions, and correspond with coercive mechanisms introduced by DiMaggio and Powell (1983). The normative pillar bases the compliance of organisations on a social contract generated by expectations about their behaviour. Indicators such as accreditation and certification are used in this normative approach.

3.4. *Mimetic mechanisms*

Mimetic mechanisms come from the concept of mimetic isomorphism proposed by DiMaggio and Powell (1983). Mimetic processes arise from the uncertainty that moves organisations to imitate structures and behaviour of peers because they accept that is beneficial.

Scott, 2005, 1995/2013) states cultural-mimetic mechanisms as the third pillar of organisations' behaviour. This pillar is cultural-cognitive, based on mimetic mechanisms, and with elements such as common beliefs, isomorphism and shared logics of action. Some cultural factors can affect the reporting behaviour about environmental issues of the entities analysed. Belonging to an industry sector, or to a particular branch thereof, can be considered as a characteristic that affects the behaviour of these firms since, due to reputation-based reasons, none of them would be willing to show a poor image by omitting information disclosed by the rest of the firms. A different reporting culture, seniority and the environmental sensitivity of the sector can give rise to different disclosing behaviour (Archel, 2003; Criado, Fernández, Husillos, & Larrinaga, 2008; Larrinaga et al., 2002; Llena et al., 2007).

It must be noted that, according to Scott, 2005), the frontier between different types of institutional mechanisms and structures is not always clearly defined. Sometimes, some mechanisms could be considered coercive, being normative at the same time, or mimetic, being also coercive, for example belonging to an industry sector or the influence of the parent company.

To set the limits of the research, and due to the relevance of regulations in CSR research, it has focused on coercive mechanisms with different levels of coercion that could determine the socially responsible corporate behaviour.

The following coercive mechanisms have been checked: (i) the incidence of regulations; (ii) the influence of parent companies; (iii) the guidance of the auditing firm and (iv) the industrial sector in which the company operates.

Government environmental financial reporting regulation is compulsory, so it can produce a change in companies' disclosure (Llena et al., 2007). In the same way, action procedures imposed by parent companies are an element that can influence the environmental reporting behaviour of their subsidiaries. Auditing firms have a demanding reporting reputation, so their advisory activity can be a relevant factor to take into account when environmental financial reporting is disclosed.

According to previous reasoning and under coercive mechanisms of institutional theory, we test the following hypotheses:

H1: The change in environmental regulation is an institutional feature that has an influence on reporting behaviour about environmental financial issues

H1.1: It has an influence on the behaviour of real toll concessionaires.

H1.2: It has an influence on the behaviour of shadow toll concessionaires.

H2: Parent company has an influence on reporting behaviour about environmental financial issues

H3: Auditing firm has an influence on reporting behaviour about environmental financial issues

H4: The type of subsector or concession (real tolls vs. shadow tolls) has an influence on reporting behaviour about environmental financial issues

H5: The institutional shareholders of concessionaires have an influence on reporting behaviour about environmental financial issues

4. Research design

4.1. *Sample*

The sample includes twenty-four Spanish real toll concessionaires (see Table A.1 in the Appendix) and twenty-six Spanish shadow-toll concessionaires (see Table A.2 in the Appendix), together represent 92% of the Spanish concessionaires. Table A.3 in the Appendix presents the main features of the real and shadow toll concessionaires.

The information analysed covers the period from 1999, the first year in which environmental financial reporting became mandatory, to 2014/2015, the last year for which the financial statements of the shadow/real toll roads concessionaires, respectively, were available at the time this study was conducted.

Individual concessionaires are controlled by huge construction and management infrastructure corporations, such as, SACYR, FCC, ACS, ABERTIS, OHL, ACCIONA, FERROVIAL (see Table A.4 in the Appendix). These corporations are the ultimate parent company for all the individual concessionaires of the sample above, except two real toll concessions (AUSUR and MADRID-TOLEDO) and two shadow toll concessions (ACCESOSIBIZA and SALNES).

4.2. *Methods*

We analysed the environmental accounting information included in the financial statements of the concessionaires and their parent companies using the content analysis method. This technique has been frequently and successfully used by the literature dealing with environmental and social reporting (Acerete et al., 2011; Moneva & Llena, 2000; Tilt, 2001).

The environmental accounting information analysed is based on the items required by the 2007 SGAP to be disclosed in the notes to the financial statements. Basically, these items remain the same throughout the three different regulations that have been applied in Spain (amendment to SGAP in 1998, 2002 Resolution and 2007 SGAP), so the information collected is homogenous. The fourteen environmental items analysed for the concessionaires and parent companies are listed in Table 1.

These items have been checked for the individual real toll and shadow toll concessionaires, because they must apply the SGAP, and for the consolidated financial statements issued by the parent companies that are the head of the corporate group that the individual concessionaires belong to. Although parent companies must disclose the consolidated information according to the IFRS and environmental information is not required by them, their head office is domiciled in Spain and they are familiar with Spanish regulation because they have to elaborate their individual

Table 1. List of environmental items.

Note about accounting criteria
Note about environmental issues
Description of environmental assets
Measurement of environmental assets
Amortisation of environmental assets
Annual environmental investment
Environmental expenditures
Description of environmental provisions
Measurement of environmental provisions
Transfer to environmental provisions
Application of environmental provisions
Environmental contingencies
Environmental liabilities
Environmental information in the management report

Note: environmental items analysed for the concessionaires and parent companies financial statements following the SGAP. To check the level of disclosure of environmental information, we have also assessed the environmental items included in the individual financial statements of the parent companies, as they must comply with the SGAP. This will also allow comparing both domestic and IFRS environmental accounting requirements.

First we calculate the '*Environmental Disclosure Index*' (EDI) proposed by Acerete et al. (2011) for each corporation for each year of the sample period, distinguishing between the two sub-sectors and the corresponding parent companies. Each environmental reporting item is scored with '1' if the item was reported in the notes to the financial statements and '0' if it was not. If there is no information available about an item but it is specifically mentioned in the notes to the financial statements, it is scored '0.5'. The index is calculated by adding the scores of each item and dividing the sum by the maximum number of items (14), so the index is expressed on a 100-point basis.

$$\mathrm{EDI}_{\mathrm{it}} = \frac{\sum_{j=1}^{X} Xj}{n} \times 100$$

$\mathrm{EDI}_{\mathrm{it}}$: Environmental Disclosure Index of corporation 'i' in year 't'
X_{j}: Presence of environmental reporting item 'j' in the notes
n: Maximum number of items

This index allows assessing the environmental financial reporting of the concessionaires, but not the evolution of each sub-sector (real toll roads, shadow toll roads, parent companies). Hence, a '*Sectoral Environmental Disclosure Index*' (SEDI) for each year of the sample has been calculated by adding up the EDI of the concessionaires and dividing the sum by the number of concessionaires in that year:

$$\mathrm{SEDI}_{\mathrm{t}} = \frac{\sum_{i=1}^{Z} EDI_i}{Z_t}$$

$\mathrm{SEDI}_{\mathrm{t}}$: Sectoral Environmental Disclosure Index for year 't'
i: Concessionaire 'i'
Z_{t}: Number of concessionaires in year 't'

Note that not all concessionaires have operated during all the years of the sample. In addition, although the parent companies are large companies that were founded several decades ago, their environmental accounting reporting has been measured since the year that the first concession controlled by them was opened to traffic (see 'Year opening to traffic' column in Tables A.1 and A.2 in the Appendix). The number of concessionaires for each year of the sample period is shown on Table 2.

Finally, we calculate an index to analyse the Overall Disclosure of Environmental Items (ODEI) in each sub-sector, distinguishing between concessionaires and parent companies. The ODEI is calculated similarly to the EDI, adding up the scores of each item ('1', '0' or '0.5') for all the corporations of the sample in each year and dividing by the number of operating corporations. In this way, the results of all the years of the

Table 2. Firms disclosing financial statements.

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Real Toll Concessionaires	12	12	13	16	17	19	20	22	24	24	24	24	24	24	24	24	24
Shadow Toll Concessionaires	–	–	–	5	5	5	6	8	12	23	23	23	24	25	26	26	–
Real Toll Concessionaires Parent Companies	2	2	2	3	4	5	6	6	6	6	6	6	6	6	6	6	6
Shadow Toll Concessionaires Parent Companies	–	–	–	4	4	4	5	6	6	6	6	6	6	6	6	6	–

Note: Number of firms whose financial statements are analysed each year of the sample

sample are added and the sum is divided by the number of years of the sample. The index is also expressed on a 100-point basis:

$$\mathrm{ODEI}_{\mathrm{Xj}} = \frac{\sum_{i,t=1}^{Z,T} EDI_{it}}{T} \times 100$$

X_j: Environmental reporting item "j" analysed
i, t: Corporation (concessionaire, parent company)
T: 17 for real toll roads; 13 for shadow toll roads

Statistical analysis has been applied in order to check the homogeneity in the level of environmental reporting presented between concessionaires of the same sub-sector and between concessionaires from both. To do so Multidimensional Scaling analysis (MDS) and cluster analysis have been applied. The combination of both techniques is devoted to the identification of homogeneous groups from the wide sample of companies under study. The reason for applying these statistical techniques is to explore the homogeneity of the Spanish toll roads sector when discloses environmental reporting. This analysis covers both individual concessionaires and parent companies. The homogeneity of environmental reporting behaviour of individual concessionaires is analysed and, also, with respect to their parent companies.

In addition, non-parametric statistical tests have been applied to find the institutional factors that affect the environmental financing reporting of the Spanish toll roads sector. To do so, we apply the Wilcoxon test, the Mann-Whitney test and the Kruskal-Wallis test.

5. Analysis of results

To accomplish the objectives of this paper, we have applied the methods described above, obtaining the following results.

5.1. *Analysis of the quality of environmental disclosure in the Spanish toll roads sector*

5.1.1. *Overall Disclosure of Environmental Items (ODEI)*

If we focus on the ODEI of individual concessionaires and parent companies of the two sub-sectors (see Table 3), the results are very poor because the 'Average ODEI' of all of them ranges between 20 and 30. In both sub-sectors, the items with the highest scores are the disclosure of the note about the accounting criteria and of the note about environmental issues. Parent companies presenting SGAP-based financial statements are the exception because they disclose more information specifically about *environmental expenditures* in them than in the disclosure of the note about environmental issues.

Nevertheless, the content of the note about the environmental issues is scarce. In real toll individual concessionaires, only one of the environmental issues presents a score close to 60 (*environmental expenditures*). The next item with the highest score (*description of environmental provisions*) does not reach 35 and more than a third of the

Table 3. Overall Disclosure of Environmental Items (ODEI).

	REAL TOLL ROADS			SHADOW TOLL ROADS		
	Concessionaires	Parent companies		Concessionaires	Parent companies	
ITEMS	*SGAP*	*SGAP*	*IFRS*	*SGAP*	*SGAP*	*IFRS*
Note about accounting criteria	**76.3**	**58.2**	**43.5**	**69.1**	**67.1**	**53.1**
Note about environmental issues	**89.2**	38.6	**73.5**	**87.4**	39.1	**79.2**
Description of environmental assets	13.8	20.1	15.8	5.3	25.6	24.0
Measurement of environmental assets	15.5	22.9	32.0	11.9	26.2	43.5
Amortisation of environmental assets	2.2	15.4	14.4	0.0	17.6	13.1
Annual environmental investment	24.2	0.0	21.2	6.8	0.0	27.5
Environmental expenditures	**58.0**	**48.3**	37.0	**40.4**	**47.2**	40.1
Description of environmental provisions	**34.0**	29.6	38.2	**31.0**	36.1	**43.3**
Measurement of environmental provisions	0.8	0.0	17.8	0.0	0.0	13.1
Transfer to environmental provisions	3.3	0.0	10.8	0.0	0.0	13.1
Application of environmental provisions	0.0	0.0	13.9	0.0	0.0	13.1
Environmental contingencies	14.2	22.2	2.3	28.7	27.4	8.7
Environmental liabilities	1.6	0.0	0.0	4.9	0.0	0.0
Environm. information in the management report	29.8	20.1	20.6	6.3	32.1	36.2
AVERAGE ODEI	***25.9***	***19.7***	***24.4***	***20.8***	***22.7***	***29.1***

Note: Score of ODEI of each group of firms for each environmental item analysed

remaining items score between 0 and 10. In the shadow toll individual concessionaires, *environmental expenditures* is also the item with the highest score (40), two thirds of the items do not score 10, and one third scores 0.

Only in a third of the items, individual toll road concessionaires reach better results than parent companies. The consolidated financial statements issued by the parent companies of shadow toll concessionaires achieve the highest value of ODEI and the top scores of ODEI in half of the items. It can also be noted that the consolidated IFRS-based financial statements presented by the parent companies get a higher ODEI than the SGAP-based consolidated and individual financial statements.

Shadow toll individual concessionaires get worse scores than real toll individual concessionaires. On the contrary, the shadow toll parent companies get better scores when presenting environmental information according to IFRS or SGAP, than real toll parent companies (see Table 3).

5.1.2. *Sectoral Environmental Disclosure Index (SEDI)*

As can be seen in Figure 1, the evolution of environmental disclosure in the real toll sub-sector shows two different phases: first, an increase in the content of reporting until 2003; second, after 2003, SEDI came to a standstill. This figure also shows that the maximum score of the SEDI is 35 and in most years the scores are between 20 and 30, with a starting point below 20 for individual concessionaires and below 10 for parent companies.

In the case of the shadow toll sub-sector (see Figure 2), the most outstanding feature is that SEDI maintains the same level during most of the sample period, even with a slight decrease as years go by, the final value of SEDI being lower than the initial value.

In both sub-sectors, before IFRS came into force, the SEDI of IFRS-based financial statements of parent companies were increasing. But, after IFRS became compulsory for the European corporate groups, environmental reporting came to stagnation. Before 2002, the SGAP-based financial statements of real toll parent companies

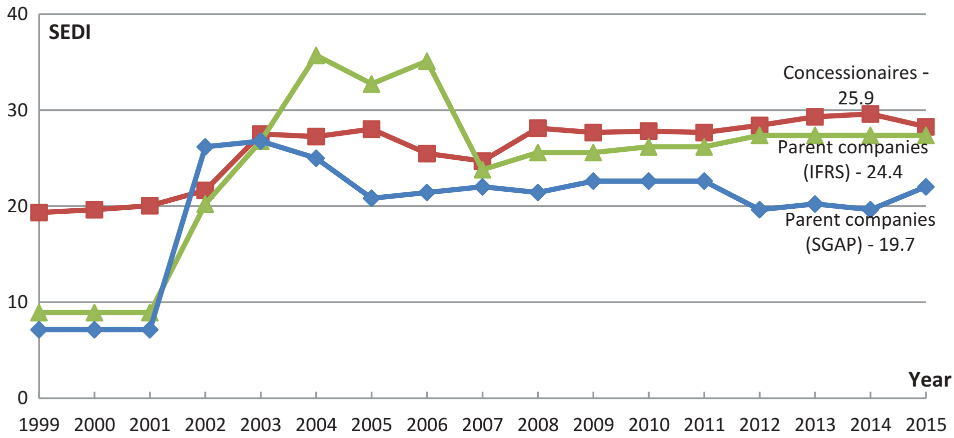

Figure 1. Evolution of SEDI of Real Toll Concessionaires and Parent concessionaires.

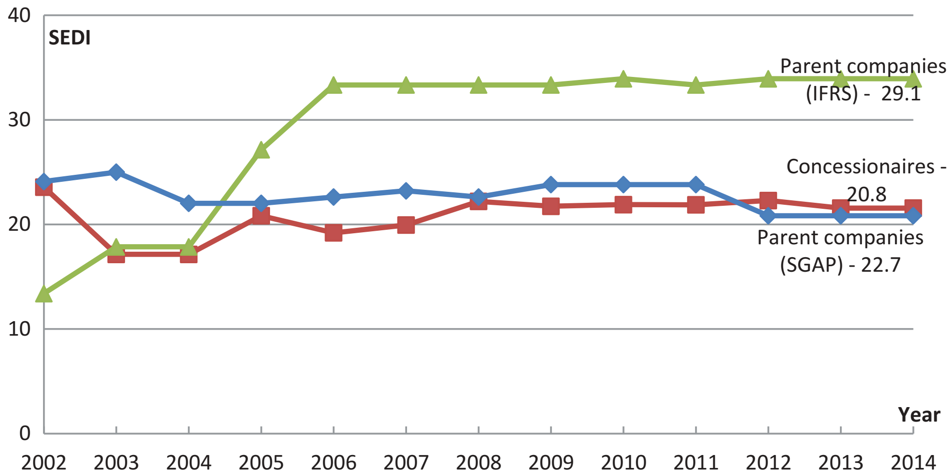

Figure 2. Evolution of SEDI of Shadow Toll Concessionaires and Parent Companies.

increased their scores and, after 2002, they also came to stagnation. The information disclosed by the SGAP-based financial statements of shadow toll parent companies has maintained the same scores throughout the sample period and they have even decreased slightly (see Figures 1 and 2).

Comparing the SEDI of individual real toll and shadow toll concessionaires, during the whole sample, except the first year shadow toll concessions were opened to traffic, real toll concessionaires reach better scores, with a difference of 22% on average (see Figure 3). In addition, since IFRS were implemented in 2005, both sub-sectors follow a similar path maintaining similar scores of SEDI to the ones reached in 2008, with a slight increase in the real toll sub-sector and a slight decrease in the shadow toll sub-sector, in the last years.

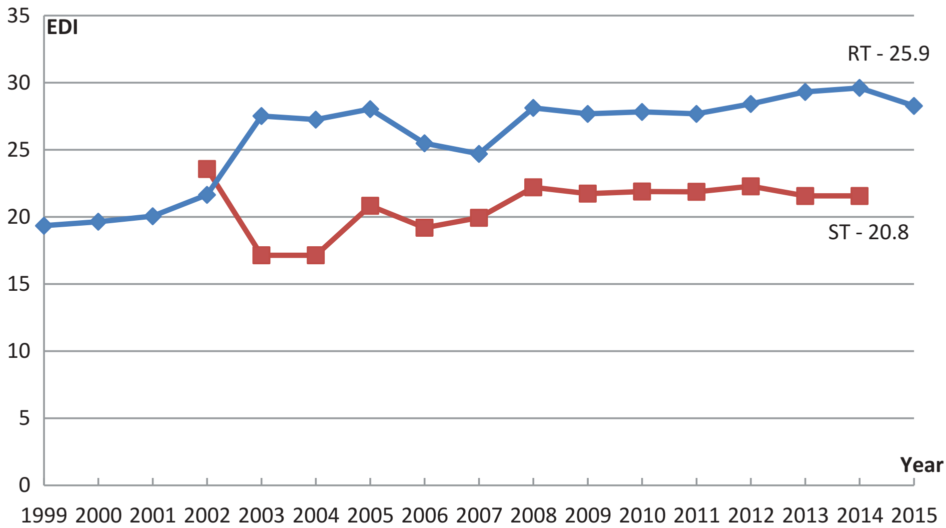

Figure 3. Comparison of evolution of EDI between Shadow Toll and Real Toll concessionaires.

In the first years of the sample, real toll concessionaires' SEDI show an increase, but it does not happen with the shadow toll concessionaires, because real tolls were much older than shadow tolls and they increased the information disclosed as time went by.

5.2. *Comparison of the reporting behaviour of individual concessionaires with respect to their parent companies*

Applying the MDS and cluster analysis to the EDI of toll road concessionaires and their parent companies, we can identify four groups (see Figure 4):

- Group '1' is made up of two individual concessionaires and two parent companies, with the highest EDI (between 39 and 49 points). Surprisingly, the parent companies in this group are not the ones that control the individual concessionaires that are in this group.
- Group '2' includes eleven entities, most of the oldest concessionaires and just one parent company. All the individual concessionaires controlled by SACYR are found in this group. All these corporations show intermediate values of EDI (between 23 and 35 points).
- Group '3' includes eight corporations with similar scores of EDI to the previous group (between 19 and 33 points) but, in this case, they were not in operation since the beginning of the sample period.
- Group '4' includes the five individual concessionaires and the two parent companies with the lowest EDI scores (between 6 and 15 points).

In the case of the shadow toll sub-sector, the statistical analysis produces the following results (see Figure 5):

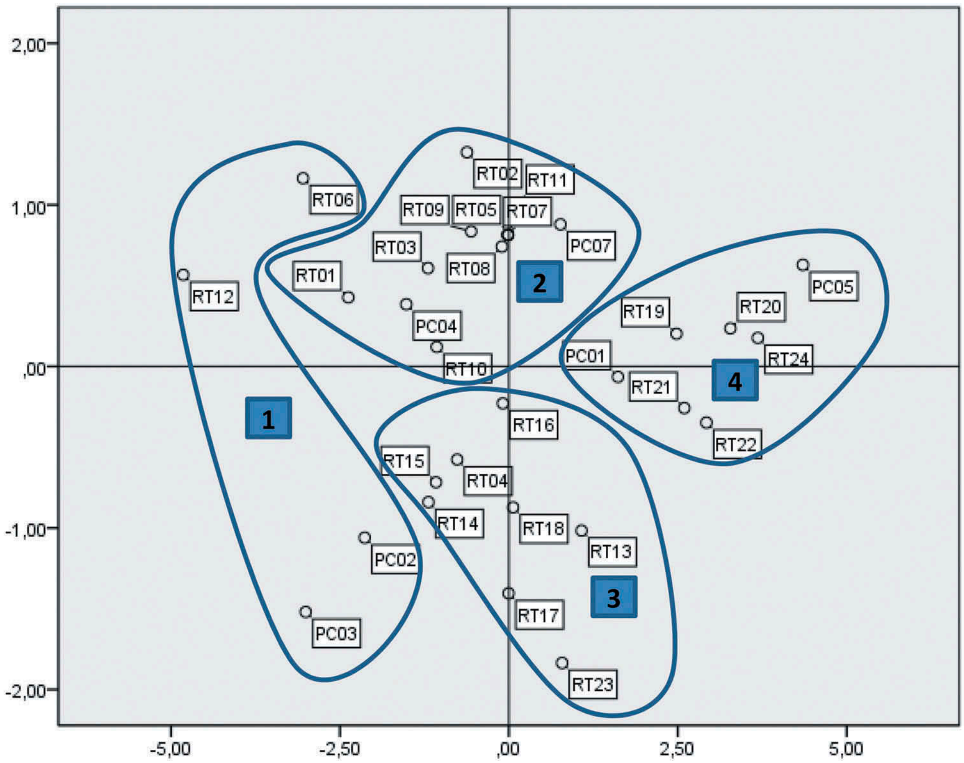

Figure 4. MDS of real toll concessionaires and parent companies.

- Group '1' is made up of only parent companies that follow IFRS to elaborate their consolidated financial statements, with the highest scores of EDI (between 33 and 57)
- Group '2' is made up of the four oldest shadow toll concessionaires in Spain plus one parent company with intermediate scores of EDI (between 15 and 22). Since 2002, these concessionaires have maintained the same score of EDI or it has diminished
- Group '3' is the largest cluster, containing more than half of the corporations of the sample (14) with scores between 14 and 27 and it is only made up of individual concessionaires, most of them opened to traffic in 2007 and 2008, and they have maintained the same score of EDI for all the years.
- Group '4' includes the corporations with the worst EDI, for instance OHL scores '0' all the years of the sample, and they are the most recent concessions to be opened to traffic.

5.3. *Influence of institutional mechanisms on environmental disclosure*

5.3.1. *Normative mechanisms*

To test whether new regulation on environmental financial reporting has a significant influence on the reporting policy of companies, a non-parametric test is applied,

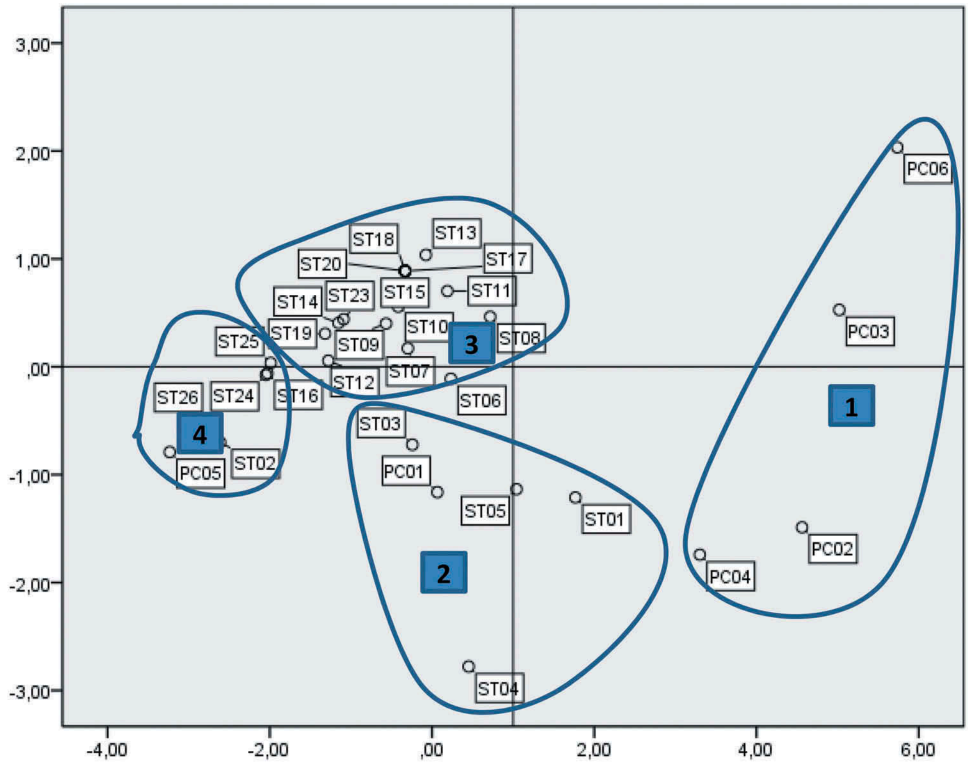

Figure 5. MDS of shadow toll concessionaires and parent companies.

comparing values for two consecutive years. Applying this statistical technique, we can detect if this institutional factor has an influence on the EDI.

The Wilcoxon test shows significant differences between consecutive years of the environmental financial reporting (EDI) for the years 2004–2005 and 2006–2007 (see Table 4). Note that the IFRS became compulsory for European corporate groups in 2005. In 2007, the new IFRS-based SGAP came into force, although its environmental requirements were already set up in 2002, but no changes in the environmental disclosure are observed.

If we consider only real toll concessionaires, we can observe that, for 2002–2003, 2004–2005 and 2006–2007, there is evidence for not accepting null hypothesis of equality of reporting behaviour. However, during the years when there is no regulatory change, there is no evidence of change in environmental reporting behaviour. Therefore, there is enough certainty to accept hypothesis H1.1 (see Table 4), because the test only shows statistically significant differences in the years with new regulations. So, regulation on environmental financial disclosure is an institutional factor with influence on the reporting behaviour on environmental finance issues of real toll road concessionaires.

Nevertheless, in the case of shadow toll concessionaires, in any year of the sample, results of Wilcoxon test cannot reject null hypothesis of behaviour equality and hypothesis H1.2 cannot be accepted. The different reporting behaviour between the two sub-sectors must be explained with further statistical analyses that help to explain the influence of other factors.

Table 4. Wilcoxon test.

	1999–2000	2000–2001	2001–2002	2002–2003	2003–2004	2004–2005	2005–2006	2006–2007	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012	2012–2013	2013–2014
All concessionaires															
Z	−1.000	−0.816	−1.633	−1.369	−1.000	−2.414	−1.633	−2.598	−1.609	−1.292	−0.412	−0.378	−.832	−1.466	−0.577
Sig.(2-tailed)	0.31	0.41	0.10	0.17	0.31	**0.016**	0.10	**0.009**	0.10	0.19	0.68	0.70	0.40	0.14	0.56
Real toll concessionaires															
Z	−1.000	−0.816	−1.633	−2.717	−1.000	−2.121	−1.414	−2.121	0.984	−1.089	−0.447	−1.000	−1.394	−1.276	−1.000
Sig.(2-tailed)	0.31	0.41	0.10	**0.006**	0.31	**0.03**	0.15	**0.03**	0.32	0.27	0.65	0.31	0.16	0.20	0.31
Shadow toll concessionaires															
Z				−1.604	.000	1.342	−1.000	−1.633	−1.890	−0.828	.000	.000	−0.368	1.000	.000
Sig.(2-tailed)				0.11	1.00	0.18	0.31	0.10	0.06	0.40	1.00	1.00	0.71	0.31	1.00

Note: Results of Wilcoxon Test between EDI of two consecutive years

The Kruskal-Wallis test shows that H2 cannot be accepted for all the period analysed, except the last two years in which null hypothesis cannot be accepted. Nevertheless, for the last years analysed, there is some evidence of different behaviour depending on the parent company. So, the parent company could be an institutional factor with influence on the reporting behaviour (see Table 5).

The third coercive institutional factor that has been considered as having an influence on the disclosing of environmental financial reporting by concessionaires is the auditing firm. It has been found that the note to the financial statements about environmental issues is exactly the same for companies audited by the same auditing firm. However, the Kruskal-Wallis test applied to see whether if the auditing firm influences the reporting behaviour of companies concludes that this is not a significant factor until 2007 but that it is statically significant from 2008 on, when the sample of companies analysed is bigger. So, for the period until 2007 null hypothesis cannot be rejected, and from 2008 on, null hypothesis cannot be accepted so there is enough evidence that auditing firms seem to have an influence on the reporting behaviour (H3) (see Table 5).

As regards the type of concession, the Mann-Whitney non-parametric test concludes that all the years of the sample period but two show significant differences in the reporting behaviour between real toll and shadow toll concessionaires. Null hypothesis cannot be accepted, so there is enough evidence for accepting H4. This result means that the type of concession is an institutional factor that influences the reporting behaviour. So, a different reporting behaviour between sub-sectors can arise from the distinctive characteristics of the type of concession (ownership, age, type of management, etc.), and companies within each sub-sector follow a common path, confirming a mimetic isomorphism (see Table 6).

The coercive or mimetic isomorphism mechanisms could be established by the reporting policy of the parent company of the individual concessionaires. Parent companies might impose (coercive) or serve as a model (mimetic) for the subsidiaries. The non-parametric Mann-Whitney and Kruskal-Wallis tests have been applied to test this hypothesis, but no significantly different behaviours have been observed, neither the type of ownership (public-private), nor the parent company.

Nevertheless, as occurred with the appearance of new regulation, there is a significant reporting change between 2002 and 2003, when there was a change from public to private ownership (see Table 7). The Mann-Whitney test (applied to the years in which the ownership is distributed between public and private, i.e. until 2003) does not allow us to reject the null hypothesis similarity between companies controlled by public administrations and those controlled by private owners (significance 0.05). The linear correlations between the year-based EDI and the type of ownership confirm that there is no dependence between the reporting behaviour and the ownership of the concessionaires, so hypothesis H5 cannot be accepted.

6. Discussion

In spite of the increase in environmental disclosures in the financial statements, results show a limited corporate implication in environmental issues because their attitude is little more than 'box ticking'. Moreover, there is a shortage of financial data on some

Table 5. Kruskal-Wallis test.

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Chi-square	3.049	3.049	1.800	8.909	5.840	5.470	5.866	8.593	10.089	12.891	12.532	11.723	11.997	12.273	14.033	14.018
df	2	2	2	6	6	6	6	7	7	7	7	7	7	7	7	7
Asym. Sig.	0.21	0.21	0.40	0.17	0.44	0.48	0.43	0.28	0.184	0.07	0.08	0.11	0.10	0.09	**0.05**	**0.05**
				2002	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Chi-square				5,446	5,146	4,354	8,678	6,446	8,377	10,006	10,125	9,652	10,845	10,771	12,891	13,778
df				4	4	4	4	4	4	4	4	4	4	4	4	4
Asym. Sig.				0,245	0,273	0,360	0,070	0,168	0,079	0,040	0,038	0,047	0,028	0,029	0,012	0,008

Note: Kruskal-Wallis test results comparing EDI by parent company for all concessionaires.
Note: Kruskal-Wallis test results comparing EDI by auditing firm for all concessionaires.

Table 6. Mann-Whitney test.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
U Mann-Whitney	29.00	15.00	17.50	31.50	43.00	53.50	166.00	164.50	157.00	162.00	171.00	166.50	158.00
Z	−.927	−2.265	−2.195	−1.765	−2.039	−2.752	−2.393	−2.426	−2.599	−2.663	−2.822	−2.888	−3.056
Sig. (2-tailed)	0.35	**0.02**	**0.02**	0.07	**0.04**	**0.006**	**0.017**	**0.015**	**0.009**	**0.008**	**0.005**	**0.004**	**0.002**

Note: Mann-Whitney test results comparing real toll and shadow toll concessionaires

Table 7. Mann-Whitney test.

	1999-EDI	2000-EDI	2001-EDI	2002-EDI	2003-EDI
U de Mann-Whitney	15.500	16.500	12.500	26.500	14.500
Z	−.409	−.245	−.898	−.390	−.084
Sig. (2-tailed)	0.68	0.80	0.36	0.69	0.93
Pearson Coef	0.115	0.000	−0.357	−0.057	−0.036

Note: Mann-Whitney test results comparing public and private ownership)

important issues such as environmental provisions and investments. Preliminary analysis shows a behaviour aligned with institutional theory's principles, for instance, a mimicking practise is observed, when concessionaires use the same or very similar wording of paragraphs for disclosing the environmental issues in different years or in the financial statements of different concessionaires.

There is a contradiction as several parent companies alleged that '*in view of their nature, the company's activities did not have a significant environmental impact*', but in the note to the financial statements about 'company's activities', they state its corporate purpose had an environmental impact, because it comprises '*the business of constructing all kinds of public and private works, as well as the provision of services, for the conservation, maintenance and operation of motorways, freeways, roads and, in general any type of public or private ways and any other type of works, and any kind of industrial, commercial and financial actions and operations which bear a direct or indirect relationship thereto*'.

In addition, in the note about *Accounting policies and measurement basis*, both individual concessionaires and parent companies describe how provisions, expenditures and other environmental issues have to be accounted for, but most of the concessionaires do not include a specific breakdown in the notes to the financial statements regarding environmental issues, because the concessionaire states that does not have any environmental obligations, expenses, assets, liabilities or contingencies that might be material.

Three facts are important in the evolution of the level of disclosure of environmental information. The first was the implementation of the Adaptation of the SGAP in 1998, which was the milestone for these companies because they did not previously disclose any environmental issues in their financial statements (Larrinaga et al., 2002). The second was the implementation of the 2002 ICAC Resolution, which introduced a comprehensive framework for environmental reporting for Spanish companies and led concessionaries to increase their disclosures and to follow a similar reporting behaviour to other companies with environmental impact, such as electricity companies (Llena et al., 2007). This fact seems to deal with both mimetic mechanisms stated by the institutional theory. Nevertheless, Spanish environmental accounting regulation for the toll motorways sector was not fully introduced into the financial statements until 2003, some years after it should have been. Similar delays in the application of environmental accounting requirements were reported in surveys by Deloitte and Touche (2000)[7]; PwC (2004).[8] Besides, the volume of information disclosed to comply with the requirements has poor quality and does not include detailed quantitative and qualitative information (e.g. there is an insufficient description of environmental equipment). The third important fact was that, when the new SGAP came into force in 2008, the environmental information disclosed by individual concessionaires came to a standstill and something similar happened to the consolidated information of the parent companies a few years before when the IFRS became compulsory for European corporate groups. So, this research concludes that regulation change is another mechanism of the institutional theory that has an influence on the reporting behaviour of companies.

Control by a parent company implies another institutional factor: when the parent company 'recommends' how environmental information must be reported by its subsidiaries, becoming a coercive mechanism. In addition, from the subsidiary's point of view, the reporting behaviour of the controlling company can be considered as a reference to imitate, becoming a mimetic institutional factor. Initially, results show that there is no pattern that concludes that subsidiary concessionaires imitate the reporting procedures of their parent companies. But, in the last two years (2013, 2014), the parent company sets the disclosure of subsidiaries, what can be due to the concentration of individual companies under big parent companies. In addition, from 2008 to 2012, results show that there is some influence of parent companies on the disclosure of subsidiaries. Statistical analysis also shows that auditing firms are an institutional factor that affects the environmental disclosure of toll road concessionaires, but only during the second half of the period of analysis.

The coercive or mimetic behaviour that arises from belonging to a sub-sector (with common features such as industrial sector or ownership) may be due to the objective of mimicking the behaviour of the best or adapting to what society expects. Accordingly, some authors find significant differences between industry sectors or between environmentally sensitive or non-sensitive companies (Aranguren, 2016; Campbell, 2004; García Sánchez et al., 2013). Thus, to belong to any of the two sub-sectors analysed (real toll and shadow toll roads) bring us to differentiate behaviours due to different management performance or date that concessionaires started to operate.

Nevertheless, results show that coercive mechanisms only have a significant influence on environmental disclosure in some situations. The type of concession and, to some extent, the change of regulation and the auditing firm are determining factors. As Bebbington et al. (2012) state, it is possible that there is a lack of a normativity process open to dialogue with stakeholders that allows reaching the objective that such a regulation is accepted and applied by reporting entities.

The low level of environmental information disclosed may be consequence of the lack of an appropriate internal environmental reporting system in companies and the need to adapt management and accounting systems to the reporting context (Criado et al., 2008). Environmental issues may affect companies in a variety of ways and require a reporting system to enable financial statement preparers to take their impacts into account. An effective and reliable internal reporting system should be designed to identify both environmental systematic issues coming from government regulation and related to the regular business process and non-systematic issues involving casual and non-financial events (ICAEW, 2009). Companies can also ensure the disclosure of environmental issues by improving communication between those responsible for environmental issues and the accounting staff or by seeking advice from specialists that provide guidance on the information to disclose. The lack of environmental knowledge in top managers and the department that prepares the financial statements

(PricewaterhouseCoopers (PwC), 2004) is another factor that leads to neglecting environmental aspects.

However, not only organisational reasons explain the low level of environmental information disclosed; there are also technical accounting reasons. Certain accounting principles that are used in normal company activities will not be relevant for the treatment and disclosure of environmental issues in financial statements. Traditionally, financial statements are prepared from a financial perspective, but environmental issues introduce a different point of view, so these items do not always fit the accounting prerequisites of materiality/relevance and usefulness. The information provided in financial statements must comply with the overall objective of being useful for the decision-making needs of users, as is stated in the Framework for the Preparation and Presentation of Financial Statements of the International Accounting Standards Board. In this accounting framework, relevance is among the principal characteristics that make the information provided in financial statements useful to users. The materiality of the information provides a cut-off point for it to be considered as relevant and, thus, to be included in financial statements. Materiality depends on the nature and monetary amount of the item. So, the great differences observed between legal requirements and items reported may be due to the lack of materiality of environmental items, in terms of their qualitative or quantitative features. As previously introduced, an example is what entities alleged in the notes to the financial statements for not presenting information about environmental obligations, expenses, assets, liabilities or contingencies: they are not material.

The low scores of concessionaires are the result of the fact that legislation does not take into account the specific characteristics of economic sectors and requires the same reporting obligations for companies that belong to different sectors. Depending on the nature of a business, environmental information could be important from the point of view of sustainable performance, but not from the financial point of view, which is the relevant perspective to consider an item as material. If an environmental issue has a financial impact it should appear separately in financial statements. But, if its monetary value is not significant or if it only has an impact from the sustainable point of view of companies' activities, it should appear in other statements such as the management report or a sustainability report.

The activities of companies involve both financial and non-financial aspects and environmental matters are not an exception. Reporting on environmental issues should be included in the appropriate financial statement. Countries have not been homogeneous when legislating whether this information should be reflected in the management report, in the annual accounts or in the notes thereto (Price waterhouse Coopers (PwC), 2004). In determining the information to include in financial statements, the relevance and the materiality of the information should be considered (Deegan & Rankin, 1997; FEE, 2008).

The case of Spanish toll road concessionaires confirms this situation because there is a low level of disclosure of environmental assets, expenditures, provisions, etc., that are items to be included in the statement of financial position or in the income statement. But, the environmental information given in the management report does not improve environmental disclosure, so the lack of interest of the sector in disclosing its environmental performance is clear. This is especially serious because the parent companies of Spanish toll rod concessionaires are building companies, which conform an environmentally sensitive sector.

7. Conclusions

In order to analyse the extent to which Spanish toll road concessionaires have adopted accounting reporting standards about environmental issues and the quality of the information provided, the objective of this paper was threefold.

Firstly, we observe a progressive increase in environmental financial disclosure by Spanish toll sector corporations as a whole over the first half of the sample period and a standstill during the second half. At the same time, we find a low level of environmental information reported by the concessionaires that can be due to the lack of an open process of normativity that promotes a widespread acceptance of the new regulation. Nevertheless, the main driver of the increase in disclosures is the compliance with accounting regulations. They repeat the paragraphs or the relevant notes to the financial statements year by year, and we can even find the same paragraphs in financial statements of different concessionaires and individual financial statements of parent companies. In some of the consolidated financial statements of parent companies, the creativity for explaining environmental facts is quite high, while others do not disclose any information, despite being a quite sensitive sector to environment.

Secondly, we do not observe a direct relationship between individual concessionaires and parent companies because there is no common pattern between controlled entities and controlling corporations. Only in a few cases do the concessionaires coincide with their parent companies in the level of disclosure. In addition, results show an inconclusive relationship between compulsory and voluntary environmental reporting, because consolidated financial statements issued by parent companies follow IFRS, that do not require environmental issues, and get better scores than individual financial statements under SGAP that are clear about which environmental issues have to be disclosed.

Comparing real toll roads and shadow toll roads, we observe that the first achieve higher scores than the second latter. The overall situation was not improved with the incorporation of shadow toll concessionaires. These were supposed to bring 'fresh air' into public infrastructure management, as the underlying philosophy for managing public infrastructure rests on PPP in which the quality of services should be put before the economic outcome. The shadow toll sector presents even poorer scores than traditional public procurement by means of real toll concessionaires and most of them have been in operation during sufficient years to present an adequate level of environmental reporting.

Thirdly, as regards the institutional mechanisms that explain environmental reporting pattern behaviour of the Spanish toll road sector according to the institutional theory's framework, we can conclude that: accounting regulation changes, as a coercive mechanism, and the type of concession, as a cultural-mimetic mechanism, produce significant differences in the level of disclosure. The auditing firm has only an influence after 2007 and with respect to the type of owner (public/private) of the concessionaires, the statistical results are not conclusive. Finally, the parent company does not have a significant influence on environmental reporting pattern of subsidiaries the sample period as a whole but, after 2008, its influence grew and, in the last two years, it is statistically significant.

Summarising, the environmental financial reporting of the Spanish toll roads sector presents a low level of disclosure since this information was required by Spanish legislation. Despite an initial increase after the specific accounting regulation was issued, there is a stagnation after IFRS became directly or indirectly compulsory. Individual concessionaires do not follow the reporting path of their parent companies. Environmental information disclosure does not show a significant change after IFRS were implemented directly, as consolidated financial statements must be elaborated following their principles, or indirectly, by means of the SGAP. Based on the institutional theory, statistical tests conclude that some mechanisms (accounting regulation changes, auditing firms and type of concession) are confirmed as having an influence on the behaviour of environmental financial disclosure by the entities of the toll roads sector, but there are other mechanisms that do not have such an influence (parent company, public/private ownership).

> As limitations of this research, we should point out that the results only refer to one sector. Although it is a well-known sector worldwide, and the years for which there are data available are not homogeneous for all the companies included in the sample. In addition, there are some results that are inconclusive which can be issues for future research. For instance, the analysis of the distinctive characteristics (ownership, age, type of management, value of investment, etc.) of the two types of concessions (real toll and shadow toll) that give rise to different environmental reporting behaviours in concessionaires of each sub-sector.

There is still hope that the recent reform of financial statements and related reports proposed by the European Commission Directives 2013/34/EU and 2014/95/EU, transposed by a royal decree[9] but without specifying the terms to be implemented, yet in Spain, will serve as driving force to place environmental reporting in narrative reports (non-financial statement within the management report) or *ad hoc* reports (a separate corporate environment report). These would be better options to reflect the environmental information of companies than traditional financial statements and to improve the disclosure of environmental reporting.

Notes

1. In the last three decades, countries have attended to several international meetings and signed agreements that necessarily must be implemented by corporations: Kyoto Protocol (1997), Johannesburg Earth Summit (2002), Copenhagen Climate Change Conference (2009), Paris Agreement (2015).
2. There are eight concessionaires that have entered into bankruptcy proceeding: HENARSA, ACCESOS, MADRIDSUR, EJEAEROPUERTO, MADRIDLEVANTE, MADRIDTOLEDO, AUCOSTA, CIRALSA.
3. PPP are long-term contracts which may take the form of the construction or management of public infrastructure or the provision of services (using public infrastructure facilities) by a private sector entity to society on behalf of a public sector entity (Grimsey & Lewis, 2002).
4. Instituto de Contabilidad y Auditoría de Cuentas (ICAC) (1998). Orden de 10 de diciembre de 1998, del Ministerio de Economía y Hacienda, por la que se aprueban las normas de adaptación del Plan General de Contabilidad a las Sociedades concesionarias de autopistas, túneles, puentes y otras vías de peaje.

5. ICAC (2002). Resolución de 25 de marzo de 2002, por la que se aprueban normas para el reconocimiento, valoración e información de los aspectos medioambientales en las cuentas anuales.
6. Public-interest entities which are parent undertakings of a large group exceeding on its balance sheet dates, on a consolidated basis, the criterion of the average number of 500 employees during the financial year.
7. This survey was carried out in Swedish companies and found that only a few of the 25 firms investigated gave plain and comprehensive environmental information the first year after legislation came into force.
8. This study about the implementation of the EC Recommendation by companies of member states confirmed that it took some time before the new legislation about environmental accounting was understood and followed.
9. Real Decreto – Ley 18/2017, de 24 de noviembre, en materia de información no financiera y diversidad.

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Appendix

Table A.1. List of real toll concessionaires.

	CONCESSIONAIRE	LENGTH (Km.)	YEAR OPENING TO TRAFFIC	CONTRACT LENGTH (years)	HIGHWAY INVESTMENT (€million)	PARENT COMPANY
RT01	ACESA	478.3	1969	54	2,685	ABERTIS
RT02	EUROPISTAS	84.3	1971	54	399	SACYR
RT03	IBERPISTAS	69.6	1972	56	526	ABERTIS
RT04	AUMAR	467.6	1974	50	1,862	ABERTIS
RT05	AUDENASA	112.6	1976	56	230	SACYR
RT06	AVASA	294.4	1978	63	1,121	ABERTIS
RT07	AUDASA	218.9	1979	75	1,502	SACYR
RT08	AUCALSA	86.8	1983	75	654	SACYR
RT09	AUTEMA	43.1	1989	50	492	FERROVIAL
RT10	AUCAT	56.3	1992	50	505	ABERTIS
RT11	AUTOESTRADAS	57.8	1997	50	45	SACYR
RT12	AUSOL	102.2	1999	55	721	FERROVIAL
RT13	AUSUR	76.6	2001	50	348	PRALESA
RT14	CASTELLANA	50.8	2002	35	479	ABERTIS
RT15	ACEGA	56.6	2002	75	247	FCC
RT16	AULESA	38	2002	55	114	ABERTIS
RT17	HENARSA	85.5	2003	39	813	ACS
RT18	ACCESOS	91.5	2004	50	259	ABERTIS
RT19	MADRID SUR	99.1	2004	65	1,277	FERROVIAL
RT20	EJE AEROPUERTO	8.8	2005	25	475	OHL
RT21	MADRIDLEVANTE	177	2006	38	535	FERROVIAL
RT22	MADRID TOLEDO	81	2006	38	545	Isolux +Comsa
RT23	AUCOSTA	114	2007	38	75	FCC
RT24	CIRALSA	53.5	2007	40	448	ACS

Table A.2. List of shadow toll concessionaires.

	CONCESSIONAIRE	LENGTH (Km.)	YEAR OPENING TO TRAFFIC	CONTRACT LENGTH (years)	HIGHWAY INVESTMENT (€million)	PARENT COMPANY
ST01	NOROESTE	62.2	2001	25	96.3	SACYR
ST02	PANTANOS	70	2002	25	69.9	GLOBALVÍA-ACS
ST03	TRADOS	14.5	2002	25	190.9	ABERTIS-AXA
ST04	EUROGLOSA	8.3	2002	25	86.7	OHL
ST05	CONCESIONESMADRID	14.2	2002	25	191.5	GLOBALVÍA
ST06	AUMANCHA	52.3	2005	30	123.8	ACS
ST07	AUVISA	74.5	2006	25–30	200.1	ACCIONA-ESPIRITO SANTO
ST08	CAMINO	72	2006	30	354.6	FCC
ST09	PAMASA	43.7	2007	33	117.3	SACYR-Local building co.
ST10	MADRID407	16	2007	30	70.3	Construcciones Sarrión-FCC
ST11	VIASTUR	26.8	2007	30	72.5	SACYR- Local building co.
ST12	IBISAN	17.5	2007	30	75.6	FCC-Local building co.
ST13	ACCESOSIBIZA	7	2008	25	74.9	Local building co.
ST14	LLOBREGAT	40	2008	33	311	FCC-Local building co.
ST15	SANTIAGOBRIÓN	15	2008	30	111.1	ACS-Local building co.
ST16	REUSALCOVER	10.2	2008	33	80	ACS
ST17	PUENTEDELEBRO	5.2	2008	30	57.2	ACCIONA-Local building co.
ST18	TURIA	54	2008	36	161.2	SACYR
ST19	SALNES	17	2008	30	53.6	Local building co.
ST20	ERESMA	113	2008	35	101.8	SACYR
ST21	AUPISA	104.6	2008	35	94	ACS
ST22	BARBANZA	40.1	2008	30	95.7	SACYR
ST23	ARO	27	2008	33	88.3	FCC-Local building co.
ST24	TER	49	2011	33	348	FCC-Local building co.
ST25	PIRINEO	67.3	2012	30	219.3	ACS-Local building co.
ST26	DIAGONAL	67	2012	33	475	ACS

Table A.3. Main features of concessionaires.

	REAL TOLL ROADS	SHADOW TOLL ROADS
Total Length	3,100 km.	1,100 km.
% Spanish high capacity roads	19%	7.5%
First year toll road opened	1969	2001
Last year toll road opened	2007	2012
Longest contract length	75 years	25 years
Shortest contract length	25 years	54 years
Average contract length	51.5 years	31 years
Longest road	478 km.	113 km.
Shortest road	8.8 km.	5.2 km.
Average length	125 km.	45 km.
Maximum capital value	€1,500m	€354.6m
Minimum capital value	€45m	€54m
Average capital value	€680m	€150m
Total capital value	€16,355m	€3,920m

Table A.4. List of parent companies.

		REAL TOLL ROADS			SHADOW TOLL ROADS				
		Nº concessions controlled	Km. managed	Starting year	Nº concessions controlled	Km. managed	Starting year	Total Nº concessions controlled	Total Km. managed
G01	SACYR	5	605	1979	6	340	2002	11	945
G02	FCC	2	171	2002	8	270	2002	10	441
G03	ACS	2	139	2003	7	336	2005	9	475
G04	ABERTIS	8	1546	1969	1	15	2002	9	1561
G05	OHL	1	9	2005	1	8	2002	2	17
G06	ACCIONA	0	0	-	2	80	2006	2	80
G07	FERROVIAL	4	421	2004	0	0	-	4	421