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Accounting and risk management in the age of compliance

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DECLARAN que la presente tesis doctoral, titulada
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Burgos, 21 de julio de 2021

Una firma manuscrita en tinta azul que parece leer 'Carlos Larrinaga'.

Prof. Carlos Larrinaga González

Una firma manuscrita en tinta azul que parece leer 'Nicolás García Torea'.

Dr. Nicolás García Torea

A Manolo, María, Mercedes y Juan

*Tu cangrejo de río
me ha enamorado a mí.
Pero el cangrejo mío,
el de la mar, a ti.*

Rafael Alberti a Burgos

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Chapter 1 - Introduction

1. The Rise of Risk Management

Risk management was an uncommon topic in accounting research until the end of the 1990s (Power, 2004). The academic discussion of risk management was motivated by the worldwide emergence of fraud cases in the late 1990s and the early 2000s (Jaramillo, García, & Pérez, 2003). To address the growing number of corporate scandals, governments started to enact specific regulations, which is considered the origin of modern risk management aiming at detecting and preventing, rather than punishing existing fraud (Power, 2013). Michael Power's work is especially relevant to understand how risk invaded internal control and the rise of audit as a trust providing practice (Power, 1997). In his book, *Organized Uncertainty* (Power, 2007) he described the upsurge of internal control. The process started in the early 1990s, with the development of the Internal Control Framework by the Committee of Sponsoring Organizations of the Treadway Commission (hereafter COSO) in the US and the publication of the *Cadbury Code* (Sir Adrian Cadbury was ICAEW contemporary chairman) by the Institute of Chartered Accountants in England and Wales (ICAEW). These frameworks introduced a risk perspective into internal control. The COSO Framework is considered the template for organizations' risk management (Power, 2004), while the *Cadbury Code* introduced a risk perspective in control practices and organizational governance (Bhimani, 2009).

Previous definitions of risk were only applicable to financial risk, (i.e., potential losses because of fraud or incompetence) (Spira & Page, 2003). The *Cadbury Code* transformed the contemporary conception of risk by incorporating the dimensions of "responsibility, accountability or decision making" to the previous calculative conception of risk (Power, Scheytt, Soin & Sahlin, 2009, p. 304), translating the previous conceptions of internal

control systems into that of risk management systems. The Cadbury Code sought the improvement of internal control by linking it with corporate governance and financial reporting (Spira & Page, 2003).

The *COSO Internal Control – Integrated Framework* published in 1992 defined three categories of objectives to evaluate internal control: (i) operational objectives, (ii) reporting objectives and, (iii) compliance objectives (COSO, 2013a). The first category established the necessity of guaranteeing the effectiveness and efficiency of organizational operations. According to Spira & Page (2003) this inclusion was a “radical change” (p. 647), because it led organizations to broaden their concerns from financial profits or losses to how effective their internal control systems were. As a consequence, control processes had to cover not only financial issues, but also to assess broader notions of risk (Power, 2007). Additionally, Power noted that the COSO Framework added an *innovative* element to organizations' internal control systems: an “ethical tone” (p. 49) to monitor corporate control environment and culture.

The implementation of the Cadbury Code and the COSO Framework were the first steps in the rise of risk management systems. In 1999 the UK promoted the update of the Cadbury Code, incorporating ideas from the COSO Framework. The result was the *Turnbull Report* which represented the final step in the *explosion of risk management practices* (Power, 2004). Risk management became “something that all business were expected to pursue as part of their basic operations” (Knechel, 2007, p. 388). Risk management requirements introduced by these frameworks failed in avoiding a new wave of corporate fraud in the 2000s (e.g., Enron/Arthur Andersen or Worldcom). These scandals drove a new wave of governmental regulation in the US that led to the enactment of the Sarbanes-Oxley Act (hereafter SOX). This law requires firms (i) to publish a statement on the adequacy of their organizational structures and internal control procedures (risk management) of financial information

and, (ii) to have this statement assured by an external independent auditor (Foster, McClain, & Shastri, 2013; Gal & Akisik, 2020).

The risk explosion was not limited to organizational governance, it also changed the role of auditors and accountants within organizations (Young, 2020). Auditors should now revise organizational internal control procedures to express their opinion on the firm's statement of adequacy. This process implies the expansion of the scope of internal governance as part of the grand narrative of risk management (Power, 2007). The requirement of assuring internal control processes of financial information resulted in a second wave of *risk expansion*, in which the focus moved to "auditable trails of documentation", creating a kind of "internally *legalised* organisational environment" (Power, 2004, p. 7-8; emphasis in the original). The legalization brought about the transformation of internal governance into "modes of compliance". In the *age of compliance*, organizations are not only required to implement risk management systems, but also to prove the efficacy of these systems. In Power's (2007) terms organizations are suffering from risk self-assessment, turning organizations *out-inside*. Oversight is no longer coming from the outside, but from the inside (Power, 2007). Consequently organizations have to be proactive in nurturing a compliance culture with a future risk-based perspective to guarantee the compliance with regulation (Spira & Page, 2003).

The COSO Framework was updated two years after the SOX introduction. The resulting framework fostered the standardization of risk management. Ideas of organizational risk self-assessment and compliance culture have become common in the organizational context. The updated version introduced the concept of *enterprise risk management (ERM) system* which can be defined as a process "designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to prove reasonable assurance regarding the achievement of entity objectives" (COSO, 2004, p. 2). The COSO

Framework introduced the figure of *Chief Risk Officer*, the person or department in charge of providing internal assurance about the proper functioning of risk management (Power, 2007). Finally, the COSO Framework also included the expected sequence that the ERM should follow: (i) internal environment, (ii) objective setting, (iii) event identification, (iv) risk assessment, (v) risk response, (vi) control activities, (vii) information and communication and (viii) monitoring. This dissertation suggests that ERM's structure inspired the structure of compliance systems, indicating that the latter can be conceived as the latest step in the evolution of risk management.

2. The Age of Compliance

Despite the implementation of SOX or the updated COSO Framework, corporate scandals were still thriving. The 2008 financial and real estate mortgage crises made governments to continue regulating risk management to fight fraud and corruption. Driven by this process, organizations had now to develop their risk management systems to promote cultural, strategical and structural processes to assess, analyze and evaluate their risk exposition to non-compliance (Young, 2020). What in previous regulations was a principle, in the new regulations become mandatory.

Risk management systems suffered from a redefinition and they now have to pay attention to ethics as a means to comply with the law (Abdullah, Indulska, & Sadiq, 2016; Minaldo & Periot, 2019). Thus, organizations are required to implement accountability frameworks with the aim of standardizing employees and managers' conducts (Stacchezzini, Rossignoli, & Corbella, 2020). As a consequence, risk management systems are transformed into *compliance systems*, that consist of a set internal mechanisms "to detect and prevent criminal conduct from occurring within the corporation" (Wellner, 2006, p. 500).

These systems have a twofold objective: (i) to promote an ethical culture to avoid the commission of felonies and (ii) to protect the firm in case a crime is committed. Compliance systems are a common phenomenon worldwide (Stacchezzini *et al.*, 2020) that seek to create an ethical organizational culture (Quick & Sayar, 2020; UN, 2011). Based on the information provided by the World Compliance Association, at least 15 countries have enacted regulation requiring the establishment of compliance systems (Figure 1).

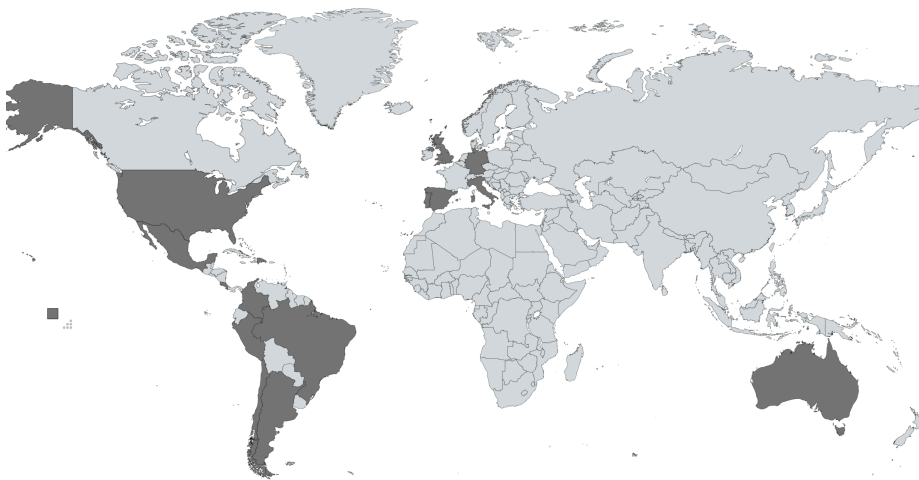


Figure 1 - World countries with compliance regulation. Source: World Compliance Association Website

Compliance is gaining traction and firms are now concerned about the need of implementing compliance systems to avoid legal sanctions. In addition to the national regulation of certain countries, there are other initiatives that refer to compliance. The European Union Directive 2014/95 requires the disclosure of information about compliance. International organizations are also promoting the implementation of compliance systems (OECD, 2013; UN, 2004), and several compliance standards have been launched (e.g., ISO 19600, 19601, being ISO 37301 the most recent one). The implementation of compliance systems is now a common practice among organizations, the state of which is described in external surveys (Minaldo & Periot, 2019).

3. Spanish Compliance Systems

Spain was not alien to the international attention to compliance systems. During the 2008 financial crisis, several Spanish firms were involved in fraud and corruption cases, particularly companies operating in the financial sector. For that reason, in 2010, the Spanish Government modified the Criminal Code (1995) introducing the *firm personhood criminal liability*. However, sanctions for *criminal organizations* were not established until a further modification of the Criminal Code in 2015 (Jimeno-Bulnes, 2019).

The implementation of compliance systems is not mandatory. However, under 2015 Criminal Code reform, firms “shall be held criminally accountable for the felonies committed in their name or on their behalf, and to their benefit, by their legal representatives and de facto or de jure administrators” (art. 31 bis, p. 18). According to the law, firms could be exempted from criminal liability after an employee or manager commit a felony when the following conditions are met:

“1. The management body has adopted and effectively implemented, before the perpetration of the criminal offence, organisational and management models that include measures of surveillance and control appropriate to prevent criminal offences of that same nature or to significantly reduce the risk of perpetration thereof.

2. The supervision of the functioning of and of compliance with the prevention model implemented has been entrusted to a body of the legal person with selfgoverning powers of initiative and control or has been entrusted legally with the function of supervising the effectiveness of the legal person's internal controls.

3. The individual offenders have perpetrated the criminal offence fraudulently eluding the organisational and prevention models; and

4.- An omission or insufficient exercise of the function of supervision, surveillance and control on the part of the body to which the second condition refers has not occurred." (p. 18)

The law was unclear about what it meant by *organizational and management model*. To address this situation, the Spanish Public Prosecutor (2016) published *Circular 1/2016 sobre la responsabilidad penal de las personas jurídicas conforme a la reforma del código penal efectuada por la Ley Orgánica 1/2015*, that offers clarifications about the requirements to avoid the criminal liability. Research on law concluded (and the Spanish Public prosecutor agree in concluding) that the Spanish Government referred to compliance systems when using the concept of organizational and management model (Dopico, 2016; Spanish Public Prosecutor, 2016).

The Criminal Code also defines the requirements that compliance systems should meet to effectively avoid the commission of felonies by firms' employees or managers:

- “1.st Identifying the spheres of activities where the criminal offences to be prevented may be perpetrated;
- 2.nd Establishing the protocols or procedures detailing the procedure for determining the will of the legal person, the adoption of decisions and the implementation thereof in relation to such protocols or procedures;
- 3.rd Possessing management models for financial assets adequate to prevent the perpetration of the criminal offences that are to be prevented;
- 4.th Imposing the obligation of notifying of possible risks and cases of noncompliance to the body entrusted with the surveillance of the functioning of and compliance with the prevention model;
- 5.th Establishing a disciplinary regime to adequately punish not complying with the measures established in the model;

6.th Carrying out a periodic audits of the model and, eventually, the amendment thereof whenever material violations of its provisions occur or when changes in the organisation, control structure or the activity carried occur making this necessary." (p. 19).

These requirements reflect firms' necessity to prove that compliance systems are effective. One form to guarantee this requirement is proposed by the law in the sixth article with the performance of periodic audits. Auditing, about financial information, and assurance, in relation to non-financial information, have been considered as tools to provide trust within the accounting literature (Power, 1997).

Additionally, these requirements are aligned with the *Five-Step Transition* described in the COSO Framework (COSO, 2013b) which inspired the standard ISO 19600 on compliance systems. Figure 2 summarizes the process that compliance systems should follow:

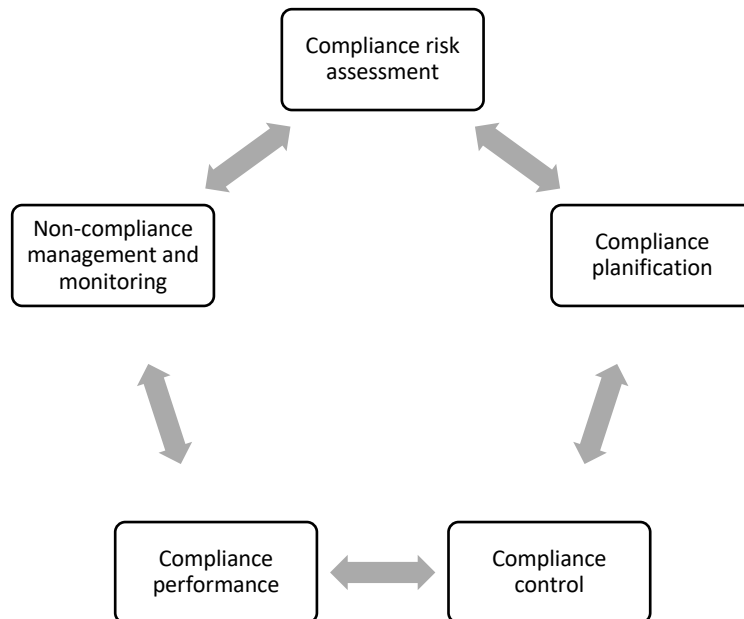


Figure 2 - Compliance system organigram. Adaptation from ISO 19600 (p. 6)

According to the Criminal Code, the goal of compliance systems is to promote an ethical culture that contributes to avoiding the commission of crimes and felonies (Spanish Public Prosecutor, 2016). Consequently, specific tools were developed with the aim of influencing employees' and managers' behavior to comply with the law: risk maps, whistleblowing or code of ethics (Remišová, Lašáková, & Kirchmayer, 2019; Stöber, Kotzian, & Weißenberger, 2019b).

Previous accounting literature analyzed the involvement of accounting in the design and use of these tools. For instance, previous literature shows how risk maps allow the visualization of risk (Jordan, Mitterhofer, & Jørgensen, 2018; Themsen & Skærbaek, 2018). However, the accounting literature has paid little attention to how the use of these tools could have been affected by the growing relevance of compliance systems, even when previous literature in other areas, such as ethics has already

suggested it (Rodríguez-Domínguez, 2020). For that reason, this dissertation focuses on the role of accounting in the construction and management of legal risk as explained in the following section.

4. Objectives

This thesis relies on the premise that compliance systems are following the risk management structure to promote a compliance and ethical culture. Consequently, the general objective of the dissertation is:

General objective: To study the role of accounting in the construction and management of risk in the age of compliance.

This general objective is disaggregated into three key objectives.

As abovementioned, compliance systems must be proven effective to enable companies to avoid their criminal liability. Following Power's (1997) thesis of the *audit society* we consider that assurance is a suitable accounting tool to prove the effectiveness of these systems. This suggestion aligns with the proposal of the Criminal Code to perform periodic audits. Compliance is an emergent topic in the accounting literature (Stacchezzini *et al.*, 2020), and the attention to this phenomenon is yet limited. Particularly there are few studies exploring the role of assurance as an instrument to provide trust in compliance systems. Therefore, the first key objective of the dissertation is:

- **Key objective 1:** To characterize the accounting literature on the assurance of compliance systems as a tool to prove their effectiveness

This key objective is addressed in chapter 2, that provides a state of play of accounting research about the assurance of compliance systems. These systems are not a novel

disconnected phenomenon, but the transformation of internal control systems. Therefore, the literature review also covers prior accounting research not only on compliance systems but also on interrelated precedent ones, such as, internal control, risk management systems and the internal audit function.

The effectiveness of compliance systems is determined by the effectiveness of the tools employed to monitor managers and employees' behavior. Several tools seek to manage risk in the age of compliance, for instance, risk maps, whistleblowing, or code of ethics. However, the main risk in the age of compliance is related to managers and employees' actions. Therefore, firms have to employ tools to influence their behavior. Consequently, the second key objective of the dissertation is:

- **Key objective 2:** To analyze the influence of compliance systems in the role of code of ethics within organizations

The code of ethics is the most common business tool offering guidance to employees and managers about how they should act (Stöber, Kotzian, & Weißenberger, 2019a). Chapter 3 develops this key objective. We used content analysis adapting previous set of items (Wood, 2000; Wood, Whyatt, Callaghan, & Svensson, 2019) by including specific ones about compliance. We compare the coverage of topics in the codes of ethics of Spanish firms before and after the criminal code reform.

Non-compliance risk is the most relevant risk in the age of compliance. Risk is understood by organizations as uncertainty absorption, in other words, the likelihood that a business decision could create a non-desired side effect (Knight, 1921). Recent regulations, like SOX, expanded risk from the financial domain to the whole organizational context. As a consequence of this expansion two types of risk can be differentiated: operational risk (related with financial issues), and organizational risk (related with the process and behaviors in developing the work) (Power, 2005). Following Beck's (1992) thesis of the *risk society*, modern risk is a social construction characterized by uncertainty. Accounting

can participate in the construction and management of risk (Themsen & Skærbæk, 2018). Thus, the third key objective is:

Key objective 3: To analyze the role of accounting in the construction of modern risk

This key objective is addressed in Chapter 4 through a case study that explores the role of accounting in the construction of risk in the field of water reuse. Water reuse is relevant in terms of compliance because it can lead to potential side effects related to felonies included on the Criminal Code, such as felonies against public health and, or the protection of the environment. Furthermore, policymakers have considered water reuse as an instrument to fight water scarcity and protect the natural environment. Mobilizing Miller's (1992) idea of *calculative space*, the analysis provides insights about the construction of risk related to water reuse risk management systems.

Based on these key objectives the dissertation is structured as follow:

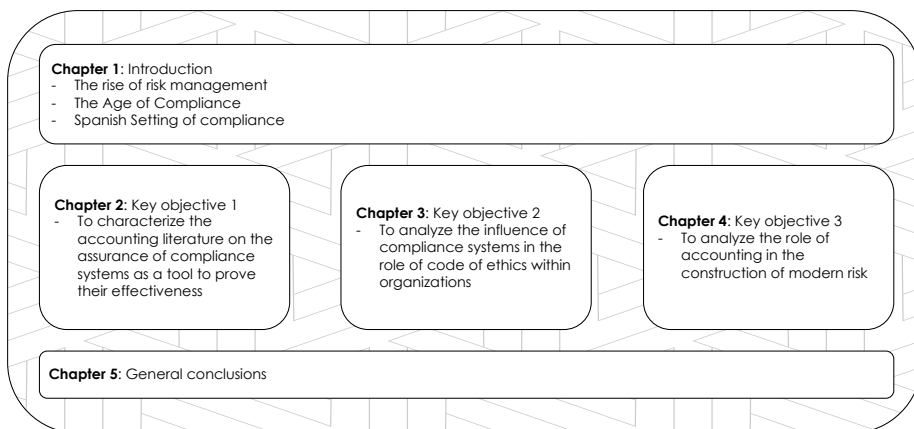
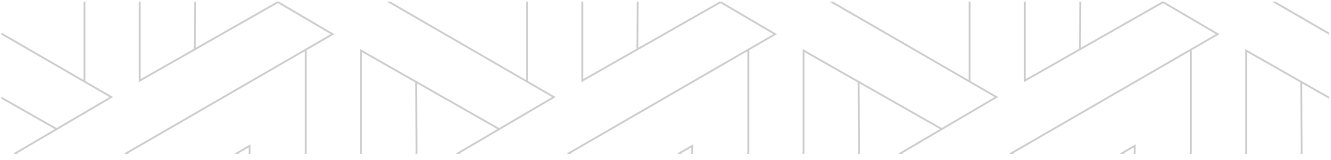



Figure 3 - Thesis dissertation structure





Chapter 2 - Assurance on compliance systems: Characterizing the (limited) accounting literature on an emerging phenomenon

Abstract

During the last decade, governments have responded to the growing number of financial and non-financial corporate scandals by requiring the implementation of compliance systems. These systems are associated to previous corporate mechanisms aiming to monitor the adequate supervision of individual's conduct, such as internal control or risk management systems. Assurance can be used as a means to provide evidence of compliance systems' effectiveness, which is a paramount requirement for firms to avoid legal responsibilities. Despite the growing attention in the practice domain, the assurance of compliance and other related systems is only emerging as an object of academic enquiry. This chapter reviews how the accounting literature has considered this novel phenomenon. More specifically, it maps prior research by considering whether and how the four institutionalizing levels of Power's (1997) system of financial auditing knowledge are observable in the studies about the assurance of compliance systems as an emergent practice. Our results indicate that research on the topic is limited and unevenly covers the four levels. Finally, the chapter suggests that compliance systems resulted from the redefinition of the notion of internal control as conceived by SOX.

Keywords:

Assurance, risk management, compliance system, control system, internal control, literature review

1. Introduction

Since the Enron collapse, important noncompliance scandals have continued to take place (Quick & Sayar, 2020). The cases of Carillion and BHS in the UK (Mustoe, 2020), Dieselgate in Germany (DW, 2020) or FC Barcelona in Spain (Cooper, 2017) are some infamous examples of recent scandals in Europe. This recurring problem led stakeholders and shareholders to demand governments to regulate (un)ethical organizational behaviors (Kaptein, 2009; Soh & Martinov-Bennie, 2015). To address this concern, some states introduced guidelines and recommendations on compliance systems as control programs focusing on the promotion of a corporate ethical culture to reduce corruption (UN, 2011, 2012). A compliance system is “an internal mechanism implemented by companies to detect and prevent criminal conduct from occurring within the corporation” (Wellner, 2006, p. 500). For example, those systems have been conceived as instruments to comply with the Spanish Criminal Code, the Italian Decreto Legislativo or the UK Anti-Bribery Act. The relevance of compliance system is evidenced by the attention to compliance issues paid by different international organizations. For instance, the United Nations in the Article 26 of its Convention against Corruption requires that organizations should be held responsible for the illegal acts committed by their employees (UN, 2004). At the EU level, Directive 2014/95 obliges companies to report compliance-related information within their non-financial statements (Quick & Sayar, 2020). Likewise, the OECD, the World Bank or International Transparency published different guidelines on compliance systems (Abdullah *et al.*, 2016).

Compliance systems stemmed from the enactment of the SOX (Institute of Internal Auditors, 2008). SOX requires companies (i) to publish a statement on the adequacy of organizational structures and internal control procedures of financial information and (ii) to have this statement assured by an external independent

auditor (Foster *et al.*, 2013). SOX applies to all firms listed in the US market regardless of the country in which they are headquartered (Gal & Akisik, 2020). Other states, such as the UK, Italy, Germany, South Africa or Spain, developed similar legislation (Nieto-Martín, 2008). Unfortunately, the United Nation has alerted that both SOX control processes and assurance failed in reducing misconducts within organizations and their significant negative social, economic and environmental impacts (UN, 2012).

In the European context, compliance systems are not strictly mandated but the government promotes their implementation (Matus-Acuña, 2013). For example, in the Spanish and Italian cases, a firm can avoid the criminal liability for the felonies committed by its managers or employees on its behalf by providing evidence of the effectiveness of its compliance system in fostering an ethical culture within the organization (Criminal Code, 1995; Quick & Sayar, 2020; Spanish Public Prosecutor, 2016). The aim of compliance systems aligns with Power's (2007) observation that this sort of systems are turning organizations *out-inside*, whereby companies implement a preventive strategy as a form of *risk-based regulation*. Under this approach, firms draw on self-oversight and reporting to comply with norms and laws through the development of internal procedures that displace the conventional command and control role of government, blurring the distinction between regulating and organizing. For this purpose, compliance systems rely on prior internal control and risk management systems, understood as “norms of behaviour to which organizational agents are held to account by their own managerial commitment to self-regulation” (Power, 2007, p. 40).

Although companies must prove the effectiveness of their compliance systems to avoid responsibility arising from their employees' illegal acts (Sieber, 2013), the legislation fails to clarify when a compliance system can be regarded as effective (Nieto-Martín, 2013). The assurance of these systems has been

considered a useful mechanism to provide confidence about their efficacy. However, Chile is the only country that specifically requires the assurance of compliance systems by an external provider (Matus-Acuña, 2013), while firms where assurance is not legally mandated may voluntarily hire this service to enhance confidence about the effective implementation of their systems. Several standards have been issued on how to establish effective compliance systems (e.g. ISO 19600 and ISO 19601) or other related systems designed to avoid fraud (e.g. ISO 37001) that can work as a benchmark for external parties assuring their functioning (Domenech, Zayas, & Legido, 2017).

Due to the growing relevance of the assurance of compliance systems at the professional level and its significant implications for companies nowadays, this study aims to explore the interest of accounting research in investigating this emergence phenomenon. For that purpose, the chapter reviews the accounting literature on the assurance of compliance systems and its interrelated and precedent systems (i.e., internal control or risk management systems). Despite their growing importance, the accounting literature about these systems (Stacchezzini *et al.*, 2020) and particularly about their assurance is yet scarce (D'Silva & Ridley, 2007; Mihret & Grant, 2017; O'Dwyer, 2011; Spira & Page, 2003). We mobilize the four levels that according to Power (1997) constitute the *system of financial auditing knowledge* to characterize accounting literature on this topic. In his book *The audit society: Rituals of verification*, Power (1997) argues that in the same way these levels of knowledge provide the structure for the development and reproduction of financial auditing practice, the emergence of further assurance services will *replicate* a similar process to develop their legitimacy and promote trust. In this chapter, we refer to these levels as 'institutionalizing levels': (i) official knowledge, (ii) training and education; (iii) the practice itself, and (iv) the practice evaluation (Power, 1997).

The results show that Power's four levels are unevenly reflected in the literature. Most of the studies focus on three (official knowledge, practice, and its evaluation) out of the four levels, with just one study addressing the training and education of practitioners in developing assurance engagements. Additionally, we observe that the literature reflects an academic debate about how firms are reorientating (re-designing) their control out-inside, resulting in the increase of reporting and assurance of their control systems. Ethical concerns and firms' beliefs about the necessity to comply with existing regulation are gaining a relevant position within organizational internal systems.

This investigation contributes to accounting research on the assurance of corporate internal systems in two ways. On the one hand, this chapter provides a state of play of the accounting literature on control systems assurance based on Power's (1997) institutionalizing levels. On the other hand, the review suggests that compliance systems can be considered the outcome of the internal control redefinition process proposed by Power (2007). This process results from the integration of three corporate instruments that already existed to manage the risk of fraud, corruption, and non-compliance with the law (i.e., risk management systems, internal control systems, and the internal auditing function).

This research is organized as follows. Section 2 conceptualizes compliance systems, explaining how this control mechanism has gained momentum in comparison with existing control systems. Section 3 describes Power's institutionalizing levels of assurance practice. The methodology followed to identify the papers are presented in section 4, the analysis of which is provided in section 5. Finally, section 6 concludes.

2. Compliance systems

Power (1997) developed the notion of *audit explosion* to explain how new forms of auditing were “mobilized in the name of ideals of transparency, efficiency, and accountability, and the scope of [traditional financial] auditing and inspection was expanded in many regulated sectors” (Power, 2007, p. 42-43). Power's premise was challenged in the 2000s by Spira & Page (2003), who suggested that the auditing role of inspectors was over when his book was published because organizations were already promoting a compliance culture from within in that moment. Power will take on board this idea and, in his book, *Organized uncertainty: designing a world of risk management* coined the term *audit implosion*, in contrast to his previous notion of *audit explosion*. Audit implosion refers to the reform of organizations' internal control with the aim of making them auditable and inspectable (Power, 2007). This paradigmatic change required the replacement of the traditional regulatory framework of auditing with a risk-based approach to guarantee the efficacy of internal control. This process represents the out-inside turn of organizations governance, in which auditors' opinion become part of a larger risk assessment process, creating a mode of self-observation and self-discipline where internal control systems play the role of *control of the control* (Power, 2007). In this new setting, firms are governed from the inside through proactive compliance-based strategies (Spira & Page, 2003).

The implementation of the first internal control systems that was mandated by the Cadbury Code (1992) represents the origin of the out-inside turn of organizational governance in the 1990s. While the Cadbury Code did not associate internal control with risk management systems; the Turnbull Report, issued in 1999, fostered the integration of both systems into one, thereby initiating the redefinition of corporate internal control (Fraser & Henry, 2007; Spira & Page, 2003). At this stage, internal control and risk management systems focused on financial issues, and

nonetheless they often failed to avoid corporate scandals (Spira & Page, 2003). The growing social demand for greater trust and confidence driven by this failure transmuted internal control systems into a matter of public concern that was debated in the civic space as an instrument to avoid fraud and corporate misconducts, related to not only financial but also non-financial aspects (Power, 2007). As Power (2007) explained, the tasks arising from this new capacity reflect the out-inside turn of internal control systems and represent their evolution into an autonomous field of expertise inside the organizations, especially after the enactment of SOX. In this context, transparency and accountability became key problematics that organizational control is supposed to address

The internal control system required by SOX incorporates the management of fraud and corruption risks in its functioning (Carter, Phillips, & Millington, 2012; Gal & Akisik, 2020; Power, 2007). The process of redefining and integrating both systems represented a new *grand narrative* of risk control (Power, 2007). As a consequence of the integration of internal control and risk management systems, the Committee of Sponsoring Organizations of the Treadway Committee (COSO) adjusted its original framework in 2003 (originally published in 1991) to support firms in implementing internal control systems (COSO, 2013a). The COSO Framework describes the principles to design a proper internal control system encouraging the integration of a risk perspective into internal control systems to achieve “strategic, operational, reporting, and compliance objectives” (p. 8). According to Power (2007), firms were now governed through the application of a collection of norms and codes prescribing control routines and tests that set the ethical tone of organizations to internalize a risk-based model of self-governance that takes the risks demanded by society into consideration to increase its trust and confidence. Among the procedures that are needed for the implementation of a proper risk management system, Young (2020) mentions “a risk

management culture; a risk management strategy; risk management structures; and risk management process" (p. 6). Other authors and international organizations consider that these systems require the application of policies and procedures to identify, analyze and assess the organization's level of exposure to risks (Francis & Armstrong, 2003; Neu, Everett, & Rahaman, 2015; OECD, 2013; Power, 1997).

This chapter postulates that compliance systems further result from the redefinition and integration of internal control and risk management systems by extending organizations oversight into a risk management approach that focuses on compliance and ethical issues (Abdullah *et al.*, 2016; Minaldo & Periot, 2019). Compliance systems gained higher prevalence worldwide in the beginning of the 2000s (Stacchezzini *et al.*, 2020). Compliance refers to the "the management of regulatory risk – the risk that rule or regulation will be broken" (Adams, 1994, p. 279). Compliance systems establish an accountability framework through which employees are "required to standardise their behaviour within the domains of ethics and legal compliance" (Stacchezzini *et al.*, 2020, p. 890). These systems operate as one of the key elements to oversee, detect and prevent corruption within organizations (Abdullah *et al.*, 2016; Quick & Sayar, 2020; Stacchezzini *et al.*, 2020). Implementing compliance systems or similar internal control mechanisms is not mandatory at the EU level, but in the legislative frameworks of several European Member States they represent the only available choice for firms to avoid the potential liability arising from some of the crimes committed by their employees (Decreto Legislativo 231, 2001; Spanish Public Prosecutor, 2016). These European regulations require that compliance systems have to perform a twofold function: (i) to create a corporate ethical culture and, consequently, avoid the commission of fraud, and (ii) to protect the firm from potential legal liability in the event of a fraud. To achieve the latter, firms are required to prove the effectiveness of their compliance systems (Sieber, 2013), being assurance

usually considered a proper means to provide evidence on their effectiveness (World Compliance Association, 2020). As mentioned above, despite the growing relevance of compliance systems in the European context¹ and the Criminal Code recommends assurance to prove compliance systems effectiveness, the revision of compliance systems by a third independent party is not compulsory.

The process to assure compliance systems can be supported by the internal audit function. Spira & Page (2003) suggest that the internal audit function was also subject to the out-inside process and was affected by the integration of internal control into risk management. Although the internal audit function emerged initially as a mechanism focusing on anti-fraud and financial transaction verification, later its scope broadened into other areas, including compliance (Kotb *et al.*, 2020). Some studies highlight that the internal audit function performs independent and interrelated assurance and consulting roles that enhance the activities of the organization and make the risk management, control and governance process more effective (Al-Akra, Abdel-Qader, & Billah, 2016; D' Silva & Ridley, 2007; Young, 2020). For example, the *Australian Securities Exchange Corporate Governance Council's Principles and Recommendations* require firms lacking an internal audit function to disclose the processes of their risk management and internal control systems (Soh & Martinov-Bennie, 2015). This situation reflects how the internal audit function is involved in the *out-inside* turning of organizational governance proposed by Power (2007) (i.e., firms seek a self-oversight to assure the effective functioning of their systems). Under this perspective, internal auditors “have been repositioned and moved from checkers to risk management facilitators and consultants” (Fraser & Henry, 2007, p. 404).

¹ Directive 2014/95 now requires the disclosure of information about corruption, human rights or bribery matters, besides the assurance of the non-financial statement (Quick and Sayar, 2020)

In summary, following Power's (2007) thesis of the *audit implosion*, we contend that the development of both compliance systems and its assurance represents the latest step in the evolution of internal control as a self-governance mechanism; thereby framing them within the grand narrative of risk control. The following section briefly outlines the origin of assurance and the theoretical framework used to analyze the literature.

3. The assurance of compliance systems

The current conception of assurance services in the corporate world has its roots in the continuing cases of mismanagement in the US during the 1990s. These scandals led the Special Committee on Assurance Services of the American Institute of Certified Public Accountants (AICPA) to publish, in 1997, the *Report of the special committee on assurance services*, also known as *the Elliott Report* (after the Chairman of the Special Committee). This document is considered to be the foundation of professional assurance services (Elliott, 1995; 1997) as a mechanism to increase trust in corporate disclosures different from financial statements. According to the International Federation of Accountants (IFAC), assurance services consists of “an engagement in which a practitioner expresses a conclusion designed to enhance the degree of confidence of the intended users other than the responsible party about the outcome of the evaluation or measurement of a subject matter against criteria” (IFAC, 2010, p. 6). However, the subject matter under evaluation in an assurance service is not limited to the revision of the information itself, but it can also cover the revision of the systems that support and monitor its production. The Elliott Report highlighted that the emergence of these new assurance services responds to the need of adjusting the audit tradition to a “wider marketplace” that expands the limits of revision services to emergent corporate practices, such as non-financial information

and internal control systems to detect wrongdoings (Elliott, 1997). This broader conception of assurance services has been recently recognized in its colonization of other areas, such as sustainability reporting. For instance, Accountability's standard AA1000AS indicates that the scope of assurance services might cover "organization's public disclosures about its performance as well as underlying systems, data and processes [...]" (AccountAbility, 2008, p. 23).

From a research perspective, the idea of *wider marketplace* aligns with Power's notion of *audit explosion* (1997), the expansion of auditing to other fields different from financial information that need "a publicly auditable self-inspecting capacity" to provide trust to users and stakeholders (p. 67). To give a proper answer to the growing social requirement of trustworthy information, auditing must (i) create auditable performance measures (i.e., *make things auditable*) and (ii) use its previous auditing experience in the domain of financial information to gain credibility in the new market areas (Power, 1997). Although assurance engagements tend to be associated with the revision of sustainability reports (Deegan, Cooper, & Shelly, 2006), the assurance of compliance systems can be considered the latest step of the *audit explosion* suggested by Power (1997). Firms are requested to prove the effectiveness of compliance systems to avoid the potential legal liabilities resulting from their employees' misconducts (Sieber, 2013). The revision of internal control and compliance systems opened a new market for auditors and assurance providers, with a new interest in the evaluation of risks. As Power (2007) notes "[a]s internal control systems became more complex, auditors set themselves the task of focusing on where key risks exist and on how they are controlled and mitigated in these systems" (p. 44).

Power's (1997) identify four levels that account for the institutionalization of auditing. He argued that the combination of these four levels constitutes the *system of financial auditing knowledge*. The first level, *official knowledge*, relates to the

generally accepted routines, rules, regulations or procedures and behaviors adopted by auditors to provide trust to financial information. The second level, *training, and education*, refers to the mechanisms through which all procedural knowledge is disseminated to practitioners, including different levels of education, training, and socialization. The third level, *practice*, focuses on the audit practice itself, through which particular audit judgements are made and written, following the negotiation between the auditor and the auditee about the information that must be revised. Finally, the fourth level, *practice evaluation*, refers to the feedback mechanisms that evaluate the previous levels in terms of quality control. Practice evaluation is not an independent level, and it is usually driven by external pressures with the aim of providing “comfort about comfort production” (Power, 1997, p. 39).

The four levels are related to the monitoring and verification of organizational models to respond to the need of generating trust and confidence. Power contends that new emergent forms of assurance will attempt to replicate the four levels so that they could eventually become institutionalized practices, following the pattern of financial auditing. This chapter analyzes the specific case of the assurance of compliance systems as an emergent practice that could be mimicking the levels suggested by Power for financial auditing. As these elements are starting to be materialized in the practice field, traces of them might be observable in the academic literature on the assurance of compliance system. Therefore, we will explore these elements in the accounting literature on the assurance of compliance systems and other related systems, such as risk management systems, internal control systems, and the internal audit function. Analyzing the attention given to these elements allows us to characterize the literature on this matter and identify potential avenues for future research.

4. Methodology

Selection of papers

Following the aim of this study, we identified accounting articles focusing on the assurance of compliance systems in international relevant academic journals. As we have already discussed, we propose that compliance systems are the latest step in the evolution of the set of internal corporate mechanisms aiming at detecting irresponsible acts and commission of frauds within firms, such as internal control and risk management systems, as well as the internal audit function. We performed specific searches in the Scopus database limited to accounting or auditing journals for each of the following combinations between the term *assurance* and the keywords (i) compliance system, (ii) internal control, (iii) risk management, and (iv) internal audit function. As explained above, internal control systems required by SOX are considered the origin of compliance systems; so, we performed an additional search using *assurance* and *Sarbanes-Oxley* as keywords. This initial search yielded a list of 150 papers.

We filtered the initial list of articles to discard those that did not focus on the assurance of the abovementioned systems. This filter was applied by establishing three criteria. First, only research articles were considered and, therefore, some accounting education case studies were excluded. Second, relevant papers must conceive compliance and its related systems as mechanisms to guarantee companies' compliance with law or regulation, as explained in section two. Finally, articles must conceive the assurance of these systems as a practice provided by an external and independent provider. The initial list of papers was filtered by reading their abstracts to identify those that met the three criteria. In case of concerns, they were discussed with a second researcher to decide the final inclusion of a paper. This filtering process yielded a final list of 19 articles.

Analysis of the selected papers

Once the articles were selected, we analyzed them to assess whether they cover any of the four institutionalizing levels that Power (1997) identified in the field of financial auditing. One of the researchers read carefully all the articles to identify their potential connections to the four levels. For instance, Mihret & Grant (2017) studied whether the internal audit function helps to improve the effectiveness of risk management, control and governance processes. They concluded that the internal audit function avoids failures more effectively when it cooperates with the external auditor. This paper provides some insight about the level of practice, as it explains the general practices and processes followed by assurance providers, in this case, regarding the collaboration between the internal and external auditors. The analysis was more complex for other studies that could simultaneously address several levels. For example, Kelly & Tan (2017) studied the internal control system and analyzed how the disclosure and assurance of material weakness can improve a firm's investment potential evaluation. This research enlightens about the level of practice because the report of material weakness refers to a "particular audit judgements made and written" (Power, 1997, p. 37) that highlights potential risks within the internal control system. But this paper also provides evidence of practice evaluation because the authors conclude that assuring material weakness has a positive effect on the evaluation of the firm by investors (i.e., this positive outcome provides an assessment of the adequacy of the assurance performed). The initial analysis was further revised and discussed by the authors until consensus was reached. The information resulting from this process was stored in an excel file, indicating the levels (if any) addressed in each paper. A summarized version of this file is provided in Appendix 1.

5. Literature review

An initial observation resulting from the analysis is that the accounting literature about the assurance of compliance and related systems is scarce. The final sample consists of 19 papers and only one of them studies specifically the assurance of compliance systems. This is consistent with previous research highlighting the lack of accounting literature on compliance systems and their assurance (Mihret & Grant, 2017; Steinbart, Raschke, Gal, & Dilla, 2018). This situation might be partly explained by the coexistence of three related systems - internal control, risk management and compliance systems - which functions seem to be intertwined. However, as Figure 4 shows, if we consider the assurance of compliance and related systems together, a growing academic interest in the area is observable during the last years.

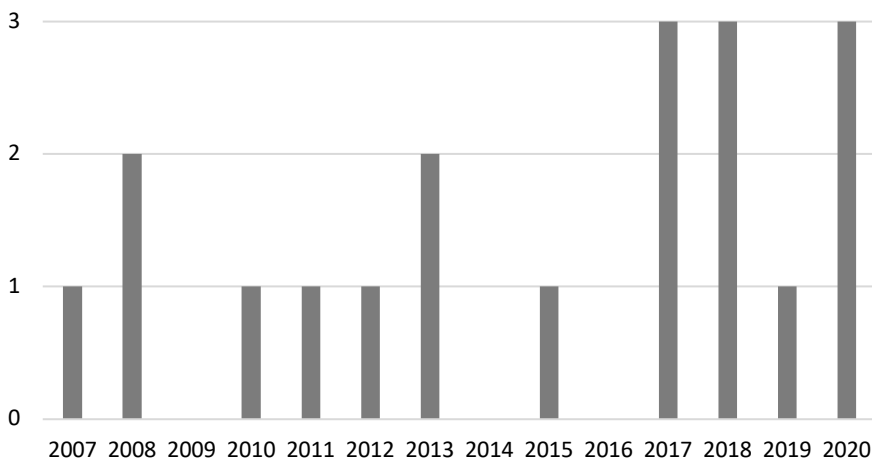


Figure 4 - Number of articles per year

Table I describes the distribution of papers according to their journal. The figures indicate the lack of a journal of reference for the topic. *Managerial Auditing Journal*, with three articles, is the journal that pays more attention to this issue. The following outlets in terms of the number of publications, with two papers, are *The Accounting Review*; *Accounting, Organization and Society*;

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Auditing: A Journal of Practice and Theory and *European Accounting Review*. These figures provide some evidence suggesting that the topic is more likely to be covered by these journals.

Table 1 – Number of articles analyzed, per journal

Journal	# Papers published
Accounting Horizon	1
Accounting Review	2
Accounting, Auditing and Accountability Journal	1
Accounting, Organizations and Society	2
Advances in Accounting	1
Advances in Accounting Behavioural Research	1
Auditing: A Journal of Practice & Theory	2
European Accounting Review	2
International Journal of Auditing	1
Journal of Accounting, Ethics and Public Policy	1
Journal of Contemporary Accounting and Economics	1
Managerial Auditing Journal	3
Sustainability Accounting, Management and Policy Journal	1
Total	19

The following subsections discuss the four institutionalizing levels proposed by Power (1997) and provide some insights into the state of play of accounting literature about the assurance of compliance, internal control, and risk management systems, as well as the internal audit function in relation with complying with the law. The main purpose of this analysis is to explore the

academic coverage of different levels that should lead to the institutionalization of this form of assurance.

Official knowledge

Power (1997) uses the concept of *official knowledge* to refer to routines, rules, regulations, procedures, or behaviors of auditors to provide trust in financial information. Studies included in this level discuss the development and application of standards as a proper way to disseminate the assurance practice. A distinction should be made regarding the use of standards in assurance engagements. While some standards are expected to guide assurance providers when performing their tasks (e.g., ISAE 3000), others provide prescriptions on the design, production and/or implementation of the object that is being assured. These second set of standards, as the IFAC (2006) notes, operates as suitable criteria against which assurance providers can evaluate the adequacy and functioning of the systems and processes under revision. All the studies considering the development and application of standards in the assurance process focus on the second set of standards. The literature highlights the lack of standards on (i) the assurance of compliance systems (Quick & Sayar, 2020), (ii) how to report about the internal control system (Foster *et al.*, 2013) and (iii) the design of the internal audit function (Mihret & Grant, 2017). For example, Foster *et al.* (2013) compare the availability of standards on how to report about the internal control in France and the US. The authors conclude that, although the mandatory information requirements are similar in both countries, there is no standard available on how to produce that information by French firms, in contrast to the situation in the US, where companies and assurers can follow the PCAOB Standard AS2, which is based on the COSO Framework. It is noteworthy that none of the papers studied the use of assurance standards guiding the work of assurers (e.g., ISAE 3000). A potential reason for this could be that these assurance standards

are quite broad and applicable to any kind of assurance engagement different from financial auditing.

To sum up, as concerns *official knowledge*, the studies focus generally on the type of standards that are available: assurance standards (standards used to guide the assurance process) and information standards (standards used to confirm that the information included, or the systems is designed correctly), being the later the most widely type analyzed by accounting research.

Education and training

Power (1997) understands the level of *education and training* as the mechanism through which all procedural knowledge is disseminated among practitioners. To the best of our knowledge, only one paper addresses this level. Armitage (2008) surveys auditing professors in 2000 and 2005 to analyze the most common topics within auditing courses, some of which are relevant for the assurance of internal control mechanisms. In 2000, the most common topics were *types of sources of evidence, audit risk, standard audit report, materiality and understanding internal control structure*. Compared to 2000, the topics which attention declined the most in 2005 were *assurance services, information systems auditing, computer auditing techniques, governmental/NGOs auditing standards and legal liability*. By contrast, the topics which attention increased were *reports on internal control, fraud awareness, working papers, auditing history and fraud techniques*. Armitage attributed the growing interest of internal control reporting between 2000 and 2005 to the enactment of SOX. However, it seems surprising that the importance of internal control reports increased while the relevance of assurance services decreased.

Practice

Power (1997) conceives practice as the process through which audit judgements are made and written, following the negotiation between the auditor and the auditee about the reports or control systems included in the revision. In this section, we analyze whether and how the selected papers cover the mechanisms used and the information reported by the assurance professionals when revising compliance and other related systems to reach a conclusion about their effectiveness. The studies dealing with these issues focused on three topics: (i) the process for assuring internal control according to SOX requirements, (ii) the implementation of new technological mechanisms, and (iii) the negotiation and relationship between the internal and the external auditors.

Concerning SOX internal control assurance requirements, Fraser & Henry (2007) analyze how firms assess risks and establish risk management controls and procedures, as well as the interaction between the internal and external auditors. They consider that the existence of a self-assessment system of risk is regarded as a part of an effective risk identification. They conclude that the assessment of an acceptable level of risk (i.e., risk appetite) could be determined by both the internal and external auditors in accordance with the organizational risk culture. Other three papers focus on the use of financial auditing tools (e.g., detection of material weakness) in the assurance of internal control systems. In this regard, Lin, Pizzini, Vargus & Bardhan (2011) studied the assurance of materials weakness reports on internal control systems. The authors note that material weakness represents a “deficiency, or combination of deficiencies, that results in a reasonable possibility that a company's control will fail to prevent or detect a material misstatement of an account balance or disclosure” (p. 289). These authors studied the role that the internal audit function and the external assurance of the control system play in the disclosure of material weaknesses based on SOX Section 404. They found that third-party assurance

enables more effective identification of material weaknesses. Similarly, Kelly & Tan (2017) highlighted the relevance of revising material weaknesses when assuring internal systems due to its positive influence on enhancing investment potential evaluation of the firm. Finally, Elder, Akresh, Glover, Higgs & Lijegren (2013) analyzed the use of continuous sampling by auditors concerning SOX requirements of internal control assurance. They reported that auditors focus on risk assessment and use analytical procedures rather than quantitative tests when assuring reports on internal control.

As regard to the application of technological advancements, only one paper (Masli, Peters, Richardson & Sánchez, 2010) studied the potential benefits of using monitoring technologies to support corporate internal control processes. They concluded that the implementation of this technology can operate as a proper tool to assess and manage internal control risks, and consequently support the work of both, internal and external assurance.

Finally, the topic that has attracted most attention in the literature is the negotiation and relationship between the internal and external auditors throughout the process of revising the assurance of internal corporate systems. The majority of studies considered that the internal audit function is a key component when collaborating in risk management and organizational governance (Čular, Slapničar, & Vuko, 2020; Kelly & Tan, 2017). Čular *et al.* (2020) considered this collaboration as a “win-win solution” (p. 16) that improves the effectiveness of their work and decreases the external auditor's fees. In a similar vein, Lin *et al.* (2011) concluded that third-party assurance is more likely to detect material weaknesses when the assurors coordinate their work with the internal audit function. This finding aligns with the result of Steinbart *et al.* (2018), who also report that the collaboration and cooperation with the internal audit function can increase the detection of information security incidents before any harm is caused. Yet, some papers suggest that the

reliance of the external auditor on the work of the internal audit function is contingent on its actual role in the design and implementation of control systems. Gramling, Schneider & Bhaskar (2018) analyzed the role of internal auditors in providing consulting services to management in the design of the internal control system and whether this task affects the detection of material weaknesses. The authors found that internal auditors involved in the design of control systems are less likely to detect material weaknesses. Therefore, they suggest that the internal auditor should focus on providing advice to management in the design of the control system or provide assurance about its correct functioning, but not on both. Similarly, one of the auditors interviewed by Fraser & Henry (2007) noted that internal auditors are no longer organizational checkers but they now act as risk management facilitators and consultants. Gramling *et al.* (2018) remarked the implication of these findings for the external assurance practitioners as they usually rely on the work of the internal audit function. This conclusion is also shared by Mihret and Grant (2017), who found that the internal audit function can contribute to facilitating the work of external practitioners in assuring internal systems. They considered that the internal audit function is "a risk management technology that provides ex ante advisory and ex post assurance services by identifying areas of an organization that could lead to failure to achieve organizational goals" (p. 700-701), concluding that external auditor's confidence on the internal audit is lower when the internal auditor has participated in the design of the internal control system. Finally, the study of Anderson, Christ, Johnstone & Rittenberg (2012) focused on the trade-off between the internal audit function and the external auditor regarding the revision of the internal control system. Their findings indicate that the size of the internal audit function is smaller when the internal audit function is outsourced to external auditors, because it is not associated to other activities in the firms. Nevertheless, internal auditors need to assimilate their role of internal providers of

assurance and compliance in the process of risk mitigation (Anderson *et al.*, 2012).

Finally, Decaux & Sarens (2015) named the combination of internal audit and external assurance with the name of combined assurance. This practice consists of three lines of defense: management functions in relation with risks, the function that oversees the risk, and the verification of the well-functioning of the two previous lines of defense (Decaux & Sarens, 2015). The authors considered that both the internal audit function and the external auditor participate in the third line of defense as a “complementary assurance mechanism” (p. 61). However, they concluded that the success of the internal and external auditors will depend on the risk management system’s maturity, only if organizations “understand the concept of combined assurance and the benefits of implementing such an approach by creating awareness of the concept” (p. 73).

In summary, the literature examining this level provides insight about three relevant topics in relation to the practice of auditors: (i) the usefulness of common financial accounting instruments, like risk assessment or material weaknesses, in providing assurance about the internal control systems after the implementation of SOX, (ii) the fact that the assurance of risk management systems requires continuous attention and consequently *monitoring technologies*, and (iii) the role of the internal audit function, paying special attention to the synergies when internal auditors work together with external auditors.

Practice evaluation

The last institutionalizing level refers to the feedback mechanisms by which auditors “provide comfort about comfort production” (Power, 1997, p. 39). Studies referring to the assessment of the work of the assurance provider do not focus on the direct evaluation of the process, but rather on its consequences. Particularly, we can differentiate two types of studies depending

on the type of consequences: (i) legal implications and (ii) broad indirect outcomes. The extent to which some outcomes have positive consequences provides an assessment of the work carried out by the assurance professional when revising corporate systems.

In terms of legal implications, Jennings, Pany & Reckers (2008) analyzed the perception of judges on the assurance of internal control systems as a mechanism that reduces misstatements in financial reports. Although their results suggest that judges trust in strong (i.e., assured) internal control systems, the most relevant factor they consider is the absence of previous failures in the system. They concluded that judges value the assurance of internal control systems to prove their effectiveness if a firm is subject to a judicial process.

Regarding the potential broad indirect outcomes of the assurance process, Power (1997) considered that practice evaluation is related to external pressures. In effect, some papers underscore the relevance that corporate systems assurance has for investors. Quick & Sayar (2020) analyzed how assurance can affect bank directors' investing decisions. They performed an experiment and concluded that both the assurance of compliance systems and the provision of an independent statement by an audit firm are positively associated with banks directors' perceptions and decisions. Kelly & Tan (2017) found that the external audit of the disclosure of material weakness in internal control has a positive effect on investment options. Similarly, Hoang & Phang (2020) described that the combined assurance of the internal and external auditor promotes the credibility of the reporting on control systems and helps to restore investors perceived reliability.

Assurance has also a positive effect on the perception of other stakeholders. For instance, Akisik & Gal (2017) studied the trust of consumers in firms when their internal control systems are assured. They concluded that assuring internal control improves the

efficiency and effectiveness of corporate operations and compliance with laws. Finally, assurance also has positive outcomes for the work of auditors. Ji, Lu & Qu (2018) analyzed the potential relationship between the assurance of internal control and audit fees. They considered that assuring internal control reports could contribute to reducing high audit fees. A stronger internal control, if externally assured, will increase confidence in its functioning, thereby reducing audit fees. Bailey, Collins & Abbott (2018) undertook a similar study about risk management systems. They analyzed whether the revision of the risk management system by an external auditor could be related to lower audit fees. They argued that the coordination between operating personnel and external auditors is key for the effectiveness of the risk assessment process. In so doing, external auditors are more promptly and efficiently guided during the control-testing phase of the audit and consequently, audit fees are reduced.

6. Conclusion

This chapter is motivated by the increasing relevance of compliance systems in the Anglo-Saxon and European contexts and the lack of previous research about how auditors perform risk assessments and develop their audit strategy and materiality judgements when assuring corporate control systems (Elder *et al.*, 2013). For that reason, we analyze existing accounting research about the assurance of compliance systems following Power's thesis of the *audit expansion* (Power, 1997).

This chapter makes a twofold contribution to previous accounting research. First, the analysis of the existing literature allows us to propose that compliance systems are the result of a growing reliance on firms' internal control mechanisms as tools to avoid misconducts and guarantee the compliance with the law. The concept of compliance system is not widespread among

accounting researchers. However, we can observe how the accounting literature reflects how firms are reorientating their control systems and integrating them within risk management systems (Decaux & Sarens, 2015; Fraser & Henry, 2007), thereby reconfiguring all organizational governance mechanisms with a risk-based approach (turning out-inside, e.g., using the internal audit function as a self-oversight mechanism). However, rather than compliance systems, accounting academia still tends to use terms such as internal control systems, risk management systems or internal audit function to refer to the mechanisms implemented to comply with regulation. The profusion of terms used to refer to similar systems aligns with Power's (2007) thesis about the *grand narrative* of internal control as a redefinition of risk management and internal control systems with the supervision and advice of the internal auditing function to evaluate and manage the risk of fraud, corruption, and non-compliance. Consequently, compliance systems can be considered the latest mechanism resulting from the self-regulation or self-observation trend that started with the enactment of SOX. Specifically, this evolution is motivated by the role of internal control in how organizations monitor, prevent and detect fraud (Carter *et al.*, 2012; Power, 2007). Power (2007) refers to this process as the *audit implosion*, whereby the disclosure of information is no longer the most relevant control instrument, but the establishment of internal governance mechanisms to reinforce corporate compliance with external requirements.


Second, we provide an overview of how the accounting literature has analyzed the assurance of compliance, internal control, and risk management systems, as well as the internal auditing function as an instrument that provides trust in their effectiveness. This literature is still scant as revealed by the limited number of papers addressing the topic. Although compliance and similar systems and their assurance are gaining relevance as a professional practice, the academic attention to this phenomenon is still rare (D'Silva & Ridley, 2007; Mihret & Grant,

2017; Steinbart *et al.*, 2018). Additionally, by analyzing the scarce literature in the assurance field in the light of the four levels of Power's (1997) system of financial auditing knowledge, we find that the literature has paid disparate attention to the institutionalizing levels. The analysis suggests a limited attention to the level of training and education, while the other three levels seem to gain more traction. This finding calls for more research exploring the assurance of compliance and internal systems. Particularly, it highlights the need for studying how assurance practitioners are trained about how to perform their work when revising these systems.

We note that most of the papers have a quantitative methodological approach. Most of them focus on identifying statistical relationships between the assurance and several factors, without providing strong theoretical reasoning supporting those associations (Ji *et al.*, 2018; Lin *et al.*, 2011; Masli *et al.*, 2010; Steinbart *et al.*, 2018). For that reason, further research should try to be informed by sound and developed theoretical frameworks (Čular *et al.*, 2020; Elder *et al.*, 2013). With that aim, it could be helpful to use qualitative methods to analyze the assurance of compliance systems to complement and explain quantitative findings and shed light on the assurance of compliance and related systems. In this regard, the application of engagement research methodologies (O'Dwyer, 2011) could contribute to answering still open questions, such as "How does management gain assurance that risk management and control objectives are achieved?" (Anderson *et al.*, 2012, p. 188).

Finally, some limitations could have affected our research. First, some papers dealing with our topic of interest may have been omitted due to the combination of keywords or because they are published in journals from other disciplines beyond accounting. We tried to mitigate this concern by performing different searches. Second, the identification of Power's (1997) level of knowledge could be subjective. To increase the objectivity, we systematize the analysis by creating a file in which

evidence from the papers was gathered to support the identification of levels. Additionally, in case of doubts, a discussion was held by the authors until consensus was reached.



Chapter 3 - The unexpected influence of law on codes of ethics: from ethical culture to legal risk avoidance

Abstract

This chapter problematizes the influence of law on the role of codes of ethics within companies (i.e., what firms seek to achieve when implementing these documents). Codes of ethics provide prescriptions about employees' expected behavior to, ideally, foster an ethical corporate culture. Recent legislative changes have sought to reinforce this role; but companies may alter the use of codes towards a less ethical purpose due to their increasing legal implications. To explore this issue, the chapter focuses on the specific setting of Spain where, consequent to the Criminal Code reform, codes of ethics are considered an integral part of corporate compliance systems to avoid the criminal liability of the firm personhood. The chapter reports that this legislative change influenced the implementation of code of ethics and distorted their original intended ethical role. We found that the Criminal Code reform fostered the publication of codes of ethics and drove significant changes in their content. Post-reform codes make direct references to legal issues and try to transfer the responsibility of unethical illegal actions directly to their employees. Therefore, companies are actually using codes as shields to protect the firm personhood from legal risks rather than as instruments to promote an ethical culture.

Keywords

Code of ethics, ethics culture, compliance, risk management

1. Introduction

Code of Ethics (hereafter CEs) are organizational documents that provide prescriptions to foster the expected behavior of employees when performing their tasks (Kaptein & Schwartz, 2008). CEs aims to create an ethical culture by defining the corporate values and principles that should guide how employees behave and interact. Companies started to publish CEs in the 1970s as a voluntary response to the growing social concern about firms' wrongdoings (Cressey & Moore, 1983). The wave of corporate scandals in the beginning of the 2000s (e.g. Enron or WorldCom) created a similar setting in which firms were under an increasing pressure to behave ethically (Power, 2013). Governments have responded to this situation by promoting the implementation of CEs. Recent legislative changes suggest and, in some cases, even mandate firms to have a CE to foster an ethical culture and awareness within organizations (Power, 2013). For instance, in the US, the 2002 SOX requires certain companies to issue a CE as part of their compliance programs to minimize the likelihood of risks related to unethical behavior (Canary & Jennings, 2008). Firms must design and implement risk management systems to reduce the likelihood of that risk materialization (Power, 2013; Power *et al.*, 2009). The implementation of risk management systems requires the development of control policies, as well as authority structures or training programs (Power, 1997). In this regard, Treviño, Butterfield & McCabe (1998) suggest that the CE works as an effective policy instrument to monitor the ethical conduct of employees and managers, as well as to prescribe sanctions for unethical behavior.

This chapter problematizes the influence of legislation on the role of CEs and explores how their legal promotion shapes the way in which firms actually use them. To study this question, we focus on the Spanish setting to investigate whether and how recent legal changes supporting the implementation of CEs might affect the

purpose that companies aim to achieve when issuing these documents. In the aftermath of the 2008 financial crisis, numerous corruption and fraud cases in Spanish firms came to light. According to Fernández-Feijoo (2009), dysfunctional ethics, principles and values within companies led to this situation. Partly to address that issue, the Spanish Parliament modified the Criminal Code in 2010 and 2015. The 2010 reform included the criminal liability for the firm personhood (i.e. a company can result criminally liable when an employee or manager commits an illegal act benefitting the firm if the organization lacks a proper supervision system (Clemente & Álvarez, 2011). The second modification delineates the actual implications of the criminal liability by defining specific sanctions for the firm personhood in case of being found guilty. The most relevant issue of the legal reform is the requirement of implementing a supervision, monitoring and surveillance system (Criminal Code, 1995, art. 31 bis), commonly known as compliance system. These systems must be aimed at fostering an ethical culture within firms to avoid the perpetration of criminal acts by employees or managers when performing their duties (Spanish Public Prosecutor, 2016). The Criminal Code (art. 31 bis) states that a firm can avoid criminal liability if it proves that it had an effective compliance system in place when an employee committed the illegal act. Several instruments are being suggested as effective elements of compliance systems to promote an ethical conduct, such as whistleblowing channels, compliance/ethics training and, also codes of ethics (Remišová *et al.*, 2019; Stöber *et al.*, 2019b). In fact, both the Spanish Public Prosecutor (2016) and the Spanish Association of Compliance (Asociación Española de Compliance, ASCOM, 2017) recommend the use of CEs to guide employees and managers' behavior. Nonetheless, we argue that the suggestion of including CEs as part of corporate compliance systems increases their legal implications and could end up in perverting their actual role within companies: firms may use CEs to avoid the legal risk stemming from the potential illegal

acts perpetrated by employees and managers rather than to foster an ethical culture within the organization.

Assuming that the prescriptions and guidelines included in CEs reflect the intended goal that companies seek to achieve with their implementation, the chapter analyses the content of CEs adopted by the largest listed companies in Spain before and after the Criminal Code reform in 2010. Following previous papers studying the content of CEs (e.g., Lefebvre & Singh, 1992; Wood, 2000; Wood *et al.*, 2019), we used thematic content analysis to investigate whether CEs are implemented to (i) promote an ethical culture and mitigate employees' unethical behavior, and/or (ii) to avoid being criminally liable for the illegal misbehavior of corporate employees.

The analysis shows that the 2010 Criminal Code reform influenced the implementation of CEs in two ways. First, it fostered the publication of these documents and increased the number of prescriptions that are related to the Criminal Code reform. Second, although we observed a growth in the number of references to ethical issues, the increase is more pronounced when analyzing items seeking to avoid firms' criminal responsibility, such as explicit mentions to employees or managers' liability and their legal prosecution should they commit an illegal act, as well as the inclusion of prescriptions mandating the acceptance of the CE. Overall, firms implemented and adjusted their CEs to allocate the responsibility of actions directly to their employees, particularly when those actions could originate potential legal risks.

This chapter contributes to previous literature on CEs by showing that legislation can obstruct the intended ethical purpose of CEs. Legal changes could induce incentives to use CEs as risk avoidance tools to evade criminal liability rather than their original expected implementation as instruments to foster an ethical corporate culture. In this regard, this study shows that companies use their CEs as a shield to transfer the responsibility

of their employees' and managers' unethical acts directly to the individual that performed it.

The remainder of this chapter is structured as follows. After this introduction, section 2 provides a brief description of the Spanish legislative setting in which CEs are being suggested as part of corporate compliance systems. Section 3 reviews previous literature analyzing the role and content of CEs. Section 4 describes the methodology, while section 5 presents the results. Finally, section 6 sets out the conclusions, limitations, and future research.

2. The Spanish legislative setting

The motivation for the Criminal Code reform in 2010 was the promotion of an ethical culture within firms to avoid the unethical behavior of employees and managers that led to corruption and fraud cases during the 2008 crisis (Nieto-Martín, 2018). The most significant change of the 2010 reform was the inclusion of the criminal liability for the firm personhood (see Figure 5). Prior to that reform, firms could not be held criminally liable for the misconducts of their employees or managers that benefit the organization. Although companies could be civilly liable, the criminal responsibility was attributed to the individual or individuals that committed the felonies. After the reform, organizations can also be held criminally liable when a felony is committed by its employees if it fails to fulfill the following requirements: (i) the organization implemented a “organisational and management models that include measures of surveillance and control appropriate to prevent criminal offences” (p. 18), known as compliance system; (ii) the organization established an autonomous control body that verifies the functioning of the system; (iii) the employee or the manager had to fraudulently circumvent the system to commit the crime and; and, (iv) if the

monitoring body detected the violation, it should have punished the perpetrator (Criminal Code, 1995; art 31 bis).

The Criminal code was again revised in 2015 because there were still some issues that required to be defined so that the criminal liability of the firm personhood could be effectively considered in judicial processes. This second reform determined specific sanctions for the firm personhood as some of the most common legal penalties (e.g., prison) are inapplicable in this case.

The Criminal Code specifies that the mere existence of a compliance system does not suffice to avoid the criminal liability. The organization must prove that the system was also adequately designed and implemented. The Spanish Supreme Court, in its first compliance-related sentence, reinforces that requirement. It stated that companies should prove the efficacy of the supervision, monitoring and surveillance system implemented to prevent crimes (Spanish Supreme Court, 2016). This requirement created an uncertain environment given that companies were unaware of how to demonstrate its fulfillment (Gómez-Jara, 2017). To clarify this point, the Public Prosecutor published Circular 1/2016 providing guidance on how the system should be designed and implemented to create an ethical culture within the organization. Some of the instruments or tools proposed as part of these systems to prevent crimes are risk maps, whistleblowing or CEs (Spanish Public Prosecutor, 2016).

Accounting in the age of compliance

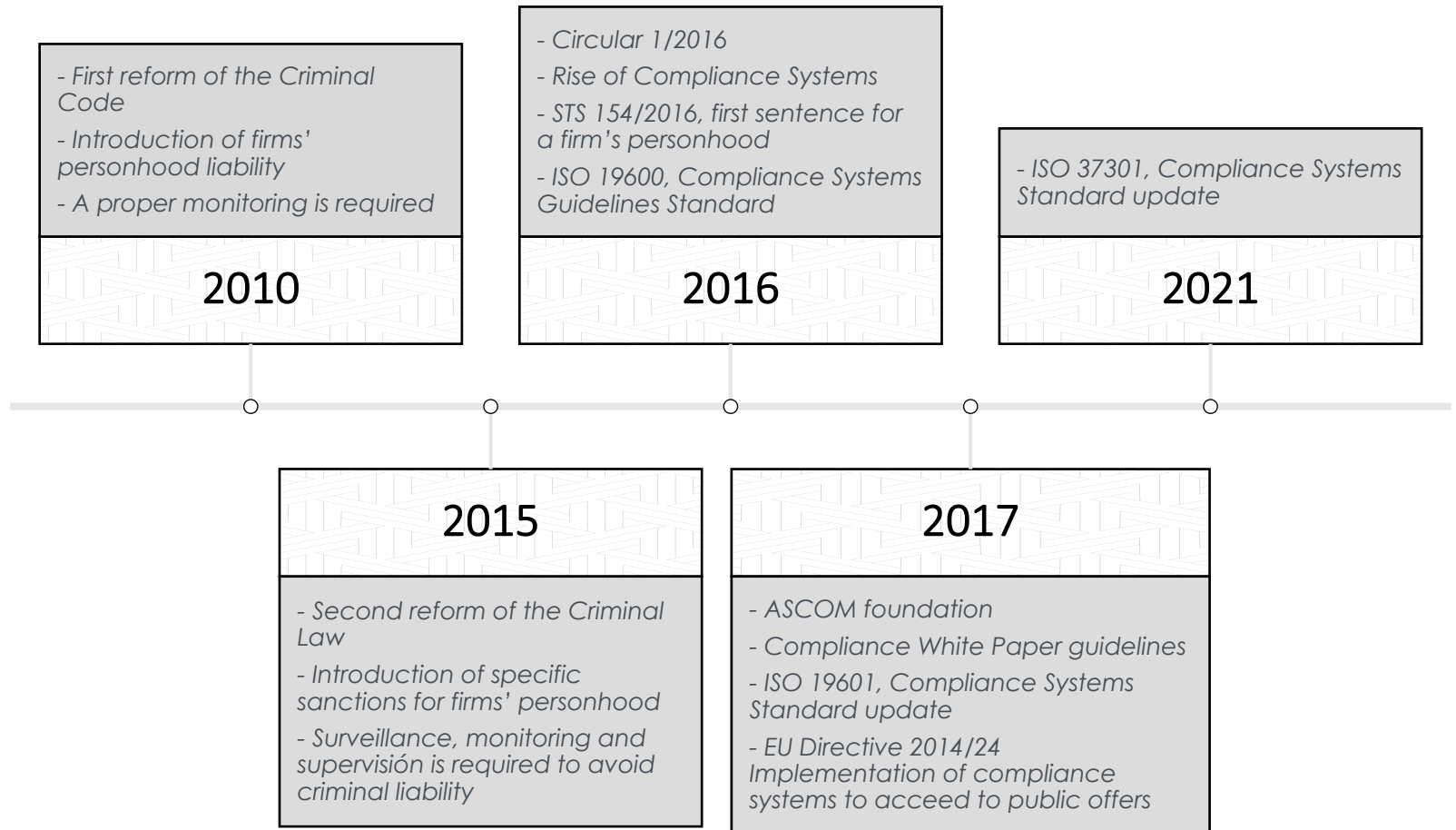


Figure 5 - Compliance Systems context evolution in Spain

To help firms in designing and implementing compliance systems, new private initiatives appeared. In Spain, the most important one is the Spanish Compliance Association (ASCOM). ASCOM certifies individuals as compliance officers through the *Certificate of Expert in Compliance*. The association also published a *Compliance White Paper*, published in 2017, that provides guidelines for implementing compliance systems. Other organizations have also developed different assurance standards to certify the performance of compliance systems both at the international (e.g., ISO 19600, *compliance management systems*) and national levels (e.g., UNE-ISO 19600, *compliance criminal systems* and 19602, *compliance financial systems*).

After this description of the Spanish setting that will be the focus of the study, the next section provides a review of previous literature about the role and content of CEs.

3. The content and role of codes of ethics.

Previous studies on business ethics highlighted that organizations implement CEs to minimize employees' unethical behavior (Erwin, 2011; Kaptein, 2004, 2011; Lefebvre & Singh, 1992; Singh, 2006, 2015), as part of the development of their risk management systems (J. S. Adams, Tashchian, & Shore, 2001; Stöber *et al.*, 2019b). Indeed, Remišová *et al.* (2019) maintain that CEs are the most influential component of ethical programs to foster an ethical managerial conduct. Francis & Armstrong (2003) concluded that "an effective ethics policy and an aspirational Code will both minimize the risk a non-compliant action can occur" (p. 384). For that reason, the effective implementation of CEs could minimize risks and protect the firm personhood when an illegal act is committed (Francis & Armstrong, 2003). The Criminal Code, the Public Prosecutor and the Compliance Association suggest the implementation of CEs as a proper tool

to avoid the firm personhood liability. In this regard, Canary and Jennings (2008) conclude that CEs can promote an ethical behavior by “emphasizing legal requirement, regulatory procedures and formal control of behavior” (p. 277).

Departing from the conceptualization of CEs as a component of corporate risk management systems to foster an ethical corporate culture, this study explores whether law changes their actual role within firms through the analysis of their content and evolution. Previous literature on the content of CEs dates back to the early 1980s with the seminal paper of Cressey & Moore (1983). The authors analyzed the CEs of US companies after the outbreak of corporate scandals in 1975. These scandals highlighted the need for more stringent legislation and the growing relevance of ethics within the business world. The authors classified the content of CEs into four areas: policy, authority, clarification of principles and compliance procedures. They found that, although firms paid attention to ethical issues, there was a bias in the selection of the areas that they covered. They tended to focus on unethical issues that could reduce their economic performance, while they overlooked unethical areas that may increase their profit (e.g., pollution, health & safety).

Since Cressey & Moore (1983) study, other authors have analyzed the content of CEs in different settings. For instance, Mathews (1987) investigated the CEs of American companies and found that they mainly covered topics related to conducts and actions that employees performed on behalf and against the firm. Based on this finding, the paper concluded that the legal prescription was the reason to produce CEs. Using a similar research method, Lefebvre & Singh (1992) examined the CEs of the largest Canadian companies and observed that most of them contained items about conduct against the firm. Specifically, CEs included prescriptions on the integrity of books and records, as well as on policies dealing with conflicts of interest. This result suggests that the main purpose of CEs was to protect corporations. More recently, Canary & Jennings (2008) analyzed

the organizational discourse in CEs before and after the US 2002 Sarbanes-Oxley implementation. They found that post-SOX CEs usually disclose organizational values such as honesty, integrity, or respect at the beginning of the code, while the rest of the content focuses on complying with the legal prescriptions.

Wood (2000) studied whether the institutional setting in which the firm operates influences the content of CEs. He analyzed the CEs of the Australian largest companies and compared his results to those of Mathews (1987) on US firms, and Lefebvre & Singh (1992) on Canadian companies. Overall, he found that the CEs of Australian, US and Canadian organizations contained similar prescriptions. Particularly, conduct against the firm was the mostly addressed category. So, all companies seemed to use these documents as instruments to protect them and guarantee their survival. Grounded on a similar premise, Wood *et al.* (2019) conducted a comparative analysis of the codes issued by the 50 largest companies in Australia and the UK. They conclude that CEs became more prescriptive in both settings as indicated by the increase in the number of items reported compared to Wood (2000).

Based on the assumption that the evolution of the organizational culture and its environment might shape the content of CEs through time, Singh (2006) compared his results on the CEs of 80 Canadian companies in 2003 to the findings of Lefebvre & Singh (1992). He observed that conduct against the firm was the most common type of recommendation in both years. However, there was a significant increase in the number of references to some specific aspects, such as ethical and legal responsibilities, environmental affairs and laws, as well as compliance procedures. Singh (2015) studied the CEs of the largest Canadian firms in 1992 and 2012. He concluded that Canadian corporations' CEs became more prescriptive, suggesting "a desire to avoid uncertainty in addressing possible ethical dilemmas" (p. 382).

After revising previous studies on the content and role of CEs, in the following section we describe the methodology that we applied to analyze the content of Spanish firms' CEs.

4. Methodology

Sample selection

Since the reforms of the Spanish Criminal Code in 2010 and 2015, organizations without an effective compliance system in place might be held liable for the illegal acts committed by its employees or managers if the crime benefits the firm. Due to the difficulty and high cost of implementing those systems, their design should be determined considering the so-called *proportional criterion*, which states that the sophistication and complexity of the compliance system depend on the size of the firm (Spanish Public Prosecutor, 2016). This criterion aligns with the results of previous research on Spanish CEs that reported that large firms with high growth opportunities were more likely to issue a CE compared to the others (Rodríguez-Domínguez, María García-Sánchez, & Gallego-Álvarez, 2009). Consequently, the largest companies are expected to have more developed and advanced compliance systems. Therefore, we study the CEs of companies included in the Ibex 35 Index, which covers the largest listed corporations in the Spanish Stock Exchange based on their market value.

To evaluate whether the 2010 and 2015 Criminal Code reforms affected the use of CEs by firms, we compared their content before and after they were approved. Specifically, we collected the most updated version of the CEs at two moments: (i) by the time we started this study in 2018 (i.e., three years after the 2015 reform); and (ii) in 2008 (i.e., two years before the first reform of the Criminal Code in 2010).

Due to the construction methodology of the Ibex 35, the companies listed in the index change through time. Thus, our population covers the 45 firms that were included in the index either in 2018 or 2008. We obtained the 2018 version of the CEs from corporate webpages for all the companies, except for one. So, the 2018 sample comprises 44 CEs. For 2008, we collected the CEs in two ways. First, we used the online tool Wayback Machine that provides a historical archive of webpages. In some cases, the name of firms varied due to mergers or acquisitions. In these instances, we identified the companies that existed in 2008 (e.g., Gas Natural and Unión Fenosa merged in 2009 as Gas Natural-Fenosa, and this new firm was later renamed as Naturgy in 2018). We were able to access the 2008 CEs of nine firms from its website. We contacted the remaining firms to request the 2008 version of their CE through email. Four companies wrote us back providing their codes, while two firms replied indicating that they published their first CE after 2010. So, the 2008 sample comprises 13 CEs. The sample size of the 2008 sample is similar to that of previous research on CEs in Spain before 2010 (Rodríguez-Domínguez et al., 2009), which indicates that the implementation of CEs was not a common practice in Spanish companies before 2010.

Content analysis

Following previous research on the content of CEs content analysis (Lefebvre & Singh, 1992; Singh, 2006; Wood, 2000), we performed a thematic content analysis to evaluate the purpose for which firms implement their CEs. To carry out this analysis, we adapted the list of thematic items used by Wood *et al.* (2019), which is the latest version of an instrument applied in previous studies (e.g., Cressey & Moore, 1983; Lefebvre & Singh, 1992; Mathews, 1987; Wood, 2000). We made the following adjustments to the instrument for our analysis. First, we considered 6 out of the 7 categories of items in the list: (1) conduct on behalf

of the firm, (2) conduct against the firm, (3) laws and conventions cited, (4) types of compliance and enforcement procedures, (5) penalties for illegal behavior, and (6) general information. We omitted the category of "governmental agency/commissions" because it focuses on competition agencies or commissions that have little relevance in the Spanish context. Second, Wood *et al.* (2019) disaggregated some of the items that were used in Wood (2000). However, we opted to keep them aggregated given that they were related with similar stakeholders. For example, Wood *et al.* (2019) differentiated between *employees-health* and *safety* issues, and we maintained them in the same item as in (Wood, 2000). Third, we adjusted some items and included additional ones to further appreciate the influence of the Criminal Code reform on the CE content. We classified the items in the third category considering whether the laws and conventions mentioned in the documents refer to crimes for which organizations can be held liable according to the Criminal Code. In the fourth category, we also added two specific items on (i) *whistleblowing*, because it is one of the most common risk management tools; and (ii) *compliance officer* (according to the proportional criterion, the officer or department in charge of the compliance system according to the Spanish Public Prosecutor). Appendix 2 provides the final list of items and the corresponding set of keywords for the content analysis. To validate the selection of keywords, one of the authors performed a manual coding of six CEs through in-depth reading. This coding was later reviewed by another author. Afterwards, we codified the content of the same six CEs using the software Atlas.ti using the list of keywords to verify its suitability. We corroborated that the results remained similar to the ones obtained in the manual coding. Therefore, we uploaded all CEs and retrieved the sentences including the keywords. We carefully read the excerpts in which the sentences appeared and determined their match with the corresponding item. In case of disagreements, they were discussed between the authors until consensus was reached.

5. Findings

We present the results of the analysis for each category of items in set of tables. Each table provides the percentage of companies which CEs include an item relative to the total sample.

Conduct on behalf of the firm

Table II summarizes the results of the *conduct on behalf of the firm* category. This category refers to actions that can occur when employees act in the name of the company (Wood et al., 2019). The inclusion of recommendations on the employees' obligations provides them with guidelines on how to act when facing potential risks.

The most cited items in 2008 are *relations with customers/suppliers* (92.31%), *environmental affairs* (92.31%) and *relations with consumers* (76.92%). All items in this category increased from 2008 to 2018, with the exception of *relations with customer/suppliers* and *product quality and environmental affairs*, which remained the most highly mentioned item (95.45%), yet with similar percentages to 2008. The items with the most significant increases from 2008 and 2018 are *relations with employees-health, safety, relations with governments, relations with investors* and items related with legally oriented requirements, such as *giving of bribes, kickbacks, gifts/entertainment, acceptance of bribes, kickback gifts/entertainment* and *payments or political contributions to governments or government's official or employees*. These items are related to crimes mentioned in the Criminal Code. Therefore, the overall trend suggests that companies are paying more attention to employees' actions that may result in legal crimes with implications for the firm personhood.

Table II - Conduct on behalf of the firm

Item	2008	2018
	n=13	n=44
1.1. Relations with governments	38.46%	70.45%
1.2. Relations with customers/suppliers	92.31%	75.00%
1.3. Relations with employees-health, safety	69.23%	93.18%
1.4. Relations with competitors	23.08%	75.00%
1.5. Relations with foreign governments	0.00%	2.27%
1.6. Relations with investors	38.46%	63.64%
1.7. Civic and community affairs	46.15%	56.82%
1.8. Relations with consumers	76.92%	84.09%
1.9. Environmental affairs	92.31%	95.45%
1.10. Product safety	7.69%	15.91%
1.11. Product quality	69.23%	63.64%
1.12. Payments or political contributions to governments or government's officials or employees	69.23%	79.55%
1.13. Acceptance of bribes, kickbacks, gifts/entertainment	69.23%	81.82%
1.14. Giving of bribes, kickbacks, gifts/entertainment	46.15%	77.27%

Conduct against the firm

The *conduct against the firm* category focuses on actions that can occur against the firm's interest (Wood *et al.*, 2019). Table III reports the results for this category and shows that *conflict of interest* is the most cited item, both in 2008 and 2018.

It is remarkable that straight references to *legal responsibility* decreased, while *ethical responsibility* remained highly cited in

both years. At first, this result could show that the ethical orientation of the CEs increased as a consequence of a greater commitment to the creation of an ethical corporate culture. However, an in-depth analysis reveals that this is not the case. On the one hand, we analyzed the codes in which *ethic* were highly cited, and we observed that the growth of mentions to ethical responsibility may not reflect an actual increase of firms' ethical awareness. Some firms modified the title of their codes from 2010 to 2015 from *code of conduct* to *code of ethics* (e.g., Endesa, Naturgy), with a consequent increase in the inclusion of *ethi-related* words. Additionally, some of the codes in which *ethic* has the highest frequency explicitly explain that CEs implementation seeks to address legal requirements to avoid the criminal liability. For instance, Iberdrola 2018 CE states that “[It]responds to the new prevention requirements set in relation to the criminal liability of the firm personhood” (p. 3). Similarly, Enagas 2018 CE specifies that it aims to “prevent and detect risks of non-compliance, including those related to the criminal liability...” (p. 5). On the other hand, the results indicate that direct references to *legal responsibility* have been replaced by specific allusions to specific aspects that may result in legal responsibility, such as *divulging trade secrets/proprietary information, intellectual property rights, integrity of books and records, employees' harassment and discrimination, insider trading information, or retaliation against others*. These items cover crimes that are explicitly included in the Criminal Code and for which the firm personhood could be held liable; thereby suggesting that organizations are concerned about the potential legal consequences deriving from those acts.

Finally, it is interesting to remark that most firms relate *retaliation against others* to situations when an employee or stakeholder reports an in-compliant behavior against the code, specifying that the firm would take no action against the whistleblower.

Table III - Conduct against the firm

Item	2008	2018
	n=13	n=44
2.15. Conflict of interest	100.00%	95.45%
2.16. Divulging trade secrets/proprietary information	61.54%	77.27%
2.17. Insider trading information	38.46%	54.55%
2.18. Personal character matters	0.00%	0.00%
2.19. Other conduct against the firm	7.69%	9.09%
2.20. Integrity of books and records	15.38%	63.64%
2.21. Legal responsibility	30.77%	11.36%
2.22. Ethical responsibility	53.85%	61.36%
2.23. Employee harassment and discrimination	46.15%	63.64%
2.24. Relations with fellow employees.	15.38%	6.82%
2.25. Intellectual property rights	53.85%	68.18%
2.26. Use of corporate assets	76.92%	70.45%
2.27. Drugs including alcohol	0.00%	0.00%
2.28. Communicating with the media and outside publics	7.69%	2.27%
2.29. Post-employment obligations	0.00%	0.00%
2.30. Participation in the political process	0.00%	0.00%
2.31. Retaliation against others	23.08%	40.91%
2.32. Use of computer software and or hardware	15.38%	22.73%
2.33. Truth in communication including advertising	23.08%	47.73%

Laws cited

In this category, we analyze the frequency of references to laws in the CEs. Table IV shows that direct mentions to the *Criminal Code* and to *laws referencing illegal acts listed in the Criminal Code* increased from 2008 to 2018.

Table IV - Laws cited

Item	2008	2018
	n=13	n=44
3.34. Laws referencing illegal acts listed in the Criminal Code	14.29%	27.27%
3.35. Rest of laws	9.62%	14.77%
3.36. Criminal Code	0.00%	38.64%
3.37. Sarbanes-Oxley	0.00%	2.27%

Although laws related to conducts listed in the Criminal Code are more cited than other laws in both years, the difference is larger in 2018 compared to 2008. Explicitly mentioning the Criminal Code and other laws related to crimes included in it indicates that companies intend to foster the awareness of their employees on the actions that might entail legal risks for the firm personhood.

Types of compliance/enforcement procedures

The types of compliance and enforcement procedures are classified in three different categories: (i) internal – oversight; (ii) internal – personal integrity, and (iii) external (Wood, 2000). Compliance or enforcement procedures covered in the *internal – oversight* category relates to those individuals, committees and/or procedures within the organization in charge of monitoring the behavior of the rest of employees. Items in the *internal – personal integrity* category refer to individuals, committees, or procedures that employees can consult regarding any ethical matter related to their own actions or those performed by others. Finally, the *external* category focuses on procedures, individuals or agencies outside the firm that are responsible of supervising the ethical conduct of firms'

employees and managers. The existence of an effective compliance and enforcement process indicates that companies are willing to comply with the Criminal Code requirements. In contrast to this, if firms lack this process, the publication of CEs will be considered purely symbolic (Singh, 2006).

Table V provides information on the supervisors or committees responsible for compliance and enforcement procedures. In 2008, this responsibility fell in an *internal-oversight individual supervisor* in most of the companies (30.77%) and *internal-personal integrity watchdog committee* (30.77%). By contrast, in 2018, an *internal watchdog committee* is in charge of the internal compliance and enforcement procedures regarding *oversight* (56.82%) and *personal integrity* (38.64%). As we analyzed the largest companies in Spain, establishing a compliance department or an internal watchdog committee is more common than having an individual supervisor.

Law influence on code of ethics

Table V - Types of compliance and enforcement procedures

Item	2008	2018
	n=13	n=44
Internal - oversight		
4.38. Supervisor surveillance	30.77%	40.91%
4.39. Internal watchdog committee	23.08%	56.82%
4.40. Internal audits	7.69%	31.82%
4.41. Read and understand affidavit	30.77%	65.91%
4.42. Routine financial budgetary review	0.00%	2.27%
4.43. Legal department review	15.38%	11.36%
4.44. Other oversight procedures	0.00%	13.64%
4.45. Whistleblowing	46.15%	88.64%
4.46. Compliance officer	0.00%	13.64%
Internal - personal integrity		
4.47. Supervisor	7.69%	36.36%
4.48. Internal watchdog committee	30.77%	38.64%
4.49. Corporation's legal counsel	0.00%	0.00%
4.50. Other (in firm)	0.00%	0.00%
4.51. Compliance affidavits	15.38%	36.36%
4.52. Employee integrity	0.00%	0.00%
4.53. Senior management role models	0.00%	0.00%
External		
4.54. Independent auditors	0.00%	6.82%
4.55. Law enforcement	0.00%	2.27%
4.56. Other external	0.00%	2.27%
4.57. Codes mentioning enforcement or compliance proceed	23.08%	43.18%

The table also shows that aspects related to the Criminal Code requirements gained more attention. In this category, there are three specific compliance procedures, one per category, that confirm that firms are concerned with avoiding criminal liability: *Read and understand affidavit* (oversight), *Compliance affidavits* (personal integrity) and *codes mentioning enforcement or compliance proceed* (external) received higher attention in 2018 compared to 2008. This finding indicates that firms are concerned about the consequences of their employee's and managers' illegal acts. Companies seek to make their employees and managers aware of the effects of their illegal acts, making specific references to their responsibility as individuals. The three compliance procedures seem to work as a safeguard that aims to guarantee that employees know that they must abide by the CE. For that reason, some companies require newly hired employees to sign that they commit to the CE. For instance, Altadis CE states that: "Actual and new employees could be required to sign a affidavits document recognizing that they have read the Code that they accept and will comply with its content. All employees should have to comply with this requirement periodically" (Altadis 2018, CE, p. 108). Atresmedia or IAG published the CEs after the legal reform, and they also demand new employees to sign the acceptance of complying with the code. This requirement suggests that firms may be using their CEs to transfer the responsibility of unethical actions to their employees.

The significant increase in *whistleblowing*, *other oversight procedures* and *compliance officer* from 2008 to 2018 also points to the influence of the Criminal Code in the content of Codes. These items are key elements of compliance systems and are required by the Spanish Public Prosecutor as tools to evaluate the actual performance and usefulness of these systems. In fact, some firms, such as Santander, states that its CE is the keystone element of its compliance system, and mandates employees and managers to be aware of its content.

Penalties for illegal behavior

Penalties are an important part of an effective CE (Erwin, 2011). In this category, we analyze the sanctions set by organizations when employees fail to comply with the CE (Wood, 2000). We found that Spanish CEs refer to *sanctions* in general, without explicitly mentioning particular penalties that fall within the main items of the category (e.g. “noncompliant breaches will be analyzed by the Ethics Committee, resolved and, if where appropriate, sanctioned in accordance with the proper internal and external regulations”, DIA 2018 CE, p. 15), for that reason we coded them as *other internal penalty*, (this item increased from 53.85% in 2008 to 70.45% in 2018). The second most common sanction is *legal prosecution*, which was included in 15.38% of CEs in 2008. However, in 2018 some firms mentioned both the internal sanction and the legal sanction together in their CEs (e.g., “noncompliant with the General Code (CEs) may result in labor penalties and administrative or criminal penalties that may also result from it”, Santander 2018 CE, p. 26). The percentage of codes mentioning them rose to 70.45% and 29.55% in 2018, respectively. The third penalty prescribed in some CEs is *dismissal/firing* (7.69% in 2008; 18.18% in 2018).

The explicit recognition that companies will initiate legal prosecutions in some cases (the second most mentioned penalty in 2018 CEs) indicates that firms intend to transfer the responsibility of actions to the individuals that have performed them. Therefore, companies may seek to take preventive actions to elude the potential responsibility of the crimes resulting from their employees and managers illegal actions. By reporting them directly to the justice, employees and managers will be punished through a criminal procedure.

Table VI - Penalties for illegal behavior

Items	2008	2018
	n=13	n=44
5.58. Reprimand	0.00%	0.00%
5.59. Fine	0.00%	0.00%
5.60. Demotion	0.00%	0.00%
5.61. Dismissal/firing	7.69%	18.18%
5.62. Other internal penalty	53.85%	70.45%
5.63. Legal prosecution	15.38%	29.55%
5.64. Other external penalty	0.00%	9.09%

General information

The last category (table VII) focuses on general concepts that provide insights on the role of CEs. The “need to maintain the corporation’s good reputation” is mentioned in a similar proportion (around 50%) both in 2018 and 2008. Nevertheless, *Letter/introductory remarks from the president/CEO/Chairperson of the board* was cited by 18.18% in 2018, compared to a 7.69% in 2008.

Table VII - General Information

Items	2008	2018
	n=13	n=44
6.65. Need to maintain corporation’s good reputation	53.85%	52.27%
6.66. Letter/introductory remarks from the president/CEO/chairperson of the board	7.69%	18.18%
6.67.1. Code specific to Spain	7.69%	15.91%
6.67.2. Code specific to international context	7.69%	6.82%

It is interesting that the items *Code specific to the Spanish context* and *Code specific to the international context*, were referenced by 15.91% and 6.82% in 2018, and 7.69% and 7.69% in 2008, respectively. The specific reference to the context where CEs are applicable could reflect firms' concern about the importance to define the liability borders of the firm personhood; for example, by excluding international suppliers.

6. Discussion and conclusion

This chapter problematizes the influence of legislation on the use of CEs. We address this issue by focusing on the Spanish setting where the 2010 Criminal Code reform introduced the criminal liability of the firm personhood. Firms can avoid this responsibility if they prove that they have established an effective compliance system to monitor and manage the likelihood of their employees to behave unethically. CEs are useful tools for that purpose (Francis & Armstrong, 2003). We characterize CEs as instruments to ideally foster an ethical culture to mitigate employees' illegal acts. Departing on this premise, we explore whether the law affected the role of CEs within the firms.

Our analysis of the CEs of the largest listed firms in Spain shows that the number of firms publishing CEs significantly rose after the 2010 Criminal Code reform. Although the implementation of CEs was common among large international firms prior to the 2000s, Spanish companies lacked behind in that practice (Guillén, Melé, & Murphy, 2002). It seems that firms in Spain required a legal boost to adopt CEs. We also observed that the trend in the growth of the implementation of CEs was in parallel to the increase of disclosures of the majority of the items analyzed. CEs after the Criminal Code reform are actually focusing on monitoring their employees' behavior to avoid potential legal risks, rather than ethical misconducts. The majority of CEs in 2018 give special relevance to actions that can lead to criminal

liability for the firm personhood (see Table VIII), for example, conduct against the firm like *divulging trade secrets/proprietary information* or *integrity of books and records*. In this regard, it is noteworthy the particular attention paid to the establishment of enforcement procedures to guarantee the effective implementation of the CEs required by the Criminal Code reform to avoid criminal liability (e.g., internal watchdog committees). In contrast to this, in the 2008 CEs, the individual supervisor was the main body responsible for monitoring the compliance with the code. Thus, it seems that the largest companies in Spain have developed and improved their supervision, surveillance, and control system (i.e., compliance system) as a consequence of the legal change.

Table VIII - Most common terms

	Common terms in ethical reference documents	2018 CEs	2008 CEs	Common terms in legal reference documents	2018 CEs	2008 CEs
1	Social	0.20%	0.13%	Compliance	0.37%	0.17%
2	System	0.08%	0.04%	Consent	0.01%	0.01%
3	Ethic	0.48%	0.12%	Forbidden	0.02%	0.01%
4	Workers	0.41%	0.37%	Risk	0.09%	0.02%
5	Govern	0.04%	0.02%	Control	0.12%	0.02%
6	Suppliers	0.17%	0.10%	Criminal	0.04%	0.00%
7	Health	0.06%	0.04%	Prevention	0.02%	0.01%
8	Evaluation	0.01%	0.01%	Market	0.07%	0.05%
9	Environmental	0.09%	0.07%	Protection	0.15%	0.09%
10	Child	0.00%	0.00%	Measures	0.08%	0.05%

Furthermore, references to specific aspects of the Criminal Code received more attention in 2018 compared to 2008 (e.g., compliance officer; laws related to illegal acts included in the Criminal Code; or similar specific risk management tools, such as whistleblowing). It is worth mentioning that more than one-third of the firms directly refers to the Criminal Code in their 2018 version. Additionally, 43.18% of the companies mandate employees to comply with the code, compared to 23.08% of companies that did so in 2008. Some CEs even explicitly require employees to be aware of and accept to comply with laws and regulation. Penalties for non-compliance are a reflection on how firms enforce employees and managers to commit to CEs. Finally, the sanctions for employees' unethical actions are ambiguous and companies seem to redirect the investigation and prosecution of those actions to the ordinary justice. These findings provide evidence of the use of CEs as instruments to comply with the law and skip their potential responsibility for not implementing a proper surveillance, supervision, and control.

The chapter contributes to previous literature on business ethics by demonstrating that legislation have a significant role in distorting the use of CEs from their original intended aim (i.e., the creation of an ethical corporate culture). Companies are trying to use CEs as *shields* to avoid their responsibility to illegal acts and transfer it to their employees. In this regard, CEs are used as risk avoidance tools, rather than as instruments to promote an actual ethical culture. So, as Carasco & Singh (2003) suggested, beyond the promotion of ethical behavior, there is a risk avoidance intention when firms implement CEs.

In so doing, this chapter promotes the academic debate about the role and nature of CEs (Valentine & Barnett, 2002) by problematizing their use as genuine ethical instruments or as legal defense instruments to avoid the firm personhood criminal liability. Prior studies concluded that companies implemented CEs as a consequence of legal prescriptions (Mathews, 1987) and to protect themselves and their business (Lefebvre & Singh,

1992; Singh, 2006). Similarly to Mathews (1987), this chapter finds that law fosters the implementation of CEs. However, we conclude that by doing so, the law perverts the ethical role of CEs that are used as tools to monitor and mitigate potential legal risks, rather than as mechanisms to create an ethical culture.

This research suggests ideas for the development of future studies. For instance, interviews with employees or managers could help researchers to understand the reasons for the implementation of CEs. Additionally, the conceptualization of CEs as part of the risk management system has also implications for the accounting field. Further research could explore, propose, and develop new accounting devices to monitor and enforce compliance with CEs, as well as to reflect on the repercussions that these accounting instruments might have for organizational change.

Finally, we recognize that some limitations should be considered when interpreting our findings. We used a limited sample of firms due to the limited accessibility to CEs of non-listed companies. Nonetheless, we analyzed the largest listed companies in Spain which are the most relevant for our research question considering the proportionality criterion set by the Spanish law. Another limitation stems from the coding procedure because it could have been possible that some sentences related to our items might not be identified. To mitigate this concern, as we explained in the methodology section, we performed several checks to increase the robustness of our analysis.

Chapter 4 – Making things different: The influence of subpolitics on the construction of water reuse risk

Abstract

Risk is a social construction based on perceptions and fears. Following Beck's (1992) thesis of *risk society*, we analyze the role of accounting in the construction of risk through a case study on risk for water reuse. Reclaimed water is an alternative water resource that can help to fight water scarcity. However, water reuse is not without risk, risk management is required to provide safety and trust to consumers of agricultural products. We use Miller's (1992) idea of calculative spaces to analyze how accounting enables the management of water risk. The analysis shows how quantification allows the creation of risk indicators representing risky substances and pathogens and their acceptable levels. Indicators quantify the threshold of pathogens and substances below which water reuse is not regarded as a risk to human health. However, quantification is affected by a subpolitical process in which experts and key actors involved in risk management participate. Subpolitics affects the construction of indicators producing side-effects. On the one hand, scientists and experts' involvement can lead to congestion when determining indicators' acceptable levels. On the other hand, overcoming congestion can provoke indicators to further generate unintended side-effects. By differentiating two types of water depending on its origin, surface water and reclaimed water, water risk management indicators may hinder, rather than promote the use of reclaimed water.

Keywords

Reclaimed water, risk management, subpolitics, European Union Regulation

1. Introduction

Water is essential for human development as it affects agriculture, energy, transports, or manufacturing industries (Dolan, Lamontagne, Link, Hejazi, Reed & Edmonds, 2021; Mekonnen & Hoekstra, 2016). However, water scarcity is becoming an economic and environmental problem in many regions, where water availability is affected by overuse and the evapotranspiration caused by higher temperatures (Hristov, Barreiro-Hurle, Salputra, Blanco, & Witzke, 2021). Phenomena related to climate change, such as the increase of temperatures, the reduction of precipitations and the change in the rainfall regime (Valdes-Abellan, Pardo, & Tenza-Abril, 2017). In 2021, the World Economic Forum lists water issues like scarcity, extreme rainfalls, or droughts within the five most likely and highest impact risks in its global perception survey (World Economic Forum, 2021). Water scarcity is especially severe in the European Mediterranean countries (Truchado, Garre, Gil, Simón-Andreu, Sánchez, Allende, 2021), where the likelihood of drought episodes has increased during the last forty years (European Commission, 2012).

Scientific research advocates the involvement of public and private actors in fostering technologies that enable the use of alternative water resources to mitigate water scarcity (Shannon, Bohn, Elimelech, Geordiadis, Marías & Mayes, 2008). Governments are already promoting new initiatives to reduce water scarcity, such as the EU Green Deal strategy that is expected to guide investors in their decisions to promote the circular economy and environmental protection (European Commission, 2019b). Water reuse fits within the European strategy because it is a type of supply-side mechanism that has been supported by governments to avoid drought effects, mitigate the associated economic losses and optimize existing water resources (Berbel & Esteban, 2019). Water reuse represents also an opportunity to palliate over-exploited aquifers (Sano,

Amarasiri, Hata, Watanabe, & Katayama, 2016). Private initiatives are also rising; for example, the project SUWANU-EUROPE developed a database of initiatives fostering water reuse funded with public and private resources (SuWaNu Europe Project, 2020).

Water reuse requires the elimination of several contaminants, pathogens, or organic materials (Shannon *et al.*, 2008). The 2011 E-Coli outbreak (also known as the *German Cucumber case*), which infected around a thousand and killed 53 people in Germany, was initially incorrectly attributed to cucumbers irrigated with reclaimed water (i.e., treated wastewater) and imported from Spain. This case called the attention to the need of managing risks arising from the presence of contaminants in reclaimed water (Sano *et al.*, 2016) and the difficulties that water reuse encounters. Governments have promoted regulation to monitor and guarantee the quality and safety of water reuse. However, proactive legislation on water reuse is not always enough to increase water reuse. For instance, in California or Australia, water reuse implementation failed due to a lack of support from the public. Previous research highlights that the involvement of stakeholders and good communication are key to successfully implement water reuse (Mainali, Ngo, Guo, Pham, Wang & Johnston, 2011). The lack of public support is driven by societal fears of irrigating with reclaimed water (SuWaNu Europe Project, 2019a). In 2018 the European Union launched a water reuse framework with the proposal of *Regulation 2020/741 on minimum requirements for water reuse* (European Commission, 2018b). This Regulation creates a homogeneous framework to reuse water by describing the minimum requirements related to pathogens and risk management systems within agricultural irrigation (Hristov *et al.*, 2021). The Regulation requires the implementation of risk management to increase trust and confidence in irrigation with reclaimed water (European Commission, 2018b).

Previous accounting literature on risk contends “that organizations have come to rely on best-practice risk

management frameworks, which, through technologies and the work of experts, come to affect the work practices of constructing and managing risks" (Themsen and Skærbaek, 2018, p. 21). This literature has come to be interested in studying how risk management technologies affect the construction of risk. Along with Themsen & Skærbaek (2018), other scholars are calling for research about the construction of risk (Jordan *et al.*, 2018). Understanding how risk is constructed is especially interesting in relation to water because previous research highlights that risk management can mitigate water risk and improve the efficiency of water operations (Christ & Burritt, 2017). Accounting can play a relevant role in managing water global issues (Signori & Bodino, 2013), but accounting research on water issues has been mostly limited to the study of water disclosure (Hazelton, 2013). Previous accounting literature on water risk management and monitoring is scarce (Christ & Burritt, 2017) and the majority of studies focuses on specific topics that, according to Russell (2021), can be classified into three groups: water and sanitation services (e.g., Egan, 2014; Ogden, 1997; Shaoul, 1997); water governance (e.g., Hazelton, 2013; Tello, Hazelton, & Cummings, 2016); and water management (e.g., Christ & Burritt, 2017; Passetti & Rinaldi, 2020).

This study explores the role of accounting in the construction of calculative spaces, and specifically in the case of water reuse. In so doing, the study responds to the call of investigating the role of accounting beyond the conventional limits of accounting research (Bebbington & Unerman, 2020). We performed a case study with three different data sources: participatory-observation in a European Union Funded Project, SUWANU-EUROPE (SuWaNu Europe Project, 2019c), interviews with agents participating in the European Regulation legislative process or especially relevant in agricultural water reuse, and the analysis of documents and reports issued by European Institutions and the SUWANU-EUROPE project. The theoretical foundation of this research relies on Beck's (1997) *risk society* and, particularly on the notion of subpolitics. Modern risk is a social construction affected by social

fears or perceptions about risk materialization. Accounting is considered a tool to legitimate practices or rationalize behaviors (Humphrey & Moizer, 1990). In this regard, accounting can create “calculative spaces” (Miller, 1992) in specific areas that are sought to be governed through numerical or financial rationality. For example, MacKenzie (2009) analyzed how accounting made greenhouse gas emission a governable space by turning different types of gases the same. Our analysis provides insights into how quantification allows the construction of indicators that transform water reuse risks into a calculable space. However, the involvement of non-political actors, known as subpolitics, in reclaimed water risk construction engenders side effects: separating a unique element, water, into two different ones, reclaimed water and surface water, depending on its origin. This distinction has economic consequences for farmers. In the case of reclaimed water, the requirement to treat reclaimed water but not surface water implies that the cost of reclaimed water is higher than for using surface water, making its use for agricultural irrigation financially unsustainable. Consequently, the aim of the European Union to foster the use of reclaimed water for agricultural irrigation could result truncated.

The rest of the chapter follows with an explanation of the theoretical framework. Then, the case study methodology is presented. The fourth section describes the empirical case, explaining the water reuse process and the growing concern requiring regulation of risk. The fifth and sixth sections analyze the determination of risk indicators and the influence of subpolitics, respectively. Finally, the last section presents the conclusions.

2. Risk in the risk society

Risk is conceived as a probability concept. Knight (1921) describes risk as the probability of latent side-effects materialization. Similarly, Luhmann (1991) defines risk as the

probability of an uncertainty becoming real. According to Beck (1992), risks are not the consequences and effects of the uncertain, but the anticipation of potential destruction, an undesired future to be prevented. Beck's (1992) description of risk is based on his thesis about the *risk society*, where he explains how the industrial society became a society concerned about risk. The industrial society was a wealth-distributing society that turned into a risk-distributing society. The social production of wealth is accompanied now by the social production of risk, changing society's aspiration of wealth acquisition into the unwelcome abundance of risks. Modern risk has specific characteristics: it does not cause immediate and irreversible harms, but it remains *latent*, its eventual emergence is uncertain. Uncertainty around risk materialization encompasses an initial social unawareness of risk that disappears as risk materializes, that is, when risk's *latent side effect* emerges and can be perceived by society (Beck, 1992).

Risk materialization creates a social pressure to control it (Beck, 1992). Risk represents certain events' potential consequences through which social significance is attributed to these events (Knights & Vurdubakis, 1993). Risk is a social construction so that the perception of an issue as a risk and the probability of its materialization is contingent on social concern (Douglas, 1996; Linsley & Shrives, 2009). As Ewald (1991) describes: “[n]othing is a risk in itself; there is no risk in reality. But on the other hand, anything *can* be a risk; it all depends on how one analyzes the danger...” (p. 199, emphasis in the original). For that reason, the consideration of risk is determined by how society projects risk uncertainty materialization into the future, and the potential scale of the destruction it may cause (Beck, 1992). In this regard, “there is a systemic tendency to construct, describe, and stabilize an increasing number of harm-based risk objects” (Power, 2007, p. 27).

Risk management can be considered the evolution of audit practice to improve accountability and trust (Power, 2003). The

risk-based evolution of accounting has been portrayed as an inter-subjective system to serve different roles and functions (Humphrey & Moizer, 1990). Accounting has the capacity to constitute new realities and possibilities for surveillance by using numbers (Power, 1994) because it can objectify and standardize the world by linking different objects (Porter, 1994). In this regard, Miller (1992) points to the functionality of accounting in the construction of calculative spaces (i.e., new areas that can be governed and evaluated following numerical or financial rationality). In the accounting literature, there are several examples of how new spaces become calculable, such as carbon markets (Ascui & Lovell, 2011; MacKenzie, 2009), universities (Gerdin & Englund, 2019), or water (Egan, 2014). These examples show how accounting constructs new spaces allowing the revision, evaluation, and comparison of the performance object (Miller & Power, 2013). In the case of risk, calculative spaces are created when risk is translated into a calculative order (Pelzer, 2018, p. 50). There are some examples of accounting research studying the role of accounting in constructing risk calculative spaces. While Jordan *et al.*, (2018) studied how risk matrices help to measure risk assessment, Themsen & Skærbæk, (2018) explored the role of IT-risk-based management practices in the “translation of uncertainties into risk” (p. 31). However, there is yet “much to be learnt about how other projects and/or organizations construct risk” (Themsen & Skærbæk, 2018, p. 31), because risk has been constructed in relation to capital and not to human behavior (Power, 2009) even when modern risk is a social construction based on social concern (Beck, 1992).

Social concern is key in the management of modern risk because its characteristics require the involvement of science and technology to satisfy the social requirement of governing risk (Beck, 1992). Science is needed because modern risk cannot be constructed, described, or stabilized easily (Beck, 1992). Scientists seek proofs of causality because “subjective professional judgment and bureaucratic discretion become difficult to

defend and the alleged impersonality of numbers turns out more appealing" (Samiolo, 2012, p. 398). To determine the limit where there is a proof of causality to consider that risks materialize, scientists use "acceptable levels for 'permissible' traces of pollutants and toxins in the air, water, and food (...) [that] permit the emission of toxins and legitimate it to just that limited degree" (Beck, 1992, p. 64, emphasis in the original). Douglas (1996) points that the acceptable level is based on whether the risk can be faced because how to answer risk depends on the social concern. However, acceptable levels involve a dilemma because what is not regulated through acceptable levels is not considered a risk and "can freely be introduced into circulation, without any restraints" (Beck, 1992, p. 65, emphasis in the original). Risks are introduced in the systems and everything may seem to be right, *normal*, so it looks that "everything goes on as if nothing is wrong" (Pelzer, 2018, p. 51), giving a response to social pressure but potentially not giving an answer to the underlying problem.

This dilemma reflects Power's idea of *risk management of nothing* (i.e., risk management systems that create a false comfort of managing risk) (Power, 2009). The process of determining acceptable levels implied the reinvention of political institutions in the name of risk (Giddens, 1999). Scientists and other pressure groups get involved in political decision-making (Beck, 1999). As Beck notes, political institutions suffer from a reinvention, with new ways of conducting politics to society (Beck, Giddens, & Lash, 1997). This reinvention causes a loss of parliamentary power and higher involvement of technocracy in the policymaking process (Beck, 1992). Beck uses the term *subpolitics* to refer to the involvement of nonpolitical actors in political decisions (Beck, 1997, 1999; Beck *et al.*, 1997). Nevertheless, Holzer & Sørensen (2003) suggest just the other side of the coin, that subpolitics can be considered as the re-politicization of non-political areas (e.g., science). Non-experts trust that risk management works in identifying acceptable levels but questioned the systems when events undermine them (Linsley & Shrives, 2009). Reflexive

modernization casts doubt on the previously assumed legitimacy of science because modern risk can be assessed or managed by using different methodologies or standards (Beck, 1997). In this regard, MacKenzie's (2009) work about the carbon markets' construction is an example of how subpolitics influences the expected role of accounting. He shows how pressures coming from the outside of the political systems play a subpolitical role in blocking the process of making different gases the same (against the International Accounting Standard Board intention). The block represents what Beck (1999) named *congestion*: the non-voluntary strike of modernity through which things remain unchanged. By congestion the process is blocked when some actors disagree with the result of the discussion, impeding the reach of consensus. As Beck described congestion produces a strike whereby everything is examined, analyzed, discussed, and debated, but nothing happens. The situation remains the same until a general non-satisfaction sensation emerges and actors agree on an option that is not their desired one, but it is preferred to paralysis without agreement (Beck et al., 1997).

Nowadays political processes are not isolated from modern risk or subpolitical influence. Risk regulation at the European Union level is also a significant element in the construction of modern risk (Alemanno, 2013): on the one hand, all citizens across the European Union are now affected by how supranational institutions regulate risk; and, on the other hand, as Europe works as a single market, a risk management failure in any of the Member States can spread to other countries, hence regulations seek harmonization (Alemanno, 2013). Additionally, water risk measurement and disclosure is a complex issue due to the lack of a universally accepted methodology to assess the risk impact of water (Signori & Bodino, 2013).

3. Research method

As explained in the previous section, risk is a social construction. Scientists, experts, and stakeholders participate in constructing and managing modern risk (Beck, 1992). To enquire the concerns and knowledge behind actors' decisions in the construction of risk a case study is performed to explore the reasons behind their "decision or set of decisions" (Yin, 2017; p. 22) in the construction of risk. The reasons to perform a case study are also supported by Yin's (2017) suitability conditions: (i) the research question proposed; (ii) the extent of control over behavioral events and, (iii) the focus on contemporary events. We considered performing a case study because our research question seeks an answer to operational links behind the decisions concerning the construction of risk. Additionally, this method has been applied by previous accounting research on water (Egan, 2014; Thomson, Grubnic, & Georgakopoulos, 2014) and on risk construction (MacKenzie, 2009; Thomsen & Skærbæk, 2018). Case study allows the enhancement of "social, environmental and ethical accountability of organizations" through the involvement of researchers within the organizations to understand how organizations perceived social and environmental accountability (Correa & Larrinaga, 2015; p. 16). Performing engagement research requires different research methods, such as participant observation or action research (Correa & Larrinaga, 2015). In our case, we used participant observation, together with semi-structured interviews and document analysis.

The participant observation corresponds to the researcher's participation in the European Union-funded project SUWANU-EUROPE. The project aimed to create actors' networks to foster the use of reclaimed water in regions located in the European Union Member States of Belgium, Bulgaria, France, Greece, Germany, Italy, Portugal, and Spain. Cyprus and Israel were also involved in the project as key regions where reclaimed water is

considered a common water source for agricultural irrigation and other purposes (SuWaNu Europe Project, 2019b).

Table IX - Documents analyzed

Technical documents analyzed	Year	Author
Directive 2000/60/EC of the European Parliament and the Council establishing a framework for Community action in the field of water policy	2000	European Commission
A Blueprint to Safeguard Europe's Water Resources	2012	European Commission
Consultation of policy options to optimize water reuse in the EU	2015	European Commission
Minimum quality requirements for water reuse in agricultural irrigation and aquifer recharge	2017	JRC
Impact Assessment accompanying the document Proposal for a Regulation of the European Parliament and the Council on Minimum Requirements for Water Reuse	2018	European Commission
Evaluation of the Urban Wastewater Treatment Directive, 186	2019	European Commission
The European Green Deal (updated in 2020)	2019	European Commission
Deliverable 1.1 - Regional state of play analyses	2019	SUWANU-Europe
Deliverable 1.4 - Lessons learned from Israel and Cyprus success stories	2019	SUWANU-Europe
Deliverable 2.1 - Report on SWOT and PEST analyses for implementation of reuse practices	2019	SUWANU-Europe
Regulation (EU) 2020/741 of 25 of May 2020 on minimum requirements for water reuse	2020	European Parliament

The researcher's participation in the project lasted sixteen months, from April 2019 to July 2020, and his role focused on developing the state of play on water reuse in the regions and

the analysis of the strengths, weaknesses, opportunities, and threats to implementing water reuse for agricultural irrigation. He participated in the elaboration of the deliverables and the organization of meetings, workshops, and webinars with key actors. The engagement of the researcher allowed him access to information and to relevant actors involved in the development of the European Union Regulation and its adaptation to the legislations of several Member States.

The second data source consisted in document analysis. Table IX provides a summary of documents, including prior analyses and reports elaborated for the European Commission considered in the EU regulation, as well as the results of the project SUWANU-Europe. During the interviews some documents, such as a risk management guideline, were mentioned but we were unable to retrieve them as they were confidential.

The third data source consisted in semi-structured interviews. The analysis of interviews helps researchers to understand the opinions, attitudes, feelings, and beliefs of people (Hilary Arksey & Knight, 1999). A total of 18 individuals were interviewed between October 2020 and February 2021 to explore the perceptions of key actors involved in the development of the European Regulation. Table X summarizes the interviewees, that we categorized depending on their role in the legislative process.

Table X – Semi-structured interviews

Coode	Sector	Participation in the Regulation development	Country	Length
Interviewee 1	Consumers	Non-participation	Spain	23:12
Interviewee 2	EU Institutions	Direct	EU	51:59
Interviewee 3	Irrigators	Direct	Italy	39:23
Interviewee 4	Irrigators	Indirect	Spain	30:18
Interviewee 5	Irrigators	Indirect	Spain	26:37
Interviewee 6	Irrigators	Indirect	Portugal	30:13
Interviewee 7	NGOs	Non-participation	Spain	65:04
Interviewee 8	NGOs	Indirect	Spain	58:25
Interviewee 9	Scientific organization	Direct	Spain	54:22
Interviewee 10	Scientific organization	Non-participation	Belgium	Notes
Interviewee 11	Scientific organization	Non-participation	Spain	57:00
Interviewee 12	Water administration	Non-participation	Spain	Written
Interviewee 13	Water operator	Direct	Spain	72:12
Interviewee 14	Water operator	Indirect	Spain	32:14
Interviewee 15	Water operator	Non-participation	Israel	51:02
Interviewee 16	Water operator	Indirect	Spain	46:18
Interviewee 17	Water operator	Indirect	Germany	32:52
Interviewee 18	Water operator	Non-participation	Israel	36:44

The interviewees were selected based on their knowledge of water reuse and their involvement in the case (Berg & Lune, 2012), thereby differentiating between three types. Some actors (Direct) participated directly in one of various steps of the EU legislative process. For example, interviewee 3 participated in the whole process representing a European association of irrigators. Other actors, (Indirect) were consulted by participants in the EU regulation process. An example is interviewee 8, whose participation was limited to providing advice to Members of the European Parliament (hereafter MEP). Finally, further interviewees (non-participant) are relevant actors in the water reuse process due to their knowledge or background though they did not have any role in the legislative process. For instance, interviewee 7 was invited to participate in the legislative process, but he refused to do it due to lack of time and differences in the methodology proposed by the European Commission. Another example is interviewee 11, who did not participate in the process, but who was in charge of adapting the Spanish regulation to the requirements of the European Union Regulation. All interviews were held in Spanish, with the exceptions of interviews 9 and 13 that were held in English. All the interviews were transcribed and sent back to the interviewees for their feedback.

For the design and analysis of the interviews, the following methodological aspects were considered. First, given that qualitative research must be reliable and applicable (Hilary Arksey & Knight, 1999), the interview protocol was based on the theoretical framework proposed. Second, the author followed the methodological instructions provided by Hilary Arksey & Knight (1999) and Wengraf (2001) for the transcription of the interviews. Third, once all the interviews were transcribed, the data were analyzed based on the theoretical framework described in section two (Yin, 2017). Drawing on Beck's thesis of risk society, the author identified the key theoretical notions concerning the construction of risk and subpolitics: *risk identification*, *latent side-effects*, *risk causality*, *acceptable*

levels, science influence over politics, and subpolitics. The interviews and texts were codified considering these elements. Some examples of the process can be provided. A reflection of *risk identification* in the interviews is "...it is something [previous water contamination] to consider in the risk management system. The probability before the water arrives at the wastewater treatment plant [hereafter WWTP]. That is a risk that should be considered" (Interviewee 11). Another example, in the case of *science's influence over politics and subpolitics*:

"I can deliver a scientific argument. You can agree or disagree with the scientific argument. But if you are on the side of perception and, you have taken the perception as reality, there is nothing I can do in delivering you further evidence that your perception is wrong. In other words, if you don't want to listen, you don't listen independently on how much science I create" (Interviewee 2).

The results of the analysis are presented following the structure provided by these theoretical concepts. The next section explains the origin of risk concern about water reuse for agricultural irrigation, paying special attention to the *German Cucumber* case and a brief explanation of the water reuse Regulation. The analysis follows with the role of accounting in the construction of risk using indicators (and their corresponding acceptable levels). Finally, the analysis concludes with the influence of subpolitics on risk construction.

4. Water reuse for agricultural irrigation: the rise of social concern about the water reuse risk

Water scarcity is a critical economic and environmental problem in many regions of the world, and it is particularly pressing in southern Europe (Valdes-Abellan *et al.*, 2017). Water reuse is not a new practice, as its regulation dates to 1978 when in California an important drought fostered the use of reclaimed water,

transforming it into an accepted practice (Interviewee 7). Some regions in Europe (e.g., Cyprus, France, Greece, or Spain) were already reusing water before the European Union promoted a legislative process to regulate water reuse in 2018. This process was motivated by the concerns of northern European countries about water scarcity. These countries traditionally considered water an abundant resource, but they also began to suffer scarcity episodes, or drought situations, that increased their concern about how to protect water resources without affecting water availability for agriculture (Interviewee 2). The Regulation also seems to be motivated by northern countries' concern (e.g., Germany) about how products can be safely irrigated with reclaimed water. Despite the potential of water reuse to fight scarcity, there is a perception that the Regulation actually seeks to appease northern European countries' fear about the quality of reclaimed water use for irrigation in other countries, particularly the southern ones, like Spain (Interviewee 9). Most of the interviewees highlighted the *German Cucumber* case in 2011, when 53 people died in Germany because of an outbreak of *Escherichia Coli pathogenic* (hereafter E-Coli). At first, German authorities discovered E-Coli pathogenic in cucumbers produced in southern Spain, yet, further analyzes confirmed that the E-Coli pathogenic affecting human health did not have a Spanish origin but was present in German bean sprouts (Tremlett & Pidd, 2011). Although it was proven that products from southern Spain were not related to the deaths, public trust in Spanish agricultural products decreased and Spanish farmers suffered from relevant losses (BBC, 2011).

The European Commission launched a legislative process with the intention of mitigating the risk of water reuse and determining how wastewater should be treated to be safely reused and to increase public trust over the quality of reclaimed water for agricultural irrigation. Although the Regulation's legislative process started in 2018, the European Commission promoted a consultation of stakeholders in 2015 (see Figure 6). The aim of the

consultation was to evaluate the most suitable instrument to foster water reuse. The feedback obtained from the consultation helped the European Commission to prepare an impact assessment analysis about water reuse in all the potential areas: agriculture, urban, industrial and recreational (European Commission, 2015). The result was the election of the "Regulation" legal instrument, instead of a Directive, to standardize the requirements for all the Member States.

The reason why the European Commission promoted a Regulation is to pursue a common framework to increase trust in irrigating with reclaimed water. The goal of the Regulation is to design common legislation that could benefit farmers, consumers, and WWTP operators because "[i]t's a European law, the highest environmental standards we have on this planet. So, consumers can be sure, and the country can be more assured than it was before" (Interviewee 2). The Regulation is the starting point for national, regional, or local authorities to foster the use of reclaimed water for agricultural purposes. However, the Regulation requires the implication of member states' authorities to succeed (Interviewee 7).

Subpolitics and risk construction

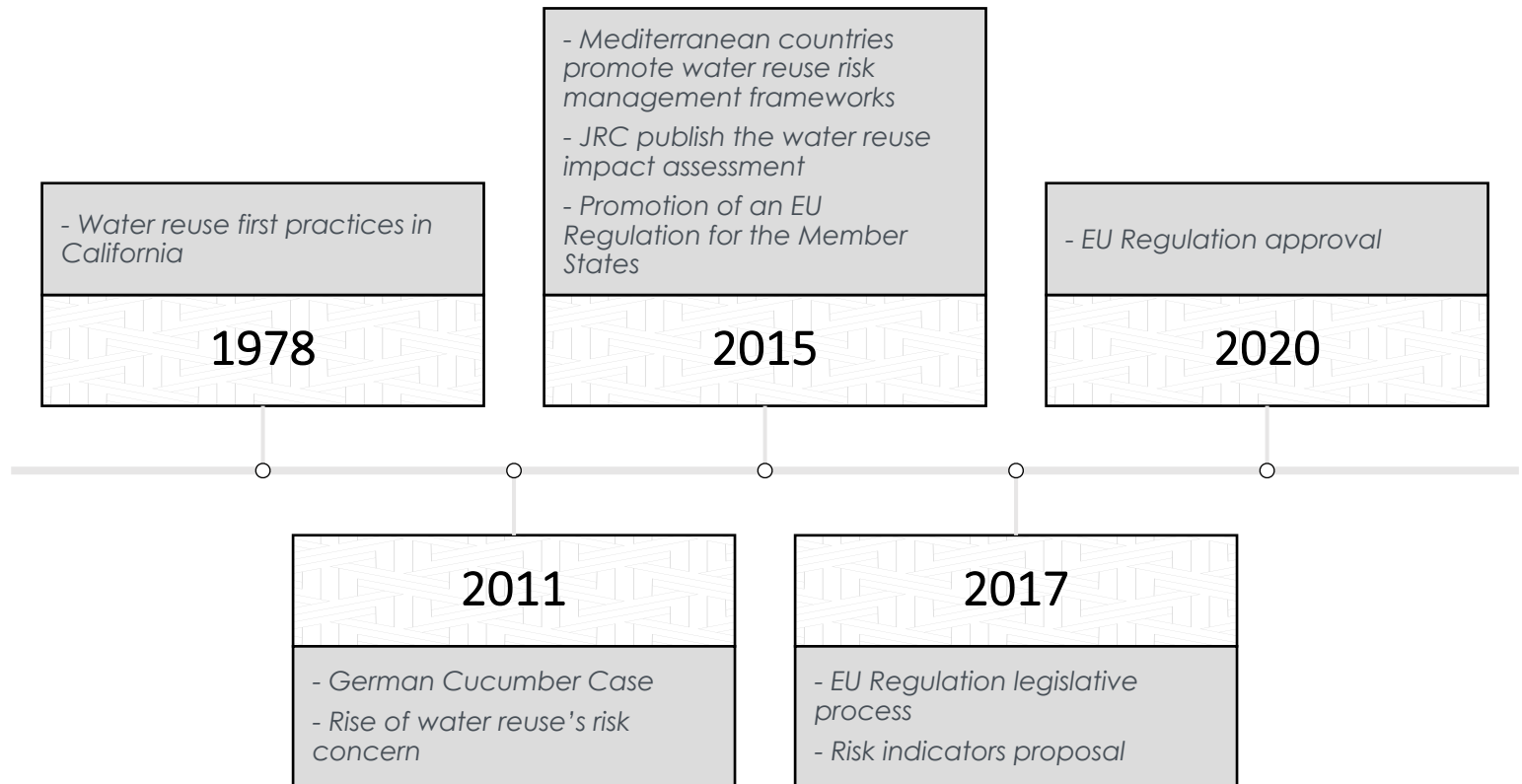


Figure 6 - Milestones on water reuse. Own elaboration

The Regulation describes the reclamation process from the treatment of wastewater to its use for agricultural purposes (see Figure 7). The first key point of the process is the WWTP (a). Wastewater arrives from cities and industries to the WWTP, where it is subject to a primary and secondary treatment process so that wastewater meets the quality requirements of the European Union Wastewater Directive (European Commission, 2019a) to be discharged into the river or sea. However, at this point, wastewater quality is not the same as that of the water that cities receive. The actors interviewed explained this situation (Interviewee 16): the European Water Directive requires that water should be discharged with the same quality as it was obtained (European Commission, 2000), something that is not happening. Furthermore, not all European cities have a suitable WWTP in operation, for instance, the European Commission is sanctioning Spain for the lack of proper wastewater treatment every year (Reuters, 2017; SuWaNu Europe Project, 2019a).

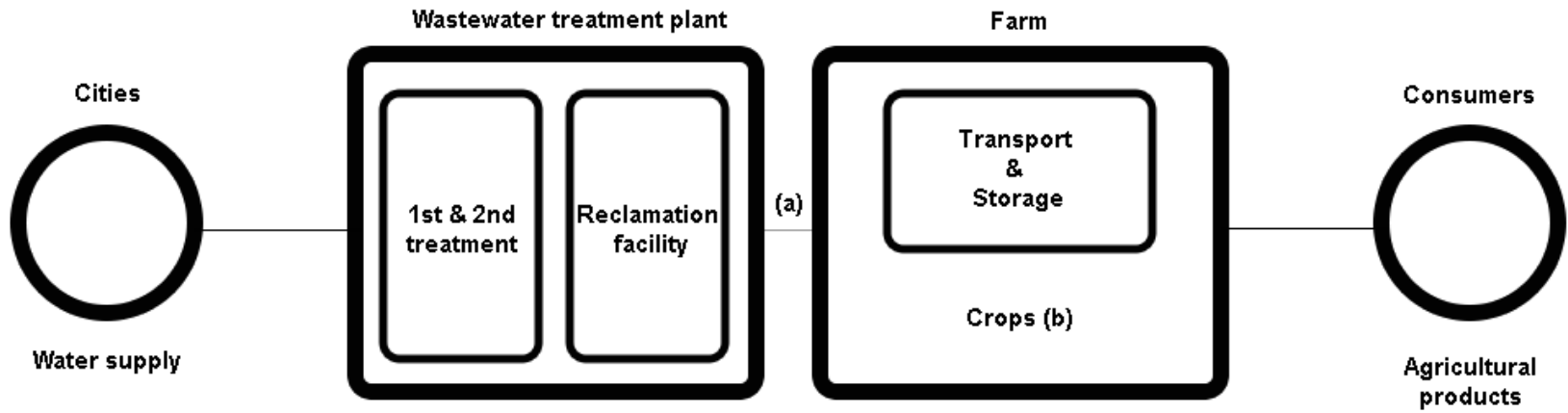


Figure 7 - Reclaimed water production chain. Source: Adapted from SUWANU Europe data

Water reuse adds a reclamation facility to the WWTP process (i.e., a technology that improves wastewater quality to be reused for agricultural irrigation or other purposes). In some countries like Israel, the reclamation facility allows using reclaimed water even for human consumption (See SuWaNu Europe Project, 2019b). This use is possible because the water coming out of the reclamation facility (known as reclaimed water) complies with quality requirements that enable its use for several purposes, such as agricultural irrigation, industrial uses, or public garden or golf courts irrigation. The last steps of the water reuse chain involve its use in irrigation and the later processing of agricultural products. The Regulation also highlights point (b) as a key step in the water reuse process. At this point, reclaimed water arrives at crops through irrigation systems. Despite that WWTP operators implement controls in point (a), farmers are required to implement risk management instruments to analyze water quality in point (b).

5. Accounting and the construction of calculative spaces: indicators and acceptable levels

The Joint Research Center (JRC thereafter) impact assessment published in 2015 provides insights about the conceptualization of water reuse risk, the description of the objectives and policy options, as well as the analysis and evaluations of potential impacts and alternatives. Additionally, it includes the Joint Research Center Technical Report entitled *Minimum quality requirements for water reuse in agricultural irrigation and aquifer recharge* (Alcalde-Sanz & Gawlik, 2017). This report provides the results of the working groups integrated by external scientists and stakeholders to determine risks by identifying the substances or pathogens that should be included in the regulation and the quantified threshold above which risk is expected to materialize.

Beck (1992) explained that acceptable levels are used as tolerance values of expected contamination. Acceptable levels refer to the limits of substances that human health can tolerate. In accounting, defining risk indicators and determining acceptable levels is known as quantification, motivating various studies in the context of risk management. Jordan *et al.*, (2018) explain the concept of quantification in relation to Miller's (1992) & Power's (2003) idea of calculative space. The authors define quantification as "a mechanism to install a sense of manageability, controllability, and auditability" (Jordan *et al.*, 2018, p. 36). Risk indicators are the tool proposed by the JRC to manage water reuse risk. Mikes (2011) identified two orders in the process of quantifying risk. The first order is about classifying uncertainties into risk categories and the second order about aggregating numbers to the risk categorized in the first step.

In our case, Mikes' (2011) orders are identified in the process of constructing water reuse risk indicators: the first part consists of the identification of substances and pathogens considered as risk and, the second one, the acceptable level allowed for each substance or pathogen.

The use of indicators on water quality is not new, it dates to the beginning of the 1900s when water disinfection started and helped to identify substances that could affect human health (i.e., pathogens or other dangerous substances). The use of indicators allowed an easier and quicker risk identification as testing individually all the potential pathogens or substances that could suppose a hazard in water is unfeasible because they are countless (Interviewee 7). According to Interviewee 7, the determination of indicators is directly related to risk identification. The diversity of the countless potential substances and pathogens to analyze would make WWTP analysis capacity completely insufficient. Consequently, on the one hand quantification allows the determination of pathogens and substances considered harmful and, on the other hand, the

acceptable levels of each substance serve to reduce risk exposure.

Determining risk indicators

Despite previous tradition using indicators for assessing water quality, the process of defining them was qualified as “a war” by Interviewee 3. Water standards analyzed in this study are related to reclaimed water class A. The Regulation differentiates four types of reclaimed water: A, B, C, and D. Class A allows irrigating “all food crops consumed raw where the edible part is in direct contact with reclaimed water and root crops consumed raw” (European Parliament, 2020, p. 48). Interviewee 7 considers that class A will be the only water used for two reasons: firstly, because you can irrigate every crop with it and, secondly, because the investment in independent tubes and pipes for each class of water is extremely expensive. Water class A is useful to reduce risk exposure because it has the most stringent requirements, enabling the highest safety level. The identification process of water class A risk resulted in three categories of risk sources: microbiological parameters, chemical parameters, and emergent contaminants. The first and second categories, as identified by JRC, are listed in Table XI, which also provides their corresponding thresholds. The analysis of the third category, emergent contaminants, is provided later.

Table XI - Reclaimed water quality criteria for agricultural irrigation.

Reclaimed water quality class A		
Indicative technology target	Secondary treatment, filtration, and disinfection	
Microbiological substances	E-Coli (cfu/100 ml)	≤10 or below detection limit
	Leggionella (spp)	≤10 cfu/l when there is a risk of aerosolization
	Intestinal nematodes (helminth eggs)	≤1000 egg/l when irrigation of pastures or fodder for livestock
Phyco-chemicals	BOD5 (mg/l)	≤10
	TSS (mg/l)	≤10
	Turbidity (NTU)	≤5

Source: Adapted from Alcalde-Sanz & Gawlik (2017, p. 19). BODs refer to 5 days biochemical oxygen demand. TSS refers to the total suspended solids.

The discussion about risk indicators is related to Beck's (1992) idea of scientific rationality, claiming to investigate the hazardousness of risks. Scientific rationality is based on (1) a framework of probability statements about the risk materialization and on (2) an ethical perspective of the probabilities and social interests. In this regard, the JRC report highlights hazards for public health and the environment. Risk assessment is based on an "estimation of potential adverse effect on health and environmental matrices associated with the intended use of reclaimed water" (Alcalde-Sanz & Gawlik, 2017, p. 11). Nevertheless, to avoid hazardous substances, the WWTP should follow a validation monitoring before starting water reuse or when an update or modification of the plant's equipment is produced, this validation

monitoring process “verify that the reclaimed water effluent is complying with the requested quality criteria” (Alcalde-Sanz & Gawlik, 2017, p. 21). This routine is based on *performance targets*, linked with each group of microbiological parameters (bacteria, virus, and protozoa). Microorganisms' indicators designated are “*E-coli* for pathogenic bacteria, F-specific coliphages, somatic coliphages or coliphages for pathogenic viruses, and *Clostridium perfringens* spores or spore-forming sulfate-reducing” (p. 21, emphasis in the original). Table XII summarizes the validation monitoring to assure that acceptable limits of the substances and pathogens measured by indicators are under control.

Table XII – Comparison of validation monitoring of the treatment performance for agricultural irrigation between the JRC Proposal and the Regulation published.

Indicator microorganisms	JRC - Performance target for the treatment train (log10 reduction)	REGULATION - Performance target for the treatment train (log10 reduction)
E-Coli	≥ 5.0	≥ 5.0
Total coliphages/F-specific coliphages/ somatic coliphages*	≥ 6.0	≥ 6.0
Clostridium perfringens spores	≥ 5.0	≥ 4.0
Spore-forming sulfate-reducing bacteria*		≥ 5.0

Source: Alcalde-Sanz & Gawlik (2017, p. 19) and EU Regulation 2020/741.

Spore-forming sulfate-reducing bacteria can be used alternately to *Clostridium perfringens* spores.

The identification of substances and pathogens to determine indicators was initially grounded on several guidelines previously analyzed by the JRC, such as the ISO Guidelines 16075 (Alcalde-Sanz & Gawlik, 2017). Determining tolerable risk for human health was also supported by the WHO Guidelines for Drinking Water Quality (World Health Organization, 2017). The use of previous guidelines was criticized by different actors. On the one hand, interviewee 13 argued that the determination of pathogens used to assure the removal of hazards and the strictness to validate its absence was non-accurate:

“... [a JRC researcher] decided to include several indicators. The most difficult [to achieve] was clostridium perfringens spores because it is supposed to indicate the presence of protozoa, but clostridium perfringens spore is actually a bacterium, so the existence of clostridium does not mean the existence of protozoa. *Why do they require spores as an indicator then?* They include it because you can find it within wastewater and because they are so small that they are really difficult to be removed. They argue: *if you remove this, you remove everything*” (Interviewee 13, emphasis added).

On the other hand, the choice of this bacteria as an indicator leads to the second critique grounded on the challenging removal costs: the cost of removing 5 logarithmic units of these spores would make water reuse economically unsustainable. This critique is analyzed in the following subsection because it is especially relevant and associated with the quantitative determination of acceptable levels.

The debate around risk substances and pathogens identification was not limited to clostridium perfringens spores. Interviewee 18 suggested that pathogens included in the European Union were more permissive than Israel's ones:

“... concerning pathogens, the main pathogen in the European regulations is E-Coli [indicator used to analyze

the existence of dungs within the water] the main pathogen in the Israeli regulations is Fecal-Coli and, in California, it's total coliforms. (...) if you want to visualize it better, you can draw a large circle and that circle is total coliform. Inside the circle, you'll have a smaller circle and that's fecal coliform. Inside that circle, you'll have another circle, that's E-Coli. And inside that E-Coli circle, you'll have a smaller circle, which is the pathogenic E-Coli, because not all E-Coli is pathogenic. (...) [So] If I'm setting my regulations, with 10 Fecal coliforms, some of my E-Coli pathogens will be Fecal Coli or will be E-Coli, but some will not be. So, the amount of E-coli that I'm allowing will be lower than 10 because I'm allowing 10 for the entire Fecal coliform family. And it's not just E-Coli" (Interviewee 18).

This issue is specifically relevant because the E-Coli pathogenic was the pathogen that caused the German Cucumber case. So, it seems inconsistent that the Regulation is more permissive in this regard than Israel's legislation when one of the alleged reasons to promote the European Union Regulation was the German Cucumber case.

Finally, *emergent* contaminants, the third category of indicators, lead to a different debate. Emergent contaminants are pathogens or substances emerging not because they are new substances although new emergent substances can appear (e.g., COVID-19), but because the social concern about them is emerging (Interviewee 7). Emergent contaminants are related to the causality principle described by Beck (1992). From a modern risk perspective, the causality relation is blurred, as it is not clear the materialization of which risk causes the final harm. Something similar happens with emergent contaminants. They exist, people know they do, but their relation of causality is not clear, neither their potential harm. Examples of emergent contaminants are ibuprofen, paracetamol, or any other drug, but also COVID-19, micro-plastics, or any future substance that could affect health security and safety (Interviewee 16).

Interviewee 16 explains that emergent contaminants are eliminated with an advanced oxidation process. However, as concerns can change (emerge), constant attention is needed. The conception of risk as a social construction is particularly evident when analyzing emergent contaminants risk because their categorization as risk depends on public concern about the risk. This situation creates a paradox, named by Beck (1992) as *blank checks*, if a risk is not categorized, the risk is harmless, regardless of how harmful it could actually be. However, determining emergent contaminants potential risk is difficult and experts do not achieve a common position about emergent contaminants:

“...we do know that they exist, we do know that they reach the crops. Because there is enough research to reliably show that. But we also know that the concentrations at which they reach the crops are minuscule. Like three or four orders of magnitude less than what you would need for a dose that would not affect a kid even if he consumes three or four kilos of lettuce per day, every day” (Interviewee 18).

Despite the social concern, the real concentration of each emergent contaminant on water is very small. There is no evidence about the likelihood to affect human health, however, emergent contaminants become a chronic risk (Douglas, 1996). Although the risk is minimum and there is no epidemiological data that show risk materialization, social concern of this chronic risk is even higher than with E-Coli, a substance with scientific evidence supporting the hazardousness. Emergent contaminants are an example of chronic risk. They were studied in-depth, and their consequences are yet unknown, however, the concern about them has grown during the last years. Thus, there is a lot of work to understand how emergent contaminants work (Interviewee 11), in other words:

“There are many of these compounds, which have been suspected to be an emerging pollutant for a decade and their emergence continued. So, my conclusion is *if after 10 years they are not resulting in clear evidence*, I'm not talking about one year or two years or three years or five years, but 10, 15 years, sometimes even 20 years, we are still talking about the same compounds. We still don't have any conclusive evidence” (Interviewee 2, emphasis added)

Emergent contaminants support Douglas' (1996) idea that chronic risk received higher attention, even when (in this case) their relevance is not clear.

The negotiation resulted in the indicators included in the right column in Table XII, which summarizes the substances and quantitative acceptable levels required for the validation monitoring in the JRC proposal and those finally included in the European Union Regulation. The difference in acceptable levels between the JRC proposal and the Regulation is explained in the following subsection.

Determining the acceptable levels of risk indicators

Determining risk acceptable levels is the process where accounting involvement is most evident through risk quantification. Quantification allows the governance and disclosure of several areas (Robson, 1992), making *accounting begin* (Power, 2015, p. 52), and consequently creating a new calculative space (Miller, 1992). According to the interviewees, the determination of acceptable levels followed a clear aim: increasing public trust. For that reason, the process to determine the acceptable levels included in the Regulation consisted of a negotiation between key actors and political forces. In this subsection, an analysis is provided about the process of determining acceptable levels, and in the following section, the analysis focuses on the role of subpolitics in setting acceptable

levels. Indicators measure substances and/or pathogens considered risks and quantify the acceptable level that should not be exceeded. In other words, the “permissible traces of pollutants and toxins in the air, water, and food” legitimate an activity (Beck, 1992, p. 64). As Beck (1992) indicates, acceptable levels aim to avoid the materialization of risk. They limit the tolerance to risk before public health could be affected.

The main results of the negotiation can be summarized in (1) key actors involved in the negotiation achieved the reduction of one logarithmic unit in the case of *Clostridium Spore* as was demanded by interviewee 13 and (2) they also added the option of analyzing the existence of bacteria on water using as indicator *Spores of sulfate-reducing bacteria*, which actually is bacteria, instead of the initially proposed *Clostridium spores*, which is protozoa. Interviewee 13 argued that the reason to reduce acceptable levels to the minimum was to increase public trust in reclaimed water security. However, he also argued that the reduction of acceptable levels could jeopardize the sustainability of water reuse in economic and environmental terms. He claimed that *Clostridium perfringens spores* reduction of 5 logarithmic units (see JRC's proposal in Table XII) means “frying” water, an enormous waste of energy that could make water reuse an unsustainable practice. Likewise, he argued that requiring 10 E-Coli is “super secure”, more than necessary and economically sustainable. Nevertheless, interviewee 5 noted that it was incongruent requiring 10 E-Coli for water reuse when the acceptable level of E-Coli in the case of human bathing (in European rivers or lakes) is 500 units, and there are no requirements for irrigating with water obtained from rivers or lakes. Despite the discussion, values included in table XII did not suffer any modification during the legislative process. In the case of bacteria indicator, a bacterium was added as indicator (*spore forming sulphate-reducing bacteria*) and the logarithmic reduction of the *clostridium perfringens spores* was reduced from 5 to 4 units. Table XIII summarizes the total requirements for Class

A water in the Regulation in comparison to previous legislation about water reuse the Member States with prior tradition in water reuse: Cyprus, Italy, Portugal, and Spain.

Table XIII - Total requirement for Class A water reuse.

Parameter	EU 741/2020	CY	IT	PT	ES
E-Coli (cfu/100ml)	≤ 10	≤ 1-10	≤10	--	≤100
Faecal coliform	--	--	--	≤100	--
Legionella sp. (cf/l)	≤1000	--	--	--	≤1000
Intestinal helminth eggs	≤1	absence		≤0.1	≤0.1
TSS (Mg/l)	≤10	≤10	≤10	≤60	≤20
Turbidity (NTU)	≤5	--	--	--	--
BOD5 (mg/l)	≤10	--	--	--	≤10

Source: Own elaboration from JRC Impact Assessment Report, EU Regulation 2020/741, and Member States' regulations.

Given that the Regulation sought to increase public trust in water reuse in agriculture, acceptable levels were made more stringent. However, some questions remain unanswered, and some incongruences are also observable. For example, the relevance of emergent contaminants in relation to E-Coli's or why the Regulation requirements are only applicable to reclaimed water and not for groundwater (rivers and lakes) or underground water (aquifers). A "discrimination" of reclaimed water due to more stringent acceptable levels imply a higher investment. Actors from Belgium, France, or Portugal agreed that water reuse becomes economically unsustainable. In the case of Belgium because farmers do not have irrigating systems, the abundance of rainfalls made such systems unnecessary. In the case of Portugal, arguments vary, crops are in the inside of the country, far from the seaside, where the majority of WWTP (and cities) are

situated. Therefore, the installation of a pipe network to transport water upstream to the crops also make water reuse unfeasible. Representatives from these countries favored the reduction of the strictness of acceptable levels to allow a reduction of water reuse costs.

Acceptable levels proposed by the European Union seek the standardization of criteria for water reuse within all the Member States, but the perception of each country is relevant in the process of determining substances and their acceptable levels. In the following section, the involvement of subpolitics in this process is analyzed to provide insights about the construction of water reuse risk.

6. Subpolitics omnipresence in the construction of risk

As explained before, accounting begins in heterogeneous areas and forms (Power, 2015). Quantification is one of those forms, and in the case of risk, it allows risk measurement, expanding accounting to new areas of control (Mikes, 2011) (i.e., creating new calculative spaces) (Miller, 1992). However, modern risk is a social construction that requires the involvement of science and experts in its construction (Beck, 1992). The involvement of individuals in the process of risk management could affect its effectiveness because risk is managed following their risk appetite (i.e., their perception about harms resulting from risk materialization) (Power, 2009). Beck *et al.* (1997) argue that the involvement of subpolitics within political processes creates a legitimacy conflict. External agents (experts, scientists, or stakeholders) are involved in the political process, eliminating the expected neutrality of science. In the case of water reuse, the JRC represents a scientific body created to satisfy the political demand for technical knowledge, an “European Commission’s science and knowledge service which employs scientists to carry

out research in order to provide independent scientific advice and support to EU policy” (European Commission, 2021).

The risk society is characterized by reflexivity, everything is questioned, including science when it participates in political processes (e.g., scientists working in the JRC can also suffer from delegitimization). Politicians require the involvement of scientists and experts in the political process to manage modern risk, however, science can also become politicized in this process (Holzer & Sørensen, 2003). Delegitimization of science appears because of different alternatives to assess or manage risk collapse. Experts now have to find a solution to different alternatives through the use of “their methodology and their scientific-technical standards (...) then the opposing arguments will fall silent and clarity and unanimity will prevail” (Beck, 1997; p. 58). The use of different methodologies by experts can be reflected in the negotiation of acceptable levels by Members of the European Parliament (hereafter MEPs). Agents interviewed confirmed that some of the MEPs consulted experts to support their arguments (e.g., Interviewee 8 was consulted by a Finish MEP), which reflects a relevant influence of subpolitics within a political process because MEPs defend their ideas with the support of scientist or stakeholders’ arguments. This process resulted in two groups of MEPs: reclaimers and protectors, depending on the country they represent and the ideas they support:

“... you can divide the landscape in Europe into two populations when it comes to water reuse. Then you have the reclaimers, so countries who have experience in reusing treated wastewater and who would like to do more about it and who are convinced based simply on their experience, that this is a safe practice provided that you follow certain rules, and you have to protect it. And protectors who are much more worried about, possible or presumed risks that you may have for surface water, for

groundwater receiving reclaimed water. And this is simply, the context in Europe" (Interviewee 2)

It can be argued that reclaimer countries are Spain, France, Italy, Greece, or Cyprus, countries with the previous tradition and legislation regarding irrigation with reclaimed water. In contrast to them, protectors, are states with abundant water resources, like Germany, Slovakia, or the Scandinavian countries. As Interviewee 9 argued, the negotiation was characterized by the concern about the quality of water employed to irrigate crops within the reclaimer countries. However, the negotiation suffered from ambiguous situations. Interviewee 2 explained the paradox of countries against water reuse but with permissive regulation for water quality irrigation. For example, in Slovakia, where the requirements of water quality for irrigation are comparatively lower, but their demands for water reuse were very high. An unusual situation, because "in one case they accepted, for instance, 100 or even more, counts of E-Coli. And in the other case, they want to have zero [risk]. This is not rational. This is not logical" (Interviewee 2).

Zero risk is related to the risk appetite. Alemanno (2013) describes the determination of the zero-risk level within the European risk regulation process as the result of a *precautionary principle*. The principle plays the role of balancing the free movement of goods and health protection, with the adoption of indicators to reduce the risk materialization probability to an acceptable level. However, it is difficult to achieve this principle, because the calculation of probabilities or the replicable evidence achieved by science would not satisfy this criterion when the subject matter is the uncertainty of risk materialization (Saravanamuthu, 2009). Thus, this principle should be distinguished from the *preventive principle*, which allows restrictions to prevent risk only when their existence has been proven. Whether preventive or precautionary, Alemanno (2013) argues that these principles could not characterize the risk assessment process, because within modern society science cannot always provide a definitive

answer. In the case of water reuse, protector countries used the preventive principle to the highest expression, reducing risk appetite to the lowest level, even when evaluating all the potential causes and effects is impossible (Interviewee 9). As risk construction within modern society is based on probabilities calculations, the precautionary principle should be based on the control in proportionality with the level of protection (Alemanno, 2013). However, protectors' risk appetite is low, and their arguments are based on the fact that the risk remaining *is not* zero. Interviewee 13 wonders how it is possible to reduce risk to zero when you are not sure about the risk you have to assess (e.g., emergent pollutants). He agreed that zero risk is impossible to achieve, but also added that during the last decades there were no cases of public health issues due to reclaimed water. The probability of risk materialization is the lowest possible (Interviewee 5). In this regard, interviewee 2 argued that:

“...there are lobbyists or stakeholder groups who have legitimate interests and to defend these interests, they use arguments coming from a different perspective now. And the problem is you can tell lies by using true statements, a common policy gap. I mean, you can't do the same on the other side. The problem is to find the truth and reality to make a good judgment of what is correct? I don't think that countries, from a national perspective, or I haven't had the impression that they had a national perspective in imposing quality standards, not the country, certainly not. Groups of actors are behind the scenes in the consultation process” (Interviewee 2)

The negotiation becomes blocked. Determining higher or lower acceptable levels suppose that reclaimers considered that protectors' requirements are too strict, and protectors regarded that risk remaining within lower acceptable levels are too high. This situation is theoretically described as congestion (Beck, 1999) (i.e., how experts, politicians, and scientists protest in the risk society). In this case, protectors did not agree with the

acceptable levels and considered that the remaining risk was relevant. Consequently, they blocked the process and when scientific arguments were delivered, protectors did not accept them. Protectors' risk appetite is low because of their perception that reclaimed water is risky. To support their arguments about the risk of reclaimed water, they provide scientific objections, supported with scientific arguments that proposed that acceptable levels do not avoid risk (Interviewee 2). Similar to Guénin-Paracini, Malsch, & Paillé (2014), science can be used as an excuse for an actual political conflict supporting sides, because "technically there is no problem, is a political issue" (Interviewee 9). As Holzer & Sørensen (2003) suggested, more than a *scientification of politics* there is a *politicization of science* (i.e., the use of science for political issues), in this case, to block the determination of acceptable levels.

Protectors are concerned about water reuse practices in countries with previous legislation, and reclaimers seek a common framework to increase trust in water reuse. Both are interested in a common regulation. Thus, an agreement is necessary. Beck (1999) explains that congestion ends with a middle solution, where no part is completely satisfied but one that enables the end of the process. In the case of water reuse, the intermediate solution consisted in acceptable values included in the Regulation, but it produced an unexpected side-effect (Beck, 1999), as organizing risk causes a new risk (Pelzer, 2018). In the case of water reuse, the intermediate situation results in incongruences. The paradox of requiring higher levels for water reuse could limit water reuse for agricultural purposes, turning a health risk into an economic and environmental one. If requirements for water reuse in agriculture are higher than for other uses, reclaimed water could become more interesting for those uses (e.g., gardens irrigation, or industrial) where there are lower requirements, while farmers will seek cheaper water resources (Interviewee 14). Consequently, determining higher acceptable levels to increase public trust could involve that,

instead of fostering water reuse for agricultural purposes, it achieves just the opposite effect: the promotion of water reuse for garden irrigation or industrial uses (Interviewee 15). EU Regulation involves lots of costs. Moreover, other water resources with lower quality can be used without any control (e.g., rivers or aquifer sources), and with lower investment in comparison with water reuse, thereby preventing the Regulation to achieve its goal.

7. Conclusion

This chapter shows how accounting can play a key role in the construction of a calculative space within water reuse through the construction of risk. Following Miller (1992), we propose that indicators participate in the construction of the water risk calculative space. Quantification allows indicators – and their acceptable levels based on risk probability – to operate as tools to assess the extent to which the presence of substances and pathogens in reclaimed water is perceived as a risk for human health. Determining the type and quantity of those substances has the characteristics of modern risk, the management of which requires the involvement of scientists and key actors in a subpolitical process (Beck *et al.*, 1997). The analysis of this investigation shows that science can be used for political purposes to support opposing arguments: the existence of risk and, at the same time, the low probability of risk materialization

Political purposes are based on risk appetite and the socially constructed nature of risk, in such a way that when there is not a perception of risk, risk does not exist, even when a potential harm may take place. This chapter provides examples of the social perception of risk in the cases of E-Coli and emergent contaminants. While it is certain that E-Coli caused the German Cucumber case, we lack evidence about the consequences of

emergent contaminants. However, the latter received higher attention from actors involved in the determination of indicators.

Interviewees distinguish two different political positions, corresponding to what they call protectors and reclaimers. Protectors perceived irrigating with reclaimed water as a risk for human health and they employ scientific arguments to strengthen acceptable levels and reduce the probability of risk materialization to zero. For reclaimers, tougher acceptable levels could make water reuse economically unsustainable. At the same time, the quantification of risk through indicators is influenced by subpolitics, producing an unexpected side-effect: more stringent acceptable levels foster the use of reclaimed water for irrigating gardens, or for industrial purposes, instead of fostering agricultural irrigation with reclaimed water.

This chapter contributes to previous accounting research by analyzing how accounting partake in the construction of water reuse risk by means of the quantification of risk through indicators. Accounting authority stems from its capacity to create calculative spaces (Miller, 1992), in such a way that the role of accounting is not just conceived as an answer, but also as a rationalization machine (Burchell, Clubb, Hopwood, Hughes, & Nahapiet, 1980) that legitimates particular activities and rationalizes behavior to protect certain interests and boost practices (Humphrey & Moizer, 1990). Examples of the accounting involvement in the construction of risk are risk maps or IT-based risk management systems (Jordan *et al.*, 2018; Themsen & Skærbaek, 2018). Our research suggests that the mobilization of scientific indicators in social, ecological, and economic contexts, could be studied as a calculative space where risk is quantified with social, ecological and economic implications. Indicators allow turning water reuse risk into a new calculative space in two ways: firstly, it identifies the substances and pathogens that are considered risky, and secondly, it evaluates the quantitative acceptable levels of each substance

or pathogen to guarantee that irrigating with reclaimed water is not a risk for human health.

The process of risk construction is affected by the nature of modern risk. Modern risk is based on social perceptions and so is the process of constructing it. In this regard, public concern about the risk of irrigating with reclaimed water is higher than with surface water and, thus, society risk appetite is lower, creating the need to manage the risk of irrigating with reclaimed water. Indicator's construction resulted in an intermediate value between reclaimers and protectors' requirements showing how the functionality of indicators is not limited to avoiding human health and environmental risk, but also to convincing society that risk is under control and contributing to making water reuse feasible. However, requiring the management of the risk from irrigating with reclaimed water for agricultural purposes creates a distinction between reclaimed water and other water sources like surface water or aquifers. This discrimination is a side-effect of risk management and entails turning one thing, water, into two different: reclaimed water and surface water.

Additionally, risk management side-effects are not limited to turning similar things different. Risk management is deployed to answer public concern about risk (Power, 2004). The result from implementing accounting systems is not always the expected and Power (2009) discussed the arguments he employed in 2004, suggesting that risk management turned into a "legitimacy-driven style risk management which has been extensively institutionalized and globalized, and important issues of 'risk appetite' have become lost in the procedural detail of organization-specific internal control, compliance and accounting systems" (p. 854). In other words, risk management, instead of seeking risk management itself, focuses on proving that risks are governed, even when they are not.

In this case, acceptable levels resulted from the process of risk identification and quantification that suffered from congestion in

the negotiation between reclaimers and protectors. The analysis shows how congestion can affect the expected function of risk management systems. Irrigating now with reclaimed water requires the implementation of risk management, while farmers irrigating with surface water do not have similar requirements. This distinction is based on the social perception that surface water is safer than reclaimed, even when it might not be the case. Increasing trust on water reuse (social perception about the safety of this practice) has a side-effect, which is making reclaimed water more expensive and less attractive to farmers, and, in some cases, economically unsustainable (where the cost of implementation is higher). In this regard, what initially was a public health risk (irrigating with reclaimed water) may become an economic and environmental one, because surface water is more profitable for farmers, and they will prefer it for irrigation, even when public perception is no longer a problem. Therefore, the process of quantifying water reuse risk may lead to unexpected consequences that could impede the promotion of reclaimed water for agricultural irrigation, which paradoxically is the purpose of water reuse policymaking.

Finally, we note that this research suffers from some limitations. Most of the interviewees are Spaniards, something that could generate a potential source of bias in the study. Spain is one of the European countries where water reuse is more relevant and, for that reason, there are more Spanish participants in the legislative process described in this paper. To avoid such bias, the selection of participants focused on individuals involved in the process, experts with relevant background, or participating in the Regulation adaptation to Spanish legislation. Additionally, the European Regulation was approved recently, in 2020. This study analyzes the role of subpolitics in water reuse risk construction and how the expected role of risk management can be altered. In order to explore whether subpolitics may generate further side-effects a longer time perspective might be advisable.

Future research could focus on those side-effects to know whether the risk management framework is achieving its objective. Likewise, the connection between accounting and water is needed. Interviewee 9 suggested that accounting may play an “extra role” in water risk management with the implementation of assurance, or the creation of certifications to increase trust in water reuse. Numerous guidelines like GRI or CDP are now expanding their original reporting framework to water issues (Carbon Disclosure Project, 2020; Global Reporting Initiative, 2016). Consequently, accounting for water should be further explored to assess, manage, and create trust and accountability about water. Further research on the role of accounting in the governance of water, the disclosure of water sources quality, water governance structures, and other areas seeking to improve water sustainability is needed, moreover when water scarcity, drought, or severe climate situations are very likely to increase in the following years.

Chapter 5 – General Conclusions

The general objective of this dissertation is to study the role of accounting in the construction and management of risk in the age of compliance. To achieve it three key objectives were proposed:

Key objective 1: To characterize the accounting literature on the assurance of compliance systems as a tool to prove their effectiveness

Key objective 2: To analyze the influence of compliance systems in the role of code of ethics within organizations

Key objective 3: To analyze the role of accounting in the construction of modern risk

The thesis project structure followed the order of the key objectives proposed above. However, in this chapter we reorganize the summary of the conclusions starting from risk construction and continuing with risk management operationalization (see Figure 8).

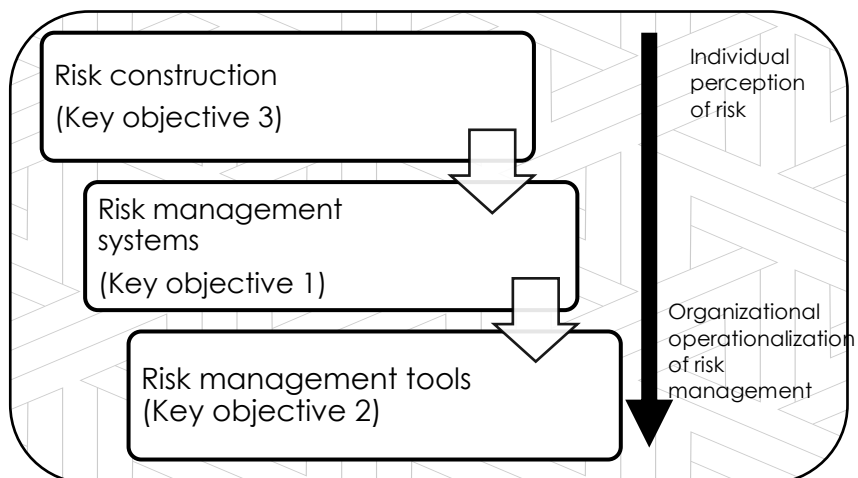


Figure 8 – Structure of the general conclusions of the dissertation

According to Beck (1992), modern risk is a social construction that depends on the social perception of threats. For that reason, the processes of risk management are affected by that construction. Therefore, this section addresses in the first place the construction of risk.

Key objective 3 - To analyze the role of accounting in the construction of modern risk, and specifically concerning water reuse. The construction and management of risk become relevant for the promotion of water reuse for agriculture purposes. Risk management is considered a practice that allows the reduction of risk within the contours of risk appetite (i.e., how much risk is allowed). In the case of water reuse, the limits of risk appetite are determined by indicators that assess the substances and pathogens that could make reclaimed water unsafe for human health or harmful to the environment. By establishing indicators, accounting creates a *calculative space* (Miller, 1992) that contributes to govern water reuse risk.

Quantification is key in the process of determining acceptable levels in the field of water reuse risk. Indicators visualize the acceptable levels below which toxins are not considered to harm human health. The process of quantifying indicators for water reuse risks consisted of two steps. In the first step, the substances and pathogens that are deemed to be risky for human health and the environment are identified. The second step consists in determining the acceptable level for each substance or pathogen.

The social construction of water reuse risk is grounded on a subpolitical process (Beck, 1992) that requires the involvement of science to manage the risk. In the case of water reuse, experts, and key actors, classified into reclaimers and protectors, participate in the subpolitical process. Both groups have different risk appetite and rely on opposing arguments about the determination of acceptable levels. Reclaimers are usually based in countries with water scarcity problems that tend to favor

water reuse, hence with a higher risk appetite. Protectors are usually experts based in countries with abundant water resources and are more prone to support measures that try to reduce risk as much as possible. The discussion between reclaimers, which considered reclaimed water a necessity, and protectors, which tended to have a lower risk appetite for irrigating with reclaimed water, resulted in a process blockage.

The blocking resulting from the debate between reclaimers and protectors is what Beck (1999) refers as congestion. The method employed in risk society to protest against risk politics. Congestion was overcome in the case when both parties accepted an intermediate position to regulate water reuse. The final intermediate position ended up creating, in contrast with the carbon markets process analyzed by MacKenzie (2009), two different elements from the same substance: reclaimed water and surface water. Risk management requirements and higher acceptable levels made reclaimed water more expensive and, consequently, less attractive to farmers. At the same time, more expensive water means that other actors like industries or cities will be better placed to access to employ reclaimed water, compared to farmers. Consequently, the regulation may increase public trust in water reuse, but this trust might not be translated into fostering water reuse for agricultural purposes.

Key objective 1 – To characterize the accounting literature on the assurance of compliance systems as a tool to prove their effectiveness. As soon as the society perceives the risk, a social pressure arises requiring the management and governance of risk. How risk is constructed and monitored through risk management systems is relevant to avoid its materialization. Nevertheless, risk management in the age of compliance does not only focus on avoiding risk materialization, but also on proving the effectiveness of risk management. Consequently, compliance systems must be shown to be effective.

Proving the effectiveness of compliance systems represents the last step in the process of turning organizations out-inside. Power (2007) coined the term *audit implosion*, introducing the idea that organizations sought trust and accountability by improving their internal control mechanism. He considered that firms' internal procedures were transformed in the name of risk and that organizations now seek to avoid fraud or corruption from the inside (Carter *et al.*, 2012; Power, 2007). Recent risk management regulation signals the relevance of compliance objectives. Compliance systems can be considered the result of this internal governance redefinition process, transforming prior governance mechanisms such as internal control and risk management systems or the internal audit function by adding a focus on complying with the law and promoting ethical behavior.

However, organizations suffer from uncertainty when they need to prove the efficacy of their compliance systems, requiring a mechanism that proves that their systems are effective. Power defined assurance as the expansion of financial auditing to a *wider marketplace*, considering it the proper tool to provide trust and accountability about new topics like environmental performance. Recently, the Spanish Criminal Code proposed assurance as a proper way to provide trust about the efficacy of compliance systems. The dissertation proposes that assurance can operate as a suitable mechanism to ensure that corporate compliance systems are effective. However, despite compliance systems are gaining a higher relevance among firms' internal control mechanisms, the concept of compliance systems has not been visited in previous accounting research. In this regard, literature examined in Chapter 2 still referring for the most part to other prior control programs, such as internal control and risk management systems, or internal audit function.

Key objective 2 – To analyze the influence of compliance legislation in the role of code of ethics within organizations.

Compliance systems seek to reduce the probability of fraud and corruption. To achieve this end, compliance systems have to

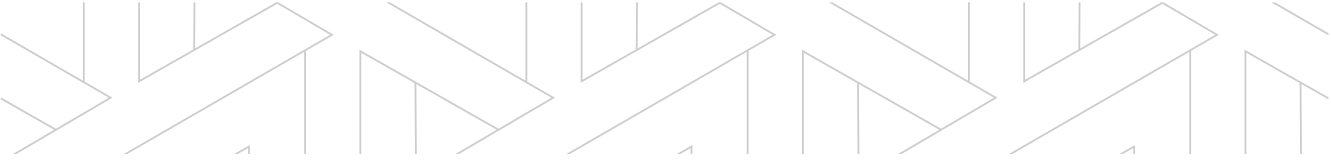
foster an ethical culture among employees and managers. Chapter 3 focuses on the tools of risk management that can achieve this purpose. The code of ethics (CE) is regarded as the proper tool to foster an ethical conduct by employees and managers (Kaptein & Schwartz, 2008). CEs are widely employed to foster firms' ethical culture and communicate the expected behavior in their work by employees and managers. This dissertation shows how CEs have turned out to be common tools among most firms in the age of compliance, a use that has been greatly influenced by the legal reform introducing the need of implementing compliance systems.

However, the implementation of CEs is not aimed at promoting an ethical culture but rather at creating a shield against legal responsibility. Chapter 3 finds that compliance legislation may distort the use of CEs by fostering their use as a legal risk management tool seeking to identify the employees or managers non-complying with the code and committing a crime. This singularization of responsibility is used by firms to avoid criminal liability and attribute this responsibility to specific organizational members.

Overall, this dissertation relies on the social construction of risk and its implications for governing firms. Compliance drives a transformation of the *operational risk* as described by Power (2005): accounting has expanded from the limited valuation of risk as related to the financial sphere to an understating of risk that is embedded in the whole organization and related to broad external concerns, like water reuse, as studied in chapter 4. How risk is perceived, constructed, and managed becomes crucial for organizations. Firms have to disclose information about risk management and assure their risk management process to provide evidence on the effectiveness of their internal control mechanisms. Risk is no longer external to firms nor a potential financial loss, but rather it becomes integral for the governance of organizations. In the age of compliance, accounting plays a twofold role in managing and governing risk. On the one hand, it

creates new calculative spaces in the name of risk by visualizing it through quantification. On the other hand, it works as a trust provider mechanism for the effectiveness of compliance and other internal control systems.

This dissertation suggests ideas for further accounting research. Future research could analyze the role of accounting in distributing blame. Beck explained that one of the characteristics of modern risk is risk causality. The materialization of risk is not always clear and, as with the construction of risk, determining the causality between the materialization of risk and its harms is often difficult. In this regard, previous accounting literature considered that risk management could work as a blame distribution tool (Skærbæk & Christensen, 2015) or, as a blame avoidance tool (Spira & Page, 2003). The results in chapter 3 support this idea; yet more research is needed to provide insight into the mechanisms by which blame is distributed, and risk causality is constructed within compliance systems. Future research could also analyze the role of accounting in providing trust about the effectiveness of compliance systems. Chapter 2 suggests that the scope of assurance could be expanded to compliance systems. Moreover, experts involved in the development of a new risk framework considered assurance or certification a proper trust providing tool (see the conclusions of chapter 4). In the Spanish context, certification is receiving relevant attention from firms when they aim to prove their compliance systems' effectiveness. New standards are appearing with this aim (AENOR, 2015, 2017a, 2017b, 2021), the most recent in 2021. However, the dilemma about how pertinent is to certify a system is not resolved. Further evidence should be provided of the role of assurance as a trust provider tool in compliance systems.



References

- Abdullah, N. S., Indulska, M., & Sadiq, S. (2016). Compliance management ontology – a shared conceptualization for research and practice in compliance management. *Information Systems Frontiers*, 18(5), 995–1020. <https://doi.org/10.1007/s10796-016-9631-4>
- AccountAbility. (2008). AA1000AS (2008) Assurance Standard.
- Adams, G. (1994). What Is Compliance? *Journal of Financial Regulation and Compliance*, 2(4), 278–285. <https://doi.org/10.1108/eb024816>
- Adams, J. S., Tashchian, A., & Shore, T. H. (2001). Codes of ethics as signals for ethical behavior. *Journal of Business Ethics*, 29(3), 199–211. <https://doi.org/10.1023/A:1026576421399>
- AENOR. (2015). UNE-ISO 19600 - Sistemas de gestión de Compliance. Directrices.
- AENOR. (2017a). UNE-ISO 19601. Sistemas de gestión de compliance penal. Requisitos con orientación para su uso.
- AENOR. (2017b). UNE-ISO 37001 - Sistemas de gestión antisoborno. Requisitos con orientación para su uso.
- AENOR. (2021). ISO 37301 - Sistemas de gestión del compliance. Requisitos con orientación para su uso. *ISO (Organización Internacional de Normalización)*. Retrieved from www.iso.org
- Akisik, O., & Gal, G. (2017). The impact of corporate social responsibility and internal controls on stakeholders' view of the firm and financial performance. *Sustainability Accounting, Management and Policy Journal*. <https://doi.org/10.1108/SAMPJ-06-2015-0044>
- Al-Akra, M., Abdel-Qader, W., & Billah, M. (2016). Internal auditing in the Middle East and North Africa: A literature review. *Journal of International Accounting, Auditing and Taxation*, 26, 13–27. <https://doi.org/10.1016/j.intaccaudtax.2016.02.004>
- Alcalde-Sanz, L., & Gawlik, B. M. (2017). *Minimum quality requirements for water reuse in agricultural irrigation and*

aquifer recharge. <https://doi.org/10.2760/887727>

- Alemanno, A. (2013). Regulating the European Risk Society. In *Better Business Regulation in a Risk Society* (p. 328).
- Anderson, U. L., Christ, M. H., Johnstone, K. M., & Rittenberg, L. E. (2012). A post-SOX examination of factors associated with the size of internal audit functions. *Accounting Horizons*, 26(2), 167–191. <https://doi.org/10.2308/acch-50115>
- Arksey, Hilary, & Knight, P. (1999). *Interviewing for Social Scientists*. (Hillary Arksey & P. Knight, Eds.) (First). London: Sage publications.
- Armitage, J. (2008). Changes in the importance of topics in auditing education: 2000-2005. *Managerial Auditing Journal*, 23(9), 935–959. <https://doi.org/10.1108/02686900810908463>
- ASCOM. (2017). Libro blanco sobre la función de compliance. Retrieved from <https://www.asociacioncompliance.com/new2017/wp-content/uploads/2017/08/Libro-Blanco-Compliance-ASCOM.pdf>
- Ascui, F., & Lovell, H. (2011). As frames collide: Making sense of carbon accounting. *Accounting, Auditing and Accountability Journal*, 24(8), 978–999. <https://doi.org/10.1108/09513571111184724>
- Bailey, C., Collins, D. L., & Abbott, L. J. (2018). The impact of enterprise risk management on the audit process: Evidence from audit fees and audit delay. *Auditing*, 37(3), 25–46. <https://doi.org/10.2308/ajpt-51900>
- BBC. (2011). E. coli cucumber scare: Spain angry at German claims. *BBC News*.
- Bebbington, J., & Unerman, J. (2020). Advancing research into accounting and the UN Sustainable Development Goals. *Accounting, Auditing and Accountability Journal*, 33(7), 1657–1670. <https://doi.org/10.1108/AAAJ-05-2020-4556>
- Beck, U. (1992). *Risk Society: Towards a New Modernity*. SAGE Publications (Vol. 69). <https://doi.org/10.2307/143601>
- Beck, U. (1997). Subpolitics: Ecology and the disintegration of

- institutional power. *Organization and Environment*, 10(1), 52–65. <https://doi.org/10.1177/0921810697101008>
- Beck, U. (1999). *La invención de lo político* (Primera). Fondo de Cultura Económica.
- Beck, U., Giddens, A., & Lash, S. (1997). *Modernización reflexiva. Política, tradición y estética en el orden social moderno* (Segunda). Alianza Editorial.
- Berbel, J., & Esteban, E. (2019). Droughts as a catalyst for water policy change. Analysis of Spain, Australia (MDB), and California. *Global Environmental Change*, 58(August), 101969. <https://doi.org/10.1016/j.gloenvcha.2019.101969>
- Berg, B. L., & Lune, H. (2012). *Qualitative Research Methods of the Social Sciences*. (H. Lune & B. L. Berg, Eds.), Pearson Education Limited. Harlow: Pearson Education Limited.
- Bhimani, A. (2009). Risk management, corporate governance and management accounting: Emerging interdependencies. *Management Accounting Research*, 20(1), 2–5. <https://doi.org/10.1016/j.mar.2008.11.002>
- Burchell, S., Clubb, C., Hopwood, A., Hughes, J., & Nahapiet, J. (1980). The roles of accounting in organizations and society. *Accounting, Organizations and Society*, 5(1), 5–27. [https://doi.org/10.1016/0361-3682\(80\)90017-3](https://doi.org/10.1016/0361-3682(80)90017-3)
- Canary, H. E., & Jennings, M. M. (2008). Principles and influence in codes of ethics: A centering resonance analysis comparing pre- and post-sarbanes-oxley codes of ethics. *Journal of Business Ethics*, 80(2), 263–278. <https://doi.org/10.1007/s10551-007-9417-1>
- Carasco, E. F., & Singh, J. B. (2003). The Content and Focus of the Codes of Ethics of the World's Largest Transnational Corporations. *Business and Society Review*, 108(1), 71–94.
- Carbon Disclosure Project. (2020). *A Wave of Change - The role of companies in building a water-secure world*.
- Carter, L., Phillips, B., & Millington, P. (2012). The impact of information technology internal controls on firm performance. *Journal of Organizational and End User Computing*, 24(2), 39–49.

<https://doi.org/10.4018/joeuc.2012040103>

Christ, K. L., & Burritt, R. L. (2017). Water management accounting: A framework for corporate practice. *Journal of Cleaner Production*, 152, 379–386.
<https://doi.org/10.1016/j.jclepro.2017.03.147>

Clemente, I., & Álvarez, M. (2011). ¿Sirve de algo un programa de compliance penal? ¿Y qué forma le doy? (*Responsabilidad Penal de la persona jurídica en la LO 5/2010: Incertidumbre y llamado por la seguridad jurídica. Actualidad Jurídica Uría Menéndez*, 28.

Cooper. (2017). Investigation , Resignation , Condemnation : The story of Bartomeu ' s Barça Board.
<https://www.barcablaugranes.com/2017/7/6/15924034/the-story-of-bartomeus-barca-board>, 43–51.

Correa, C., & Larrinaga, C. (2015). Engagement research in social and environmental accounting. *Sustainability Accounting, Management and Policy Journal*, 6(1), 5–28.
<https://doi.org/10.1108/SAMPJ-09-2014-0058>

COSO. (2004). Enterprise Risk Management - Integrated Framework. Executive Summary. *Sarbanes-Oxley Guide for Finance and Information Technology Professionals*.
<https://doi.org/10.1002/9781119201939.app4>

COSO. (2013a). COSO Framework & SOX Compliance.

COSO. (2013b). Internal Control - Integrated Framework. *The Committee of Sponsoring Organizations of the Treadway Commission*, (May), 1–20. Retrieved from
<https://www.coso.org/Pages/ic.aspx>

Cressey, D. R., & Moore, C. A. (1983). Managerial Values and Corporate Codes of Ethics. *California Management Review*, 25(4), 53–77. <https://doi.org/10.2307/41165032>

Criminal Code. (1995). Ley Orgánica 10/1995, de 23 de noviembre, del Código Penal. *Boletín Oficial Del Estado*, 1–199. Retrieved from
<https://www.boe.es/buscar/pdf/1995/BOE-A-1995-25444-consolidado.pdf>

Čular, M., Slapničar, S., & Vuko, T. (2020). The Effect of Internal

- Auditors' Engagement in Risk Management Consulting on External Auditors' Reliance Decision. *European Accounting Review*, 29(5), 999–1020.
- D'Silva, K., & Ridley, J. (2007). Internal auditing's international contribution to governance. *International Journal of Business Governance and Ethics*, 3(2), 113–126.
<https://doi.org/10.1504/IJBGE.2007.012606>
- Decaux, L., & Sarens, G. (2015). Implementing combined assurance: insights from multiple case studies. *Managerial Auditing Journal*, 30(1), 56–79. <https://doi.org/10.1108/MAJ-08-2014-1074>
- Decreto Legislativo 231. (2001). Decreto Legislativo 8 giugno 2001, n. 231 “Disciplina della responsabilità amministrativa delle persone giuridiche, delle società e delle associazioni anche prive di personalità giuridica, a norma dell’articolo 11 della legge 29 settembre 2000, n. 300.”
- Deegan, C., Cooper, B. J., & Shelly, M. (2006). An Investigation of TBL Report Assurance Statements: Australian Evidence. *Australian Accounting Review*, 16(2), 2–18.
- Dolan, F., Lamontagne, J., Link, R., Hejazi, M., Reed, P., & Edmonds, J. (2021). Evaluating the economic impact of water scarcity in a changing world. *Nature Communications*, 12(1), 1–10.
<https://doi.org/10.1038/s41467-021-22194-0>
- Domenech, E., Zayas, L., & Legido, I. (2017). *Análisis de la estandarización de modelos de cumplimiento penal: UNE 19601, Sistemas de gestión del Compliance Penal*. BDO Risk & Advisory Services (Vol. 1).
- Dopico, J. (2016). Responsabilidad penal de las personas jurídicas. In *Memento Penal* (pp. 1–19).
- Douglas, M. (1996). *La aceptabilidad del riesgo según las ciencias sociales*. (R. Sage, Ed.) (1ª). Barcelona: Ediciones Paidós Ibérica.
- DW. (2020). Volkswagen scandal: Top German court rules automaker must pay 'dieselgate' compensation | .
<https://www.dw.com/en/volkswagen-scandal-top-german-court-rules-automaker-must-pay-dieselgate->

Compensation/a-53556743. Retrieved from <https://www.dw.com/en/volkswagen-scandal-top-german-court-rules-automaker-must-pay-dieselgate-compensation/a-53556743>

- Egan, M. (2014). Making water count: Water accountability change within an Australian university. *Accounting, Auditing and Accountability Journal*, 27(2), 259–282. <https://doi.org/10.1108/AAAJ-07-2012-01059>
- Elder, R. J., Akresh, A. D., Glover, S. M., Higgs, J. L., & Liljegren, J. (2013). Audit sampling research: A synthesis and implications for future research. *Auditing*, 32(SUPPL.1), 99–129. <https://doi.org/10.2308/ajpt-50394>
- Elliott, R. (1995). The future of assurance services: Implications for academia. *Accounting Horizons*, 9(4), 118.
- Elliott, R. K. (1997). Assurance service opportunities: Implications for academia. *Accounting Horizons*, 11(4), 61–74.
- Erwin, P. M. (2011). Corporate Codes of Conduct: The Effects of Code Content and Quality on Ethical Performance. *Journal of Business Ethics*, 99(4), 535–548. <https://doi.org/10.1007/s10551-010-0667-y>
- European Commission. (2000). Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy.
- European Commission. (2012). *A Blueprint to Safeguard Europe's Water Resources*. Retrieved from <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0673:FIN:EN:PDF>
- European Commission. (2015). *Consultation on policy options to optimise water reuse in the EU*.
- European Commission. (2018a). *Impact Assessment accompanying the document Proposal for a Regulation of the European Parliament and of the Council on Minimum Requirements for Water Reuse. Commission staff working document, impact assessment*.
- European Commission. (2018). Proposal for a Regulation of the

- European Parliament and of the Council on minimum requirements for water reuse.
- European Commission. (2019a). Evaluation of the Urban Waste Water Treatment Directive, 186. Retrieved from https://ec.europa.eu/environment/water/water-urbanwaste/pdf/UWWTD_Evaluation_SWD_448-701_web.pdf
- European Commission. (2019b). *The European Green Deal*. <https://doi.org/10.1017/CBO9781107415324.004>
- European Commission. (2021). EU Science Hub - The Joint Research Center. Retrieved from <https://ec.europa.eu/jrc/en>
- European Parliament. (2020). Regulation (EU) 2020/741 of 25 May 2020 on minimum requirements for water reuse. *Official Journal of the European Union*.
- Ewald, F. (1991). Insurance and risk. In Burchell, Gordon, & Miller (Eds.), *The Foucault effect: Studies in governmentality* (pp. 197–210). University of Chicago Press.
- Fernandez-Feijoo, B. (2009). Crisis and corporate social responsibility: Threat or opportunity? *International Journal of Economic Sciences and Applied Research*, 2(1), 36–50. Retrieved from <http://hdl.handle.net/10419/66605%0AStandard-Nutzungsbedingungen>:
- Foster, B. P., McClain, G., & Shastri, T. (2013). The auditor's report on internal control & fraud detection responsibility: A comparison of French and U.S. users' perceptions. *Journal of Accounting, Ethics and Public Policy*, 14(2), 221–257.
- Francis, R., & Armstrong, A. (2003). Ethics as a Risk Management Strategy: The Australian Experience. *Journal of Business Ethics*, 45(4), 375–385. <https://doi.org/10.1023/A:1024163831371>
- Fraser, I., & Henry, W. (2007). Embedding risk management: Structures and approaches. *Managerial Auditing Journal*, 22(4), 392–409. <https://doi.org/10.1108/02686900710741955>
- Gal, G., & Akisik, O. (2020). The impact of internal control, external assurance, and integrated reports on market

value. *Corporate Social Responsibility and Environmental Management*, 27(3), 1227–1240.
<https://doi.org/10.1002/csr.1878>

Gerdin, J., & Englund, H. (2019). Contesting commensuration: Public response tactics to performance evaluation of academia. *Accounting, Auditing and Accountability Journal*, 32(4), 1098–1116. <https://doi.org/10.1108/AAAJ-09-2016-2717>

Giddens, A. (1999). Risk and Responsibility. *The Modern Law Review*, 62(1), 1–10. <https://doi.org/10.2307/824017>

Global Reporting Initiative. (2016). *GRI 306: Effluents and Waste. GRI Standards*. Retrieved from <https://www.globalreporting.org/standards/gri-standards-download-center/?g=dec8fd48-1dbf-453f-9d93-f746662dea78>

Gómez-Jara Díez, C. (2017). *El Tribunal Supremo ante la responsabilidad de las personas jurídicas.pdf*.

Gramling, A. A., Schneider, A., & Bhaskar, L. S. (2018). Do consulting services performed by internal auditors influence their subsequent assessments when performing assurance services? *Advances in Accounting Behavioral Research*, 21, 69–95. <https://doi.org/10.1108/S1475-148820180000021004>

Guénin-Paracini, H., Malsch, B., & Paillé, A. M. (2014). Fear and risk in the audit process. *Accounting, Organizations and Society*, 39(4), 264–288.
<https://doi.org/10.1016/j.aos.2014.02.001>

Guillén, M., Melé, D., & Murphy, P. (2002). European vs. American approaches to institutionalisation of business ethics: the Spanish case. *Business Ethics: A European Review*, 11(2), 167–178. <https://doi.org/10.1111/1467-8608.00273>

Hazelton, J. (2013). *Accounting as a human right: The case of water information. Accounting, Auditing and Accountability Journal* (Vol. 26).
<https://doi.org/10.1108/09513571311303738>

Hoang, H., & Phang, S. Y. (2020). How Does Combined Assurance Affect the Reliability of Integrated Reports and

- Investors' Judgments? *European Accounting Review*, 30(1), 175–195. <https://doi.org/10.1080/09638180.2020.1745659>
- Holzer, B., & Sørensen, M. P. (2003). Rethinking Subpolitics. Beyond the Iron Cage of Modern Politics. *Theory, Culture & Society*, 20(2), 79–102. <https://doi.org/10.1177/0263276403020002005>
- Hristov, J., Barreiro-Hurle, J., Salputra, G., Blanco, M., & Witzke, P. (2021). Reuse of treated water in European agriculture: Potential to address water scarcity under climate change. *Agricultural Water Management*, 251(March), 106872. <https://doi.org/10.1016/j.agwat.2021.106872>
- Humphrey, C., & Moizer, P. (1990). From techniques to ideologies: an alternative perspective on the audit function. *Critical Perspectives on Accounting*, 1, 217–238.
- IFAC. (2006). Internal Controls - A Review of Current Developments. *International Federation of Accountants*, (August), 1–19. Retrieved from <http://www.ifac.org/sites/default/files/publications/files/internal-controls-a-revie.pdf>
- IFAC. (2010). *International Framework for Assurance Engagements*.
- Institute of Internal Auditors. (2008). Sarbanes-Oxley Section 404: A guide for management by internal controls practitioners, *January*(2nd), 1–78.
- Jaramillo, M., García, M., & Pérez, M. (2003). Escándalos financieros y su efecto sobre la credibilidad de la auditoría. *Revista AECA*, 19.
- Jennings, M. M., Pany, K., & Reckers, P. M. J. (2008). Internal control audits: Judges' perceptions of the credibility of the financial reporting process and likely auditor liability. *Advances in Accounting*, 24(2), 182–190. <https://doi.org/10.1016/j.adiac.2008.08.006>
- Ji, X. dong, Lu, W., & Qu, W. (2018). Internal control risk and audit fees: Evidence from China. *Journal of Contemporary Accounting and Economics*, 14(3), 266–287. <https://doi.org/10.1016/j.jcae.2018.07.002>

- Jimeno-Bulnes, M. (2019). La responsabilidad penal de las personas jurídicas y los modelos de compliance: a case of anticipated evidence. *Revista General de Derecho Penal*, 32, 1–67.
- Jordan, S., Mitterhofer, H., & Jørgensen, L. (2018). The interdiscursive appeal of risk matrices: Collective symbols, flexibility normalism and the interplay of 'risk' and 'uncertainty.' *Accounting, Organizations and Society*, 67, 34–55. <https://doi.org/10.1016/j.aos.2016.04.003>
- Kaptein, M. (2004). Business codes of multinational firms: What do they say? *Journal of Business Ethics*, 50(1), 13–31. <https://doi.org/10.1023/B:BUSI.0000021051.53460.da>
- Kaptein, M. (2009). Ethics programs and Ethical culture: A next step in unraveling their multi-faceted relationship. *Journal of Business Ethics*, 89(2), 261–281. <https://doi.org/10.1007/s10551-008-9998-3>
- Kaptein, M. (2011). Toward Effective Codes: Testing the Relationship with Unethical Behavior. *Journal of Business Ethics*, 99(2), 233–251. <https://doi.org/10.1007/s10551-010-0652-5>
- Kaptein, M., & Schwartz, M. S. (2008). The effectiveness of business codes: A critical examination of existing studies and the development of an integrated research model. *Journal of Business Ethics*, 77(2), 111–127. <https://doi.org/10.1007/s10551-006-9305-0>
- Kelly, K., & Tan, H. T. (2017). Mandatory management disclosure and mandatory independent audit of internal controls: Evidence of configural information processing by investors. *Accounting, Organizations and Society*, 56, 1–20. <https://doi.org/10.1016/j.aos.2016.12.002>
- Knechel, W. R. (2007). The business risk audit: Origins, obstacles and opportunities. *Accounting, Organizations and Society*, 32(4–5), 383–408. <https://doi.org/10.1016/j.aos.2006.09.005>
- Knight, F. (1921). *Risk, Uncertainty and Profit*. New York: Reprints of economic classics. <https://doi.org/10.1017/CBO9781107415324.004>
- Knights, D., & Vurdubakis, T. (1993). Calculations of Risk: Towards

- an Understanding of Insurance as a Moral and Political Technology. *Accounting, Organizations and Society*, 18(7), 729–764.
- Lefebvre, M., & Singh, J. B. (1992). The content and focus of Canadian corporate codes of ethics. *Journal of Business Ethics*, 11(10), 799–808. <https://doi.org/10.1007/BF00872312>
- Lin, Shu, Pizzini, M., Vargus, M., & Bardhan, I. R. (2011). The role of the internal audit function in the disclosure of material weaknesses. *Accounting Review*, 86(1), 287–323. <https://doi.org/10.2308/accr.00000016>
- Linsley, P. M., & Shrides, P. J. (2009). Mary Douglas, risk and accounting failures. *Critical Perspectives on Accounting*, 20(4), 492–508. <https://doi.org/10.1016/j.cpa.2008.05.004>
- Luhmann, N. (1991). *Risk: A sociological theory*. Risk: A Sociological Theory. de Gruyter. <https://doi.org/10.4324/9781315128665>
- MacKenzie, D. (2009). Making things the same: Gases, emission rights and the politics of carbon markets. *Accounting, Organizations and Society*, 34(3–4), 440–455. <https://doi.org/10.1016/j.aos.2008.02.004>
- Mainali, B., Ngo, H. H., Guo, W. S., Pham, T. T. N., Wang, X. C., & Johnston, A. (2011). SWOT analysis to assist identification of the critical factors for the successful implementation of water reuse schemes. *Desalination and Water Treatment*, 32(1–3), 297–306. <https://doi.org/10.5004/dwt.2011.2714>
- Masli, A., Peters, G. E., Richardson, V. J., & Sanchez, M.J. (2010). Examining the potential benefits of internal control monitoring technology. *Accounting Review*. <https://doi.org/10.2308/accr.2010.85.3.1001>
- Mathews, M. C. (1987). Code of Ethics: Organizational Behavior and Misbehavior. *Research in Corporate Social Performance and Policy*, 9, 107–130. <https://doi.org/10.1007/BF00381721>
- Matus-Acuña, J. P. (2013). La certificación de los programas de cumplimiento. In L. Arroyo Zapatero & A. Nieto-Martín (Eds.), *El derecho penal económico en la era del compliance2* (pp. 145–154).

- Mekonnen, M. M., & Hoekstra, A. Y. (2016). Sustainability: Four billion people facing severe water scarcity. *Science Advances*, 2(2), 1–7. <https://doi.org/10.1126/sciadv.1500323>
- Mihret, D. G., & Grant, B. (2017). The role of internal auditing in corporate governance: a Foucauldian analysis. *Accounting, Auditing and Accountability Journal*, 30(3), 699–719. <https://doi.org/10.1108/AAAJ-10-2012-1134>
- Mikes, A. (2011). From counting risk to making risk count: Boundary-work in risk management. *Accounting, Organizations and Society*, 36(4–5), 226–245. <https://doi.org/10.1016/j.aos.2011.03.002>
- Miller, P. (1992). Accounting and Objectivity: The Invention of Calculating Selves and Calculable Spaces. *Annals of Scholarship*, 9(1/2), 239–264.
- Miller, P., & Power, M. (2013). Accounting, Organizing, and Economizing: Connecting Accounting Research and Organization Theory. *Academy of Management Annals*, 7(1), 557–605. <https://doi.org/10.5465/19416520.2013.783668>
- Minaldo, A.-S., & Periot, S. (2019). *KPMG Compliance survey*.
- Mustoe, H. (2020). BHS collapse : ' I was in charge of millions , then I had nothing ' . <https://www.Bbc.Com/News/Business-54056046>.
- Neu, D., Everett, J., & Rahaman, A. S. (2015). Preventing corruption within government procurement: Constructing the disciplined and ethical subject. *Critical Perspectives on Accounting*, 28, 49–61. <https://doi.org/10.1016/j.cpa.2014.03.012>
- Nieto-Martín, A. (2008). La responsabilidad social, gobierno corporativo y autorregulación: sus influencias en el derecho penal de la empresa. *Política Criminal: Revista Electrónica Semestral de Políticas Públicas En Materias Penales*, (5), 3–18.
- Nieto-Martín, A. (2013). Introducción. In L. Arroyo Zapatero & A. Nieto-Martín (Eds.), *El derecho penal económico en la era del compliance* (pp. 11–30).
- Nieto-Martín, A. (2018). Introducción al Derecho Penal

- Económico y de la Empresa. In N. J. De la Mata, J. Dopico, J. A. Lascuráin, & A. Nieto-Martín (Eds.), *Derecho Penal Económico y de la Empresa* (pp. 39–60). Dykinson.
- O'Dwyer, B. (2011). The Case of Sustainability Assurance: Constructing a New Assurance Service. *Contemporary Accounting Research*, 28(4), 1230–1266. <https://doi.org/10.1111/j.1911-3846.2011.01108.x>
- OECD. (2013). *Ética Anticorrupción y Elementos de Cumplimiento. Manual para Empresas.*
- Ogden, S. G. (1997). Accounting for organizational performance: The construction of the customer in the privatized water industry. *Accounting, Organizations and Society*, 22(6), 529–556. [https://doi.org/10.1016/S0361-3682\(96\)00027-X](https://doi.org/10.1016/S0361-3682(96)00027-X)
- Passeti, E., & Rinaldi, L. (2020). Micro-processes of justification and critique in a water sustainability controversy: Examining the establishment of moral legitimacy through accounting. *British Accounting Review*, 52(3), 100907. <https://doi.org/10.1016/j.bar.2020.100907>
- Pelzer, P. (2018). Risk bearing capacity and the bearers of responsibility. *Critical Perspectives on Accounting*, 52, 48–56. <https://doi.org/10.1016/j.cpa.2016.08.002>
- Porter, T. M. (1994). Making things quantitative. In M. Power (Ed.), *Accounting and Science* (pp. 36–56).
- Power, M. (1994). From science of accounts to financial accountability of science. In M. Power (Ed.), *Accounting and Science* (pp. 10–035). Cambridge Studies in Management.
- Power, M. (1997). *The audit society. Rituals of verification.* (M. Power, Ed.). Oxford University Press.
- Power, M. (2003). Auditing and the production of legitimacy. *Accounting, Organizations and Society*, 28(4), 379–394. [https://doi.org/10.1016/S0361-3682\(01\)00047-2](https://doi.org/10.1016/S0361-3682(01)00047-2)
- Power, M. (2004). The risk management of everything. *Journal of Risk Finance*, 5(3), 58–65. <https://doi.org/10.1108/eb023001>
- Power, M. (2005). The invention of operational risk. *Review of*

International Political Economy, 12(4), 577–599.
<https://doi.org/10.1080/09692290500240271>

Power, M. (2007). *Organised Uncertainty: Designing a World of Risk Management*. Oxford University Press.
<https://doi.org/10.1080/13603100802475535>

Power, M. (2009). The risk management of nothing. *Accounting, Organizations and Society*, 34(6–7), 849–855.
<https://doi.org/10.1016/j.aos.2009.06.001>

Power, M. (2013). The apparatus of fraud risk. *Accounting, Organizations and Society*, 38(6–7), 525–543.
<https://doi.org/10.1016/j.aos.2012.07.004>

Power, M. (2015). How accounting begins: Object formation and the accretion of infrastructure. *Accounting, Organizations and Society*, 47, 43–55.
<https://doi.org/10.1016/j.aos.2015.10.005>

Power, M., Scheytt, T., Soin, K., & Sahlin, K. (2009). Reputational risk as a logic of organizing in late modernity. *Organization Studies*, 30(2–3), 301–324.
<https://doi.org/10.1177/0170840608101482>

Quick, R., & Sayar, S. (2020). The impact of assurance on compliance management systems on bank directors' decisions. *International Journal of Auditing*, 25(3), 3–23.
<https://doi.org/10.1111/ijau.12210>

Remišová, A., Lašáková, A., & Kirchmayer, Z. (2019). Influence of Formal Ethics Program Components on Managerial Ethical Behavior. *Journal of Business Ethics*, 160(1), 151–166.
<https://doi.org/10.1007/s10551-018-3832-3>

Reuters. (2017). EU urges fine for Spain over waste water treatment.

Robson, K. (1992). Accounting numbers as “inscription”: Action at a distance and the development of accounting. *Accounting, Organizations and Society*, 17(7), 685–708.
[https://doi.org/10.1016/0361-3682\(92\)90019-O](https://doi.org/10.1016/0361-3682(92)90019-O)

Rodríguez-Domínguez, L. (2020). El cumplimiento normativo y los delitos económico-financieros : perspectiva desde los códigos éticos de Argentina , Colombia y España. *Revista*

de La Facultad de Ciencias Económicas y Jurídicas de La Universidad Nacional de La Pampa, 10(2), 125–143.

- Rodríguez-Domínguez, L., María García-Sánchez, I., & Gallego-Álvarez, I. (2009). Codes of ethics in Spanish corporations: An exploratory content analysis. *International Journal of Law and Management*, 51(5), 291–309. <https://doi.org/10.1108/17542430910988892>
- Samiolo, R. (2012). Commensuration and styles of reasoning: Venice, cost-benefit, and the defence of place. *Accounting, Organizations and Society*, 37(6), 382–402. <https://doi.org/10.1016/j.aos.2012.04.001>
- Sano, D., Amarasiri, M., Hata, A., Watanabe, T., & Katayama, H. (2016). Risk management of viral infectious diseases in wastewater reclamation and reuse: Review. *Environment International*, 91, 220–229. <https://doi.org/10.1016/j.envint.2016.03.001>
- Saravanamuthu, K. (2009). *A journey of socialising the risks associated with global warming: A Gandhian insight into Schumacher's total accounting and accountability*. *Advances in Public Interest Accounting* (Vol. 14). Elsevier. [https://doi.org/10.1108/s1041-7060\(2009\)0000014008](https://doi.org/10.1108/s1041-7060(2009)0000014008)
- Shannon, M. A., Bohn, P. W., Elimelech, M., Georgiadis, J. G., Mañas, B. J., & Mayes, A. M. (2008). Science and technology for water purification in the coming decades. *Nature*, 452(7185), 301–310. <https://doi.org/10.1038/nature06599>
- Shaoul, J. (1997). A critical financial analysis of the performance of privatised industries: The case of the water industry in England and Wales. *Critical Perspectives on Accounting*, 8(5), 479–505. <https://doi.org/10.1006/cpac.1996.0118>
- Sieber, U. (2013). Programas de Compliance en el derecho penal de la empresa. Una nueva concepción para controlar la criminalidad económica. In L. Arroyo Zapatero & A. Nieto Martín (Eds.), *El derecho penal económico en la era del compliance* (pp. 63–110).
- Signori, S., & Bodino, G. A. (2013). *Water management and accounting: Remarks and new insights from an*

accountability perspective. *Studies in Managerial and Financial Accounting* (Vol. 26). Emerald Group Publishing Limited. [https://doi.org/10.1108/S1479-3512\(2013\)0000026004](https://doi.org/10.1108/S1479-3512(2013)0000026004)

Singh, J. B. (2006). A comparison of the contents of the codes of ethics of Canada's largest corporations in 1992 and 2003. *Journal of Business Ethics*, 64(1), 17–29. <https://doi.org/10.1007/s10551-005-2408-1>

Singh, J. B. (2015). Changes in the contents of corporate codes of ethics: An institutional interpretation. *European Business Review*, 27(4), 369–388. <https://doi.org/10.1108/EBR-11-2014-0078>

Skærbaek, P., & Christensen, M. (2015). Auditing and the Purification of Blame. *Contemporary Accounting Research*, 32(3), 1263–1284. <https://doi.org/10.1111/1911-3846.12106>

Soh, D. S. B., & Martinov-Bennie, N. (2015). Internal auditors' perceptions of their role in environmental, Social and governance assurance and consulting. *Managerial Auditing Journal*, 30(1), 80–111. <https://doi.org/10.1108/MAJ-08-2014-1075>

Spanish Public Prosecutor. (2016). Circular 1/2016, sobre la responsabilidad penal de las personas jurídicas conforme a la reforma del código penal efectuada por la Ley Orgánica 1/2015.

Spanish Supreme Court. (2016). Sentencia RJ\2016\600 num. 154/2016 de 29 de Febrero.

Spira, L. F., & Page, M. (2003). Risk Management: The reinvention of internal control and the changing role of internal audit. *Accounting, Auditing & Accountability Journal*, 16(4), 640–661.

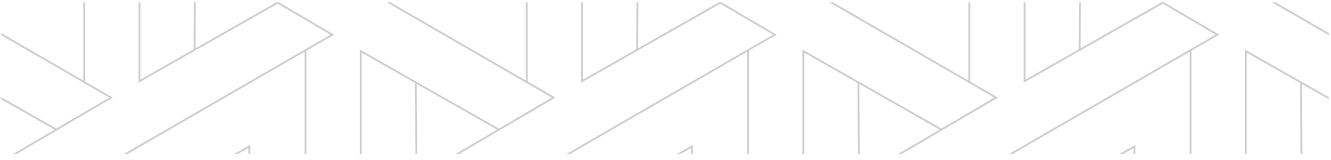
Stacchezzini, R., Rossignoli, F., & Corbella, S. (2020). Corporate governance in practice: the role of practitioners' understanding in implementing compliance programs. *Accounting, Auditing and Accountability Journal*, 33(4), 887–911. <https://doi.org/10.1108/AAAJ-08-2016-2685>

Steinbart, P. J., Raschke, R. L., Gal, G., & Dilla, W. N. (2018). The influence of a good relationship between the internal audit

- and information security functions on information security outcomes. *Accounting, Organizations and Society*, 71, 15–29. <https://doi.org/10.1016/j.aos.2018.04.005>
- Stöber, T., Kotzian, P., & Weißenberger, B. E. (2019a). Culture follows design: Code design as an antecedent of the ethical culture. *Business Ethics*, 28(1), 112–128. <https://doi.org/10.1111/beer.12201>
- Stöber, T., Kotzian, P., & Weißenberger, B. E. (2019b). Design matters: on the impact of compliance program design on corporate ethics. *Business Research*, 12(2), 383–424. <https://doi.org/10.1007/s40685-018-0075-1>
- SuWaNu Europe Project. (2019a). *Deliverable 1.1 Regional state of play analyses*. Retrieved from <https://suwanu-europe.eu/water-recycle-project-documents/>
- SuWaNu Europe Project. (2019b). *Deliverable 1.4 - Lessons learnt from Israel and Cyprus succes stories*.
- SuWaNu Europe Project. (2019c). *Reclaimed Water for Agricultural Irrigation Systems*. Retrieved May 10, 2020, from <https://suwanu-europe.eu/>
- SuWaNu Europe Project. (2020). *Water reuse initiatives database*. Retrieved from <https://suwanu-europe.eu/database/>
- Tello, E., Hazelton, J., & Cummings, L. (2016). Potential users' perceptions of general purpose water accounting reports. *Accounting, Auditing and Accountability Journal*, 29(1), 80–110. <https://doi.org/10.1108/AAAJ-12-2013-1552>
- Themsen, T. N., & Skærbaek, P. (2018). The performativity of risk management frameworks and technologies: The translation of uncertainties into pure and impure risks. *Accounting, Organizations and Society*, 67(January), 20–33. <https://doi.org/10.1016/j.aos.2018.01.001>
- Thomson, I., Grubnic, S., & Georgakopoulos, G. (2014). Exploring accounting-sustainability hybridisation in the UK public sector. *Accounting, Organizations and Society*, 39(6), 453–476. <https://doi.org/10.1016/j.aos.2014.02.003>
- Tremlett, G., & Pidd, H. (2011). Germany admits Spanish

cucumbers are not to blame for E coli outbreak. *The Guardian*.

- Treviño, L. K., Butterfield, K. D., & McCabe, D. L. (1998). The Ethical Context in Organizations : Influences on Employee Attitudes and Behaviors. *Business Ethics Quarterly*, 8(3), 447–476.
- Truchado, P., Garre, A., Gil, M. I., Simón-Andreu, P. J., Sánchez, G., & Allende, A. (2021). Monitoring of human enteric virus and coliphages throughout water reuse system of wastewater treatment plants to irrigation endpoint of leafy greens. *Science of the Total Environment*, 782, 146837. <https://doi.org/10.1016/j.scitotenv.2021.146837>
- UN. (2004). United nations convention against corruption and its impact on international companies.
- UN. (2011). Business against Corruption. A Framework for action.
- UN. (2012). Corporate Sustainability with integrity: organizational Change to Collective action. Retrieved from www.unglobalcompact.org
- Valdes-Abellan, J., Pardo, M. A., & Tenza-Abril, A. J. (2017). Observed precipitation trend changes in the western Mediterranean region. *International Journal of Climatology*, 37(January), 1285–1296. <https://doi.org/10.1002/joc.4984>
- Valentine, S., & Barnett, T. (2002). Ethics codes and sales professionals' perceptions of their organizations' ethical values. *Journal of Business Ethics*, 40(3), 191–200. <https://doi.org/10.1023/A:1020574217618>
- Wellner, P. A. (2006). Effective compliance programs and corporate criminal prosecutions. *Cardozo Law Review*, 27(1), 497–528.
- Wengraf, T. (2001). *Qualitative Research Interviewing*. (S. Publications, Ed.) (First).
- Wood, G. (2000). A cross cultural comparison of the contents of codes of ethics: USA, Canada and Australia. *Journal of Business Ethics*, 25(4), 287–298. <https://doi.org/10.1023/A:1006034209956>
- Wood, G., Whyatt, G., Callaghan, M., & Svensson, G. (2019).



Codes of ethics content: UK and Australian corporations.
European Business Review, 31 (5), 669–687.
<https://doi.org/10.1108/EBR-04-2018-0081>

World Compliance Association. (2020). Certificación y evaluación de los sistemas de compliance. Retrieved from <http://www.worldcomplianceassociation.com/certificacion-evaluacion-sistemas-compliance.php>

World Economic Forum. (2021). *The Global Risks Report 2021: 16th Edition*.

World Health Organization. (2017). *Guidelines for drinking-water quality*.

Yin, R. K. (2017). *Case study research and applications: Design and methods*. Sage publications.

Young, J. (2020). Determinants for a risk-based audit of an operational risk management framework: A South African perspective. *Academy of Accounting and Financial Studies Journal*, 24(2), 1–19.

APPENDIXES


APPENDIX 1 – Paper analysis

The following table summarized the analysis of the selected considering their coverage of Power's levels of knowledge. Acronyms OK refers to official knowledge, ET to education and training, P to practice and PE to practice evaluation.

Authors	Year	Source title	Title	Object under assurance	OK	ET	P	PE
Cular, M., Slapnicar, S., Viko, T.	2020	European Accounting Review	The effect of Internal Auditor's Engagement in Risk Management Consulting on External Auditor's Reliance Decision	Risk management and internal audit function			X	X
Hoang, H., Phang, S. Y.	2020	European Accounting Review	How does combines assurance affect the reliability of integrated reports and investors judgements	Combined assurance of integrated reporting (includes risk management systems)				X
Quick, R., Sayar, S.	2020	International Journal of Auditing	The impact of assurance on compliance management systems on bank directors' decisions	Compliance Systems				X
Gramling, A.A., Scheneider, A., Schefchik, L.	2019	Advances in Accounting Behavioral Research	Do consulting services performed by internal auditors influence their subsequent assessments when performing assurance services?	Internal control			X	X

Authors	Year	Source title	Title	Object under assurance	OK	ET	P	PE
Ji X.-D., Lu W., Qu W.	2018	Journal of Contemporary Accounting and Economics	Internal control risk and audit fees: Evidence from China	Internal control				X
Steinbart P.J., Raschke R.L., Graham G., Dilla W.N.	2018	Accounting, Organizations and Society	The influence of a good relationship between the internal audit and information security functions on information security outcomes	Internal audit function			X	
Bailey C., Collins D.L., Abbott L.J.	2018	Auditing: A Journal of Practice & Theory	The impact of enterprise risk management on the audit process: evidence from audit fees and audit delay	Risk management system				X
Akisik O., Gal G.	2017	Sustainability Accounting, Management and Policy Journal	The impact of corporate social responsibility and internal controls on stakeholders' view of the firm and financial performance	Internal control				X
Kelly, K., Tan, H.T.	2017	Accounting, Organizations and Society	Mandatory management disclosure and mandatory independent audit of internal controls: evidence of configural information processing by investors	Internal control			X	X
Mihret, D.G., Grant, B.	2017	Accounting, Auditing and Accountability Journal	The role of internal auditing in corporate governance: a Foucauldian analysis	Internal audit function	X		X	

Authors	Year	Source title	Title	Object under assurance	OK	ET	P	PE
Decaux L., Sarens G.	2015	Managerial Auditing Journal	Implementing combined assurance: insights from multiple case studies	Risk management system	X			
Elder, R.J., Akresh A.D., Glover S.M. Higgs J.L., Liljegren J.	2013	Auditing: A Journal of Practice & Theory	Audit sampling research: synthesis and implications for future research	Internal control (audit sampling)			X	
Foster, B.P., McClain, G., Shastri, T.	2013	Journal of Accounting, Ethics and Public Policy	The auditor's report on internal control & fraud detection responsibility: a comparison of French and US users' perception	Internal control				X
Anderson U.L., Christ, M.H., Johnstone, K.M., Rittenberg, L.E.	2012	Accounting Horizon	A Post-SOX examination of factors associated with the size of internal audit functions	Internal audit function			X	
Lin S., Pizzini M., Vargus M., Bardhan I.R.	2011	Accounting Review	The role of the internal audit function in the disclosure of material weaknesses	Internal audit function			X	
Masli A., Peters G.E., Richardson V.J., Manuel Sanchez J.	2010	Accounting Review	Examining the potential benefits of internal control monitoring technology	Internal control			X	
Jennings M.M., Pany K., Reckers P.M.J.	2008	Advances in Accounting	Internal Control audits: Judges' perceptions of the credibility of the financial reporting process and likely auditor liability	Internal control	X			X



Authors	Year	Source title	Title	Object under assurance	OK	ET	P	PE
Armitage, J.	2008	Managerial Auditing Journal	Changes in the importance of topics in auditing education: 2000-2005	Internal audit function		X		
Fraser, I., Herny, W.	2007	Managerial Auditing Journal	Embedding risk management: structures and approaches	Risk management system			X	

APPENDIX 2 – Keywords for content analysis items (based on Wood et al., 2019)

Conduct on behalf of the firm	Keyword
1.1. Relations with governments	public, administration, government, institutional
1.2. Relations with customers/suppliers	customers, suppliers
1.3. Relations with employees-health, safety	health, employee, worker, security
1.4. Relations with competitors	competition, competitor
1.5. Relations with foreign governments	govern, foreign
1.6. Relations with investors	shareholder, investor, owner
1.7. Civic and community affairs	social responsibility, CSR, civic, community, society
1.8. Relations with consumers	consumer
1.9. Environmental affairs	environment, natural
1.10. Product safety	security, product
1.11. Product quality	quality, product
1.12. Payments or political contributions to governments or government's officials or employees	payment, public employee, contributions, political
1.13. Acceptance of bribes, kickbacks, gifts/entertainment	bribe, present, gift, prize, kickbacks
1.14. Giving of bribes, kickbacks, gifts/entertainment	bribe, present, gift, prize, sponsorship, donation, kickbacks

Conduct against the firm

2.15.	Conflict of interest	conflict, interest
2.16.	Divulging trade secrets/proprietary information	secret, information, confidential, trade secret
2.17.	Insider trading information	information, insider, confidential, secret
2.18.	Personal character matters	personal, character, data
2.19.	Other conduct against the firm	*other conduct
2.20.	Integrity of books and records	books, accounting, financial, records, integrity, veracity
2.21.	Legal responsibility	legal, responsibility, liability
2.22.	Ethical responsibility	ethic, responsibility, conduct
2.23	Employee harassment and discrimination	discrimination, harassment, employee
2.24	Relations with fellow employee.	employee, fellow
2.25	Intellectual property rights	Property rights, intelec*, right, property, patent
2.26	Use of corporate assets	corporate, assets, trade
2.27	Drugs including alcohol	drug, alcohol
2.28	Communicating with the media and outside publics	media, press, public
2.29	Post-employment obligations	postemployee
2.30	Participation in the political process	politic*
2.31	Retaliation against others	retaliation

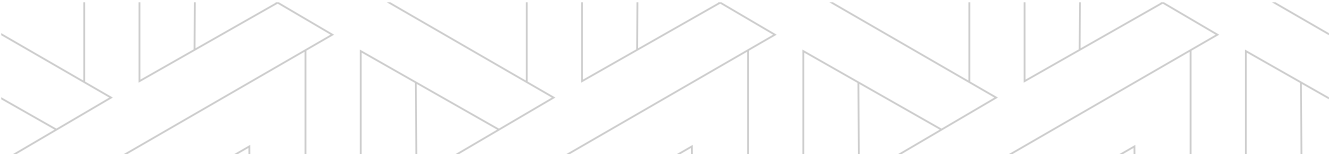
2.32	Use of computer software and or hardware	software, malware, hardware
2.33	Truth in communication including advertising	trust, communication, ad*
Laws cited (in references to)		
3.34.	Laws referencing illegal acts listed in the Criminal Code	
3.35.	Rest of laws	
3.36.	Criminal Code	criminal code, CP
3.37.	Sarbanes-Oxley	SOX, Sarbanes, Oxley
Types of compliance/enforcement procedures		
Internal - oversight		
4.38.	Supervisor surveillance	control, surveillance, department, internal
4.39.	Internal watchdog committee	committee, internal, watchdog, commission, department, audit
4.40.	Internal audits	audit, internal
4.41.	Read and understand affidavit	read, understand, affidavit, comprehension, knowledge
4.42.	Routine financial budgetary review	financial, control, economic, budget, direct,
4.43.	Legal department review	legal, department, control
4.44.	Other oversight procedures	other control
4.45.	Whistleblowing	whistleblower, whistleblowing, channel, ethic

4.46.	Compliance Officer	compliance, officer, CCO, liability
Internal - personal integrity		
4.47.	Supervisor	surveillance, controller, control
4.48.	Internal watchdog committee	committee, internal, watchdog, commission, department, audit
4.49.	Corporation's legal counsel	department, legal, commission, committee
4.50.	Other (in the firm)	other
4.51.	Compliance affidavits	compliance, affidavits
4.52.	Employee integrity	integrity, worker, employee, security
4.53.	Senior management role models	conduct, model, system, code
External		
4.54.	Independent auditors	external, audit
4.55.	Law enforcement	compliance, law
4.56.	Other external	other
4.57.	Codes mentioning enforcement or compliance proceed	code, enforcement, obligatory, compliance, proceed
Penalties for illegal behavior		
Internal		
5.58.	Reprimand	penalty, reprimand
5.59.	Fine	fine, sanction

5.60.	Demotion	demotion
5.61.	Dismissal/firing	dismissal, fire
5.62.	Other internal penalty	other
5.63.	Legal prosecution	claim, suit, justice
5.64.	Other external penalty	

General Information

6.65.	Need to maintain corporation's good reputation	reputation, organization
6.66.	Letter/introductory remarks from the president/CEO/Chairperson of the board	letter, remarks, CEO, president, chairperson
6.67.1	Code specific to Spain	code, conduct, Spain, national
6.67.2	Code specific to International	code, conduct, foreign



*El dinero hablaba a menudo en inglés
sobre el vestíbulo azul de los grandes hoteles.
El mundo estaba en orden y dios era de aquellos
que guardaban las fiestas y eran obedientes.
Días de estraperlo bajo las luces del alba
cuando las cuadrillas de los pescadores
ignoraban si el mar les sería favorable
o una trampa escrita en la palma de sus manos.*

Juan José Téllez



Esta tesis doctoral fue depositada y defendida en la ciudad de Burgos en 2021, año en el que la Catedral de dicha ciudad cumplió 800 años.

