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# **Detering corporate crime at all costs?**

*The relevance and appropriateness of risking sanction-induced bankruptcy*

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This thesis was written as a part of the Master of Science in Economics and Business Administration at NHH. Please note that neither the institution nor the examiners are responsible – through the approval of this thesis – for the theories and methods used, or results and conclusions drawn in this work.

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## Preface

### Executive Summary

To combat the widespread affliction of corporate crime, a more effective corporate liability framework for optimal crime deterrence is required. At the core of this framework lies the trade-off between the social benefits of optimal crime deterrence on one side, and the societal harm from the fines that are sufficiently harsh to deter crime, which can in turn lead to corporate bankruptcy on the other. In this thesis, I evaluate whether the harshest corporate fines, the benchmark penalties, can be a relevant and appropriate tool in an ensemble of 50 completed enforcement cases. The relevance of this penalty is defined from the crime deterrence perspective, according to the extent with which firms collaborate with enforcement agencies, in terms of self-reporting their crimes and fully cooperating with the authorities. In contrast, the appropriateness of the penalty is defined from the government's perspective, according to the collateral consequences of this penalty on different stakeholder groups and how the government regards them.

I find that the benchmark penalty could have been relevant in 16 cases from a deterrence standpoint, out of 38 with sufficient data. From these 16 cases, in no more than three cases would governments find the enforcement of the benchmark penalty, and its associated risk of corporate bankruptcy, appropriate according to the damage it creates for the group they put the highest degree of emphasis on. These findings highlight the burden that the current status quo of corporate liability presents for crime deterrence, and demonstrate the unfeasibility of the reliable enforcement of harsh penalties that could lead to corporate bankruptcy.

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Antonio Buller

A handwritten signature in black ink, appearing to read 'Antonio Buller', written in a cursive style.

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## List of Abbreviations

|      |  |
|------|--|
| CDP  | Corporate Death Penalty                                |
| CJIP | Judicial Public Interest Agreements                    |
| DPA  | Deferred Prosecution Agreement                         |
| GDP  | Gross Domestic Product                                 |
| NTR  | Non-Trial Resolution                                   |
| OECD | Organisation for Economic Co-operation and Development |

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# 1. Introduction

Corporate crime is a widespread affliction (Nelson, 2017), to the point that it substantially affects the global economy substantially (Castro, Phillips, & Ansari, 2020). To combat this ailment and avoid the enormous costs of corporate crime on society, deterrence should be a priority (Arlen, 2020). Deterrence is the discouragement of committing crimes, particularly through the fear of punishment, and the most effective tool to deter corporate crime is by imposing corporate liability.

Corporate liability has emerged through an expansion of corporate regulations in the 20th century. Especially, international collaborations like the United Nations Convention against Corruption and the Organisation for Economic Co-operation and Development (OECD) Anti-Bribery Convention have aided to form legislation for punishing corporate crime (Auriol, Hjelmeng, & Søreide, forthcoming). Many countries enforce corporate liability under criminal law, while others enforce it under civil law. Nevertheless, in practice, corporations can be sanctioned in similar ways independently from the type of enforcement (Auriol et al., forthcoming). Moreover, many countries use similar, albeit varying, criteria for the requirements of corporate liability, such as the connection between the crime and the firm, and also the application of the identification theory<sup>1</sup> (OECD, 2016; Pieth, Low, & Cullen, 2007).

Still, to this day, the corporate sanctions in place in existing corporate liability frameworks have been insufficient in providing the necessary deterrence levels. Corporate fines are too low, and enforcement agencies too lenient on corporations to create substantial fear of punishments (Coffee, 1981; Hulpke, 2017; Kaplow, 1989; Thomas, 2017). As a result, corporations can have an increased perception of fines as the inherent “cost of doing business”(Thomas, 2017). In this thesis, I present the corporate liability framework that is required for optimal crime deterrence. This framework revolves around a twofold incentive: the certainty of reduced sanctions for complying corporations, and, more importantly, the risk of severe sanctions for their non-complying counterparts.

However, the severe sanctions required for optimal crime deterrence introduce a new risk: sanction-induced bankruptcy. With increasing fines, corporations become less able to bear the

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<sup>1</sup> The Identification theory determines that a person of leading position must have been involved in the crime to impose corporate liability.

financial burden of their penalties, eventually risking going bankrupt. This implies that, in some cases, these harsher penalties required to effectively deter corporate crime become a de facto Corporate Death Penalty (CDP). The CDP, established generally as “any sanction that either directly or indirectly threatens the ongoing viability of the corporation” (Padfield, 2018), exists in many forms, such as by revoking a corporate charter (Grossman, 2015; Linzey, 1995), or indirectly by enforcing a criminal conviction<sup>2</sup> (Hamdani & Klement, 2007). Here, I will refer solely to the CDP that results as a consequence of harsh fines (Coffee, 1981; Thomas, 2017). In this regard, the CDP considered in this thesis is not the purpose of the punishment but rather its side effect. This stands in contrast to other forms of the CDP, which focus on the death of the corporation as their primary goal.

The CDP, by being the most severe penalty available for enforcement agencies, can introduce a whole new scale of crime deterrence (Hulpke, 2017; Wray & Hur, 2006) and harsh penalties maximize incentivized compliance for legal and ethical standards. However, these harsher penalties, and in particular those resulting in the CDP, can lead to severe collateral consequences for different stakeholder groups. Employees could lose their employment, and investors their investment. Consumers could be harmed by decreasing market competition; and the remaining industry, although may benefit from the removal of a competitor, could also suffer reputational damages. These risks imply that the CDP creates an inherent trade-off, between the societal benefit of optimal deterrence on one side, and the societal harm of a firm's bankruptcy on the other. This might be the very reason why corporate liability remains to this day consistently underenforced<sup>3</sup>.

In this thesis, I investigate whether enforcing the highest corporate sanctions, with their associated risk of corporate bankruptcy and societal damage, is a viable tool for crime deterrence for enforcement agencies and governments. Thus, I address the following questions:

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<sup>2</sup> A conviction of guilt can create further implications for the firm. For example, the United States security and exchange commission does not allow convicted felons to operate as auditors. This proved to be fatal for the accounting firm Arthur Andersen, who went out of business in 2001 after a conviction by the justice department.

<sup>3</sup> For example, the EU commission reserves the right to readjust the sanction downwards if the ongoing viability of a firm is threatened. See: EU (2006). Other reasons could be technical impediments and political incentives. See: Soreide (2018)



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1. Under which conditions could enforcement agencies apply the harshest sanctions for optimal crime deterrence, risking corporate bankruptcy?
  2. Which circumstances lead to the most damaging collateral consequences of CDP for different stakeholders?
  3. Considering these circumstantial consequences, when would governments find risking the CDP appropriate?

This thesis is structured as follows: in Section II, I present the theory on an optimal corporate liability framework for crime deterrence. This framework establishes that harsh sanctions can be applied, from a deterrence standpoint, if a corporation has (1) not self-reported the crime, (2) not fully cooperated with enforcement agencies, and (3) the crime was committed systematically and not by one rogue employee.

In Section III, I analyze the circumstances that lead to the most damaging consequences of the CDP. I argue that, compared to other stakeholder groups, the CDP consequences for consumers and producers are most decisive in determining the viability of the CDP. For these two groups, I find the two most critical variables for determining potential effects: market concentration and industry leverage. A CDP in a concentrated market can result in increased prices, which is harmful for consumers while increasing profit margins for the remaining producers in the industry. In contrast, industry leverage levels can determine to which extent reputational damages spread to the remaining producers after a bankruptcy.

In Section IV, I determine whether the highest fines, implying potential CDP, could be applied from a deterrence standpoint on a dataset provided by Auriol et al. (forthcoming). This data sample contains 50 completed enforcement cases from five different countries from which I use 38 for my analysis. In cases in which the CDP is applicable, I analyze to which extent consumers and producers are affected by its consequences.

In Section V, I discuss how this framework could be expanded and elaborate on interesting aspects for future research and potential limitations of this study. Furthermore, I develop an additional test to determine whether governments would find risking the CDP appropriate based on which stakeholder groups are most affected, and whether the governments favor the group.

In Section VI I summarize the main findings of my study and elaborate on the main conclusions and implications that can be drawn from them.

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## 2. Optimal Framework for Crime Deterrence

Ultimately, the goal of corporate liability is to deter crime for the wellbeing of society. However, to this day, the size of monetary penalties is too modest to create optimal deterrence. While harsh sanctions can increase deterrence, they can also induce the CDP, which can have a detrimental effect on societal wellbeing. A tradeoff is created, with maximum deterrence on the one hand and consequences for society through corporate bankruptcy on the other. Whether a harsh fine, that inherits the risk of sanction-induced bankruptcy, is a penalty to enforce for an instance of corporate crime thus hinges on an assessment of the relevant conditions of a respective case.

In this section, I introduce an optimal corporate liability framework for crime deterrence and analyze why harsh penalties, even when they risk corporate bankruptcy, are needed to create maximum deterrence. In addition, this framework provides the necessary conditions to enforce harsh penalties, which could risk the CDP.

### 2.1 Holding Corporations Liable

Corporate liability, implying that corporations can and must be held accountable for the criminal acts of their employees, is historically debated (Lederman, 1985). Criminal acts can inherently be committed only by individuals, and not by corporations (Arlen, 2012). In a world with only individual liability, only the individuals that commit crimes would be punished; whereas the corporations that benefited from these crimes remain exempt. On the other hand, the potential punishment that corporations could endure for the actions of their employees could have tremendous implications by being so severe that it threatens corporate bankruptcy, which might put undesirable harm on third parties. Individual liability relies on sanctions that are only imposed on the culpable individuals, not the corporations itself, and has one main goal: to deter potential violators from committing a crime (Arlen, 2012). Similarly, corporate liability should also be understood as a tool to deter crime, and not as tool for retribution<sup>4</sup> (Arlen, 2020).

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<sup>4</sup> Arlen (2020) finds that deterrence should be the focus, since corporate crime is severely damaging to consumers and society and since purely retributive actions would ultimately fall on the shareholders, who have little impact on corporate crime prevention when the company is not closely-held.

Corporate liability is not only a suitable tool for crime deterrence, it is also extremely effective (Arlen, 1994, 2012; Arlen & Kraakman, 1997). The way that companies can control their employees (Oded, 2010; Pitt & Groskaufmanis, 1989), while having a clear overview of the firm's structure and operations implies that prevention and policing measures for crime deterrence enforced in house by the company are not only effective, but also always more efficient than those enforced by external governmental agencies (Arlen & Kraakman, 1997).

## 2.2 Prevention and Policing

Prevention and policing measures help corporations' control whether or not their employees find crime attractive and easy to get away with. Prevention measures decrease the benefits that employees receive from crime and also increase the costs associated with committing it (Arlen, 2012; Kornhauser, 1982). On the other hand, the right policing measures in place increase the probability of criminal acts being punished (Arlen & Kraakman, 1997).

Companies can prevent crime by limiting the weight that employee performance has on employee income. Employees often do not benefit from their crimes directly, but rather indirectly as their crimes increase a firm's revenue and thus qualify them for compensation and promotion bonuses. Thus, by reducing these performance-based bonuses and benefits, the firm makes committing crimes for improved performance less attractive (Arlen, 2012; Arlen & Kraakman, 1997).

In addition to reducing the indirect performance-related benefits, other preventive measures the firm can take include increasing the cost of committing crimes, by implementing an aggressive legal compliant environment. This could be achieved by establishing and upkeeping corporate ethical standards that put potential violators under aggravated moral burdens, and by introducing internal reporting systems that improve the chance of detection by whistleblowers (Arlen, 2012; Conley & O'Barr, 1997; Tyler & Blader, 2005).

In contrast, companies can deter crime by ensuring that when crimes are committed, they are exposed and punished. The most effective policing measures for exposing crimes include closely monitoring employee activity and operations, exhaustive internal investigations, self-

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reporting crimes to local authorities, and fully cooperating with the enforcement agencies<sup>5</sup> (Arlen, 1994, 2012; Arlen & Kraakman, 1997).

These policing actions are especially efficient when carried out by the company itself, compared to other external institutions (Arlen & Kraakman, 1997). Enforcement agencies have more difficulties understanding all the details of a company's operations and lack the tools to best monitor and investigate the firm's employees. In contrast, the firm can evaluate its behavior more efficiently and recognize potential misconduct more easily, both in local offices, as well as in international jurisdictions often non-accessible for enforcement agencies. A firm can also procure and evaluate potential evidence that is crucial for the investigation of a crime with much reduced associated burdens and procedural costs. Similarly, self-reporting alleviates the costs associated with crime investigation substantially for enforcement agencies<sup>6</sup>; while full cooperation not only decreases enforcement expenses but also helps agencies identify responsible individuals and put them to justice (Arlen, 2012, 2020).

A separate aspect to consider regarding optimal implementation of policing measures is the tradeoff between broad liability and a pervasiveness standard. Under broad liability the firm can be held liable for crimes committed by their entire workforce, and even if it is committed just by a single employee. This incentivizes corporations to deter crime by their entire workforce (Arlen, 2020). On the other hand, a pervasiveness standard would only put harsh corporate sanctions on crimes that have been committed by more than one rogue employee. Hamdani and Klement (2007) find that corporations can invest much in policing crime, but perfect deterrence is hard to reach. If even one oversight in the system, in the form of a crime by a single employee, could result in severe corporate penalties, monitoring incentives could be reduced as complete certainty of avoiding corporate liability is not achievable. By allowing harsh systematic sanctions only for systematic crimes, firms could be incentivized to at least diligently deter systematic criminality.

In terms of policing measures, monitoring and investigative efforts are helpful tools for crime deterrence that come at a relatively low risk for most companies. On the other hand, self-

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<sup>5</sup> Self-reporting a crime is disclosing the misconduct to authorities, without knowing if the government is already investigating them. Full cooperation means that after the crime was revealed, the corporation provides additional evidence about the scope of the misconduct and the part natural persons have played in it. See: Arlen (2020)

<sup>6</sup> For more literature on the benefits of self-reporting in individual crimes see: Kaplow and Shavell (1994)

reporting and full cooperation occur when crimes have been actually committed, and the risk of serious repercussions and liability exist. Self-reporting and full cooperation involve the active corporate engagement that is vital for successful crime prosecution.

Although establishing these prevention and policing measures is cheaper and more efficient for companies than for enforcement agencies, they do not come free of costs. Prevention policies as well as monitoring and investigating efforts involve implementation expenses for companies, whereas self-reporting and full cooperation involve not only these expenses, but also potentially much larger liability costs for non-law-abiding companies. So, the question remains: why should companies implement and maintain these efforts?

The main argument defending that these efforts are not required nor justifiable is that individual liability may be sufficient for maximum crime deterrence. To evaluate whether this statement is true, Arlen (2012) uses a simple theoretical model framework, in which it is assumed that individuals are not restricted by wealth and all parties have perfect access to information<sup>7</sup>. In this simplified framework, Arlen (2012) finds that individual liability alone is sufficient for optimal crime deterrence.

However, the strict assumptions in this model are neither reasonable nor plausible in a real-world setting. Real-world individuals do not have perfect access to information, but more importantly, they are strongly limited by wealth. This means that the fines required to pay for corporate crime, where individuals can use a corporation's influence to create long-lasting and wide-reaching damage, are unpayable for real-world individuals<sup>8</sup> (Arlen, 2012; Polinsky & Shavell, 1993).

Apart from wealth constrictions, individual liability also suffers practical application obstacles. As the goal of a law process should be to establish the material truth, individual liability hinges on two criteria: identifying the responsible actors and proving guilt beyond

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<sup>7</sup> Arlen (2012) finds that, in this model, the state can optimally deter crime using either individual liability, by applying a sanction that equals the harm caused, or using corporate liability, by inducing firms to put sanctions on employees who committed a crime. The combination of both liability regimes is not advised since the state can already optimally deter through individual liability alone. Thus, to deter corporate crimes, individual liability with monetary sanctions would be sufficient. See also: Polinsky and Shavell (1993)

<sup>8</sup> A potential alternative to monetary sanctions in the form of imprisonment is not regarded as a viable substitution. A prison sentencing often comes with limitations in form of age and health conditions. In addition, if individuals go to prison for a lengthy amount of time for their violations, it creates a problem in the form of marginal deterrence, since there is not a harsher punishment available for a harsher violation. See: Arlen (2012)

reasonable doubt (Rui & Soreide, 2018). However, identifying the person responsible for a crime can be difficult due to the complexity of the organization, and the risk of a punishing a scapegoat, who would take all the blame, while other responsible employees can avoid liability, is prevalent (Garrett, 2015; Søreide, 2016). Proving the guilt of individuals involves obstacles, as crimes are often masqueraded as normal business activity which further impedes the collection of evidence. As a result, establishing the relation of the suspect and the criminal intent remains difficult, and employees and senior management are often not prosecuted (Søreide & Makinwa, 2020).

Thus, under real-world conditions, individual liability is insufficient to optimally deter corporate crime alone, and governments would need to implement further crime deterrence mechanisms. The most cost-effective crime deterrence mechanisms are corporate prevention and policing measures (Arlen, 2012) and the most efficient way of inducing these measures is corporate liability. Nevertheless, it remains critical that individual liability is also implemented. Without putting culpable employees to justice, corporate liability would only threaten corporations, while individuals feel no consequences of committing crimes. A joint liability regime, of individual liability that puts real costs on individuals, and corporate liability that incentivizes effective deterrence measures is optimal (Arlen, 2012).

## 2.3 Inducing Corporate Compliance

So far, we have established that prevention and policing measures are an effective tool for crime deterrence, albeit a costly one for corporations. However, the most efficient strategies for incentivizing corporations to actually implement these measures remain to be discussed. Why would corporations decide to implement expensive prevention and monitoring measures? And more importantly, why would corporations decide to facilitate the efforts of external enforcement agencies, thereby increasing their own liability risks, by self-reporting and full cooperation?

The answer to these questions can be summarized in one simple argument: well-defined corporate liability policies that rely on harsh sanctions for non-complying companies and sentencing mitigation for complying companies. These policies should revolve around a duty-based liability regime where final penalties depend on the actions that companies take to prevent or reveal corporate crime (Søreide, 2016).

If a corporation has complied diligently – by monitoring, investigating, self-reporting, and fully cooperating – then mitigating factors could be considered for its potential sentencing. On the other hand, if a corporation has not taken any measures to deter crime, then any potential sentencing should involve the harshest possible sanctions. However, compliance actions, like self-reporting and full cooperation, require the active corporate engagement that is vital for successful crime prosecution, while entailing a high level of corporate liability risk for the corporations.

Self-reports reveal unknown crime to enforcement agencies; crimes which could otherwise be never detected. Full cooperation provides crucial evidence for prosecuting and sentencing liable firms and culpable individuals. However, companies cannot be expected to adopt one, let alone both, of these incriminating measures without the certainty that their situation would improve by doing so. This could be achieved with a ladder-like penalty system where each individual action mitigates the sanction. A compliant company would then receive the lowest penalty only if it both self-reported and fully cooperated (Arlen, 2012).

On the other hand, non-compliant companies that have neither self-reported nor cooperated should receive sanctions many times higher than what they benefited from their crimes. I will refer to this maximum sanction for non-complying companies as the benchmark penalty. By making the benchmark penalty also dependent on probability of detection<sup>9</sup> and the generated harm<sup>10</sup> (Becker, 1968), fines could become more and more extreme and create severe financial instability in corporations, which could induce corporate bankruptcy and make the benchmark penalty a de facto CDP. Thus, by threatening the benchmark penalty, firms are motivated to obtain the lower sanctions through self-reporting and fully cooperating. However, the certainty of enforcement is critical in achieving the desired deterrence. Otherwise, enforcement agencies could risk upholding a facade of threats, without any actions to support them.

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<sup>9</sup> For further classical literature on the effect of the probability of detection see Polinsky and Shavell (1979)

<sup>10</sup>Becker (1968) proposes that the optimal fine should be the harm to third parties, divided by the probability of detection.



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Moreover, even the benchmark penalty will have no deterrence effect<sup>11</sup>, if governments are not regularly detecting unreported crime. Without a reliable rate of detection, all penal threats become meaningless, as corporations face no risk of getting caught and receive any sanctions.

## 2.4 Optimal Deterrence in Practice

In practice, governments have prominently introduced non-trial resolutions (NTR) as a tool to settle corporate crime cases not in court but in negotiations beforehand, which often allows corporations to avoid harsh sanctions (OECD, 2019b).

NTR evolved in the early 2000s, as governments wanted to combine enforcement with compliance and lower sanctions for cooperative corporations (Søreide & Makinwa, 2020). Governments often approve of NTR, as they are a cost efficient alternative to court proceedings and also increases the pace of enforcement processes, which results in an increase the total number of enforcement actions (Søreide & Makinwa, 2020). However, there are immense difference between jurisdiction concerning the use of NTR, for example in prosecutorial discretions and guidelines. These differences create challenges for enforcement agencies, who more and more rely on international collaborations for efficient enforcement, as the different jurisdictional approached can clash in the collaboration. Moreover, corporations that operate internationally face uncertainty about their exposure to double jeopardy<sup>12</sup>. Settlements in one country can expose corporations to claims from different jurisdictions, especially when a NTR misses punitive functions that other governments want to enforce. This could create an extreme situation for corporations, where they are confronted by more and more countries and have increasing expenses (Søreide & Makinwa, 2020). As a result, firms might be motivated to rather hide their crimes instead of risking international exposure through self-reporting and the revealing it.

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<sup>11</sup> In addition, Auriol and Søreide (2017) find that harsh penalties only create deterrence if firms put value on future contracts and operations. Moreover, they find that harsh penalties, like debarment or the CDP, can create serious consequences in concentrated markets (see section 3.3) which restricts their application. However, firms in concentrated markets put the highest value on future business. This insight creates a dilemma for extreme penalties, as they seem to have the highest effect in markets where they cannot be applied.

<sup>12</sup> Double jeopardy is the punishment of a person/corporation twice for the same offence.

Due to the lack of proper guidelines and requirements, some enforcement agencies have flexibility in their decision making. Although this allows authorities to assess settlements on a case-by-case basis, it also allows firms to negotiate and benefit from this flexibility. Through this negotiation, corporations could receive reduced sanctions, while not fully complying in line with the framework of optimal deterrence. If corporations that have not self-reported are still allowed to enter NTR, it demotivates self-reporting and would make the threat of the benchmark penalty and the CDP meaningless, as firms could always try to receive settlements that refrain from enforcing harsh sanctions.

An important type of NTR is the Deferred Prosecution Agreement (DPA)<sup>13</sup>(Arlen, 2020). Through a DPA, enforcement agencies put criminal charges and sanctions on corporations, however, the liable firm avoids trial and a sentencing. The corporation benefits as the fines are generally lowered and it can evade further fallout through a conviction of guilt. Arlen (2020) finds that the offering of a DPA should be subjected to the same framework that we have discussed in this section (Arlen, 2020): self-reporting and full cooperation. However, that is often not the case in the real world. For example, France has introduced legislation that allows corporations to enter into a Judicial Public Interest Agreements<sup>14</sup> (CJIP), a deal similar to a DPA. The access to a CJIP is not at all conditioned to self-reported acts and full cooperation but is rather used when it is for the “public interest”<sup>15</sup>. As a result, prevention and policing measures are not optimally incentivized which leads to limited deterrence (Arlen, 2020).

Although international collaboration with the goal to combat corporate crime have been introduced over time<sup>16</sup>, not only France, but most governments have failed so far to install the necessary framework to optimally deter corporate crime. Moreover, reliable and internationally consistent guidelines for the use of NTR are still missing. These oversights contribute to the suboptimal deterrence levels that persist to this day (Arlen, 2020).

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<sup>13</sup> Other NTR are the guilty plea, which simulates a criminal conviction, and non-prosecution agreements, which do not incur criminal charges, if the corporation fulfills their part of a bargain. See Arlen (2020)

<sup>14</sup> See article 22 Sapin II

<sup>15</sup> Arlen (2020) mentions that there is no indication yet on what criteria categorizes a CJIP for the public interest. For further literature (in French) see d’Ambrosio (2019).

<sup>16</sup> Like the 1994 Agreement to take measures to combat and deter bribery of foreign public officials, the 1996 Accord to ban tax deductibility of bribes to foreign officials or the 1997 OECD Anti Bribery Convention. For further details see Pieth (1997).

## 2.5 Deterrence-based Variables

In this section, I present an incentive-based corporate liability framework for optimal crime deterrence. These incentives are twofold: mitigating sanctions for complying corporations and enforcing harsh penalties for corporations that did not self-report or fully cooperate.

The benchmark penalties for non-compliant firms, can be so severe that they threaten the financial stability of liable firms, which in extreme cases can lead to the bankruptcy of the company and transform the benchmark penalty to a de facto CDP. However, this harsh punishment should only be reserved for corporations that have done nothing to comply with enforcement agencies. Thus, the sanctions that can risk the CDP are limited to two deterrence-based variables: (1) the firm has not self-reported the crime and (2) the firm has not fully cooperated with enforcement agencies (Table 1).

Moreover, I also mentioned the tradeoff between pervasiveness and broad liability. Whereas broad liability can be a useful tool for complete crime deterrence, in this thesis I argue that it would be appropriate to consider systematic criminal activity as a condition for harsh corporate punishments. As a result, crimes need to be pervasive, committed by more than just one rogue employee, to be eligible for the benchmark penalty (Table 1).

Table 1: Deterrence-based variables

| Relevant Variables for the Use of the Benchmark Penalty (CDP) |                               |
|---|-------------------------------|
| ➤   | Not Self-Reported             |
| ➤   | No Full Cooperation           |
| ➤   | Pervasiveness of Criminal Act |

*Table 1 shows the three variables that would allow the use of the benchmark penalty from a deterrence standpoint.*

If these three conditions are met, the benchmark penalty can be imposed. Although this would risk the CDP, from a deterrence standpoint, it would be vital that this penalty would be enforced.

### 3. Collateral Consequences of the CDP

In the previous sections, I elaborate on the framework of optimal deterrence and analyze how harsh fines are a necessary instrument to motivate corporate compliance. However, enforcing the benchmark penalty creates the risk of sanction-induced bankruptcy. Such bankruptcies could result in serious consequential costs to different parts of society, harming society in some cases well beyond the impacts of the original crime. Moreover, these consequences may also affect blameless third-party stakeholders, potentially threatening the viability of enforcing the benchmark penalty.

In this section, I assess the extent of these consequences by analyzing how the different stakeholders would be affected by the potential bankruptcy induced by the benchmark penalty. I identify two variables to estimate the distribution of collateral consequences: market concentration and industry debt levels. I elaborate on the potential consequences first for firm-related stakeholders, including employees and investors; and second for market-related stakeholder groups, consumers and producers.

#### 3.1 Employees

It can be argued that employees are severely affected by the CDP and collateral effects of corporate liability (Atkinson, 2020; Hulpke, 2017). The foremost consequence for employees after a corporate bankruptcy is becoming unemployed due to layoffs (Elsby, Hobijn, & Sahin, 2010) and potentially remaining unemployed for long periods (Katz & Meyer, 1990). However, employees can also experience other long lasting economic and social effects, such as wage reductions (Davis, Faberman, & Haltiwanger, 2012; Graham, Kim, Li, & Qiu, 2013), reduced consumption, loss of housing (Hsu, Matsa, & Melzer, 2018), and declining health<sup>17</sup> (Burgard, Brand, & House, 2007). However, most of these collateral effects do not occur solely due to sanction induced bankruptcy. For example, they can also occur as a result of bankruptcy due to inefficiency and outsourcing of production (Hulpke, 2017). Hulpke (2017) argues that job loss is no excuse to let corporate crime run rampant. Hence, it can also be argued that the collateral consequences suffered by employees may in some cases be

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<sup>17</sup> See also: Atkinson (2020)

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outweighed by the greater harm that corporate criminality inflicts to the whole of society (Hulpke, 2017; Ramirez, 2005).

## 3.2 Investors

The second firm-related stakeholder group, the firm's investors such as shareholders and bondholders, are not threatened to lose their job, but rather the capital they put into the firm<sup>18</sup>. Some views categorize shareholders as innocent and blameless for any corporate criminal involvement<sup>19</sup>, and criticize how corporate sanctions harm investor's wealth (Alschuler, 2009; Coffee, 1981; Lederman, 1985; Ramirez, 2005).

However, not all shareholders are equally affected by bankruptcy. Bankruptcy has nearly no effect on institutional investors, mainly due to the effects of diversification<sup>20</sup> (Akhigbe et al., 2005). By holding a variety of securities in a portfolio, investors can minimize idiosyncratic risk, which in this case means that even a large bankruptcy should not have a significant effect on the overall value of their portfolio. Considering that in 2019 41% of the world market capitalization was held by institutional investors (De La Cruz, Medina, & Tang, 2019), the consequences of CDP on the shareholders of the convicted firm may be less than anticipated.

Creditors of the CDP convicted company can similarly suffer losses (Coffee, 1981), as they face the risk of not recuperating their investment in full in the event of bankruptcy. Nevertheless, creditors are first in line when assets are liquidated to investors. Thus, they should experience somewhat lesser consequences than equity holders, who get paid out last. Akhigbe et al. (2005) find that holders of secured debt remain largely unaffected by the bankruptcy of a firm, while holders of convertible and unsecured debt can experience significant losses.

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<sup>18</sup> For example, Enron, an energy giant involved in an accounting scandal, had their price per share decrease from ~90\$ December 2000 to less than \$1 per share in December 2001 (Folger, 2011).

<sup>19</sup>Lederman (1985) says that the influence of shareholders on the business is rather fictional and questions how they can be held responsible for crimes they had no part in.

<sup>20</sup> Akhigbe, Martin, and Whyte (2005) are focusing their research on the Worldcom bankruptcy, the in 2005 still largest bankruptcy in history. During the financial crisis in 2008, the bankruptcy of Lehman Brothers superseded.

In contrast to advocates of the shareholder's innocence, others also acknowledge the collateral effect on investors while arguing that investors should not be considered victims (Atkinson, 2020). Arguments for this are that firms are run in the interests of shareholders and for their benefit, which compensates them for the risk they take with their investments. This principle can be expanded to creditors, who get higher interest depending on the risk that a company defaults and the losses for them upon default. Moreover, the financial loss for shareholders creates incentives to demand proper compliance in the first place to avoid any value reducing events. In summary, although investors may suffer substantial losses under the enforcement of the benchmark penalty, it can be argued that these potential losses are not necessarily collateral damage for blameless stakeholders, but rather a valid outcome of the risk they take as investors, as well as a useful tool to create compliance incentives.

### 3.3 Consumers

In general, the removal of a company could harm consumers, one of the market-related major stakeholders, because it removes a product that was available for consumption. In some cases, a product can be easily substituted, and the consumer consequences are minimized; in other cases, such as for unique pharmaceutical products, consumers might have a preference over substitutes, or substitutes are not available. This could potentially create severe consequences, lasting at least until a proper replacement for the product is found.

Moreover, apart from the unavailability of certain products, consumers can be affected by the CDP through its effect on market competition. Competition can be defined as a rivalry between groups (Vickers, 1995). Hence, the degree of competition in an industry is dependent on the degree of rivalry. In markets where only few firms operate, it is easier to collude and collaborate, which can result in a decrease of the level of rivalry and hence the degree of competition. With more firms in an industry, the ability to collude decreases and therefore can the number of firms be a decisive factor in estimating the degree of competition.

More competition can result in substantial benefits, leading to increased wages and promoting innovation and productivity (Philippon, 2019). Furthermore, competition can decrease prices,

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benefiting consumers through an increase in consumer surplus<sup>21</sup>, which can in turn manifest itself in an increase in disposable income and enhanced spending-ability (Philippon, 2019).

The advantages that consumers have from high levels of competition creates a dilemma for the imposition of the CDP. Once the benchmark penalty is sentenced and enforced, in extreme cases, the corporation could not cover the costs of conviction, go bankrupt and eventually exit the market. As the CDP decreases the number of firms in the industry, it is therefore often an anti-competitive instrument that could prove to be harmful to consumers<sup>22</sup>.

Furthermore, less competition also increases the profit margins for the remaining corporations in the industry<sup>23</sup> (Grullon, Larkin, & Michaely, 2019). Although higher profits could be created through more efficient asset utilization in more concentrated industries, Grullon et al. (2019), as well as Barkai (2016), find that the increase in returns are due to increased markups which manifest in inflated prices for consumers. This would expel the benefits of competition for consumers and negatively affect consumer surplus.

One of the fundamentals of production is that, in a perfectly competitive market, a producer should not be able to gain long term profits. All firms are price takers<sup>24</sup>, since no firm has the influence and market power to adjust prices, and all firms set their output such that marginal costs of production are equal to the price (point E0 in Figure 1). A single case of the CDP in a very competitive industry would therefore have little impact on prices, as the remaining firms have no market power and remain relatively dependent on the price that is set by the market. However, if a company suddenly gains competitive advantages, they can affect the price without losing all of their demand. In the most extreme case, the CDP could force one firm after another out of business, until a competitive or oligopolistic industry turns into a monopolistic one. In such a scenario, a firm would reduce output to the level where marginal

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<sup>21</sup> Consumer surplus is a measurement of consumer benefits. It shows the benefit that consumers receive for paying less for a product that they were willing to pay more for. In contrast, producer surplus is the benefit that producers have when they sell a product above the minimum price that they would be willing to sell it for.

<sup>22</sup> In theory, the CDP could exclude a market participant that vehemently restricted market efficiency. In such a case, the CDP could prove to be promoting industry competition rather than limiting it. Consumers could then actually benefit from the CDP. While this could affect the viability of the CDP, it is outside the scope of this study.

<sup>23</sup> Higher profits for corporations could naturally also mean more employment and better wages, but Philippon (2019) finds that profits from competitive advantage are often paid out to shareholders in dividends and used for share buybacks.

<sup>24</sup> In competitive industries, firms must produce at the price given by the market, since they lack market power to change it and are easily substituted by competitors if they try to increase prices anyway.

costs and marginal revenue are the same (Point S in Figure 2) to maximize profits. At this level, prices would increase, and demand would decrease. This market would no longer be in a perfect equilibrium of supply and demand, but rather in an inefficient equilibrium (Point E1 Figure 2), which reduces consumer surplus and creates a welfare loss (grey area, Figure 2). This welfare loss, also defined as a deadweight loss<sup>25</sup>, signals for example that some consumers are not able to buy the product anymore, as the price is above their willingness to pay, and that remaining consumers suffer reduced disposable income which also affects their spending on other industries (Philippon, 2019).

Figure 1: Equilibrium in competitive markets

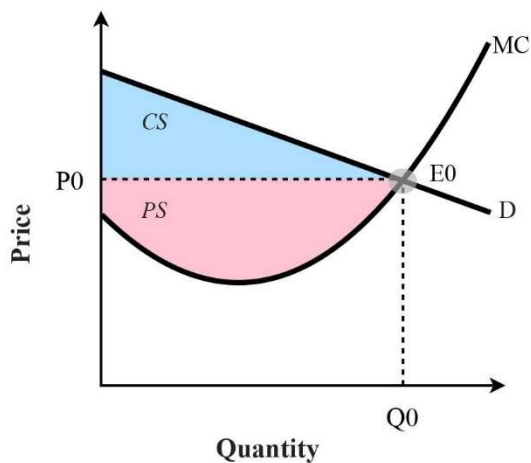


Figure 1 shows the Equilibrium in a competitive industry and the area of CS and PS

Figure 1: Equilibrium in concentrated markets

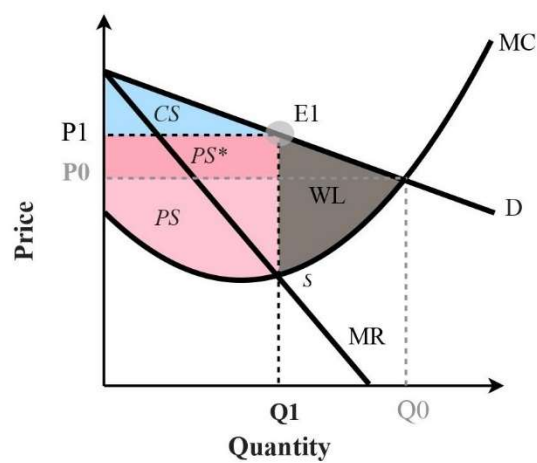


Figure 2 shows the equilibrium in a now concentrated industry. The shift in market power creates a new equilibrium in E1.

The degree of competition however plays a crucial role in defining the impact of the anti-competitive effect of sanctions (Auriol & Søreide, 2017). Without a high degree of market concentration, it remains unlikely that the CDP would inflict heavy burdens on consumers via price inflations. Only once the market is no longer considered competitive, could the increased market power of producers through a CDP manifest in collateral consequences for consumers. Nevertheless, to avoid a transition from a competitive market scenario (Figure 1) to a monopolistic market scenario (Figure 2), enforcement agencies should always consider the changing degree of competitiveness before and after the potential infliction of a CDP. If

<sup>25</sup> A deadweight loss means that the Economic surplus, which is consumer plus producer surplus, has been reduced due to the market inefficiency.



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avoiding major harm for consumers is a priority, then the CDP should only be risked in competitive markets.

### 3.4 Producers

Through the same principle that consumers are harmed by the CDP, the second market-related stakeholder, the remaining producers, could benefit from the sanction induced bankruptcy of a rival by gaining competitive advantage. However, industry contagion effects also play a role, and could create negative externalities for producers. In the following, I examine the different ramifications that a firm's competitors can face after it has been subject to a CDP.

Lang and Stulz (1992) analyze the effect of bankruptcy on competitor by examining industry wide stock price reactions<sup>26</sup> and find two effects of corporate bankruptcy: the contagion and competitive effect<sup>27</sup>. The contagion effect<sup>28</sup> generally results in a negative stock price response of competitors' stocks<sup>29</sup>(Ferris et al., 1997). This negative reaction is mostly due to the reveal of negative cash flow information in the bankruptcy filing. A firm that has similar cash flow as the failing firm could be perceived to have also similar problems in their operations. However, when the bankruptcy is prompted by purely idiosyncratic reasons then no new information about the industry should be revealed (Lang & Stulz, 1992). This is an important implication for the CDP since this penalty would only induce bankruptcy due to the existence of firm-specific corporate criminal acts<sup>30</sup>. The contagion effect from cash flow information could be mitigated in these cases.

In addition, there is also a reputational contagion effect of a firm's bankruptcy on competitors (Lang & Stulz, 1992). After the publication of a serious criminal case, investors and customers

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<sup>26</sup> In general, stock prices are critical for the wealth of the large industry shareholder group. However, more importantly they also reflect a corporation's financial health. Corporations can indirectly benefit from higher stock prices which enable them cheaper financing through seasoned equity offerings and also cost-efficient stock-acquisitions.

<sup>27</sup> Further effects of bankruptcy on producers exist. For example, Benmelech and Bergman (2011) find increased cost of debt due to fire sales and its negative effect on a firm's collateral assets. Choi and Cho (2018) find that innovation is reduced, since firms are focusing more on short-term efficiencies instead of long-term commitments that are necessary for innovation.

<sup>28</sup> The contagion effect is often discussed with a focus on the financial industry. See Akhigbe and Madura (2001) and Helwege and Zhang (2016)

<sup>29</sup> Ferris, Jayaraman, and Makhija (1997) find that for every dollar lost for the bankrupt firm, competitors would lose \$3.32.

<sup>30</sup> An exception would be industry wide collusion or cartels.

could change their impression on the entire industry, and be less optimistic about its future value, potentially affecting the dealings of competitors with business partners. The negative effect should also exist when a firm is announcing financial distress due to criminal behavior, as the entire industry could be under increased scrutiny of undertaking criminal activity as well<sup>31</sup>.

The extent of the contagion effect can be substantially affected by the industry leverage levels (Lang & Stulz, 1992). The greater the debt of competitors, the higher their equity elasticity, which would amplify negative stock price effects. Moreover, the more leverage a firm has, the higher is the present value of direct bankruptcy cost<sup>32</sup>. Thus, negative contagion effects are more impactful, and the consequences for producers after a CDP more severe, in highly leveraged industries.

The competitive effect, the other relevant effect of corporate bankruptcy on producers, generally implies a positive value response on producers (Lang & Stulz, 1992). The CDP of a firm can be beneficial for competitors through the reallocation of wealth and growing competitive advantage, like increased demand, reduced costs, or increased margins through higher prices (Kolay, 2018). This effect stands in the exact opposite of the consumer effect discussed in the previous section, as the price increase benefits producers but harms consumers. However, as the harm on consumers is only tangible through a CDP in concentrated markets, the competitive effect for producers exists also only in concentrated industries, where gaining producer rent and more market power is possible (Akhigbe et al., 2005; Kolay, 2018; Lang & Stulz, 1992).

The relation between the competitive effect and the leverage levels is not as straightforward as in the case of the contagion effect. On the one hand, similar to the contagion effect, large industry debt levels result in higher elasticity of equity which would further increase stock prices from competitive benefits. On the other hand, a great amount of debt can also reduce flexibility and the competitor's ability to benefit from emerging opportunities that arise in the aftermath of a bankruptcy (Lang & Stulz, 1992). Thus, high leverage levels are related to a

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<sup>31</sup> For example, Nelson (2017) calls corruption in financial markets the norm.

<sup>32</sup> Direct bankruptcy costs are expenses related to a bankruptcy filing. A firm with more leverage has higher probability to go bankrupt and hence a higher present value of bankruptcy costs, which results in a higher negative effect of contagion.

both positive and negative impact on the competitive effect, and a robust relation between debt levels and the extent of competitive effects cannot be established.

In summary, the bankruptcy of a firm can have either positive or negative consequences for competitors, depending on which of the two effects dominates<sup>33</sup>. However, as Lang and Stulz (1992) find, the degree of leverage and market concentration can give an important implication to these effects. Market concentration is unrelated to the contagion effect, while directly affecting the competitive effect. Industry leverage levels are ambiguously related to the competitive effect, while directly influencing the contagion effect.

Table 2: Effect on producers

| <b>Market competition</b>    | Concentrated |                 | Competitive     |          |
|------------------------------|--------------|-----------------|-----------------|----------|
| <b>Leverage levels</b>       | High         | Low             | High            | Low      |
| <b>Effect on Competitors</b> | Uncertain    | Strong Positive | Strong Negative | Negative |

Table 2 shows how market competition and leverage levels determine the effect for producers after a bankruptcy in their industry.

As illustrated in table 2, a positive effect on producers is created when sanction induced bankruptcy occurs in an industry with low leverage levels, implying smaller contagion effects, and with high market concentration, implying larger competitive effects for the remaining firms, which gain competitive advantage from the bankruptcy. A negative effect is produced when the industry is highly levered, which creates a higher contagion effect, and when the market is highly competitive, which prevents any rent seeking through increased prices. Likewise, a negative effect would exist in competitive markets when leverage is low, since although the contagion effect would be less severe, the competitive effect is absent. Lastly, the effect on competitor's after a CDP is uncertain in concentrated markets with high leverage.

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<sup>33</sup>Ferris et al. (1997) also analyze stock price reactions and conclude that the contagion effect dominates, since they find little evidence for the competitive effect. However, their analysis is focused on the bankruptcy filing as the event window. The authors hypothesize that by that time competitive advantages could be already priced in the competitors' equity. In contrast Iqbal (2002) finds no evidence for contagion effect in his study, while Goins and Gruca (2008) say the competitive effect could dominate if causes for distress are idiosyncratic.

In this scenario, the positive competitive effect is opposed by the negative contagion effect of high leverage, which makes the overall impact on producers case-specific, depending on which effect dominates over the other.

### 3.5 Consequence-based Variables

In this section, I elaborate on different firm-related and market-related stakeholders and the potential consequences of the CDP on them. Although the losses of firm-related stakeholders such as employees and investors contribute to the total fallout of sanction-induced bankruptcy; these losses are, respectively, either not exclusively related to the CDP, or considered an assumed risk. For these reasons, these groups are not considered for estimating the collateral consequences of the CDP in this framework and I focus on the market-related stakeholders, consumers, and producers. To estimate the extent of the effect of the CDP, I deduct two consequence-based variables: market concentration and industry leverage (Table 3). High market concentration relates to harmful effects on consumers via price increases, but also to benefits in competitive advantages for producers. On the other hand, leverage levels can give an indication of harmful consequences on producers via industry contagion effects.

Table 3: Consequence-based variables

| <u>Estimators to Categorize Consequences of the CDP</u> |                                |
|---|--------------------------------|
| ➤   | Degree of Market Concentration |
| ➤   | Degree of Industry Leverage    |

*Table 3 shows the variables that can determine the collateral consequences after a CDP for consumers and producers.*

### 3.6 Shifting Costs and Discounting Penalties

So far, I have analyzed consequences on different parts of society and deducted the consequence-based variables. Here, I want to briefly extend the microeconomic concerns, which are related to the consequences to consumers, and elaborate on possible ways for corporations under scrutiny to lessen the impact of the CDP.

### 3.6.1 Shifting the Sanction

Previously, I described how the CDP could decrease competition and induce price inflations through newfound or additional market power. I already distinguished that in order to avoid major consequences to consumers, the CDP could hence only be applied in competitive markets. An additional aspect that I briefly examine is how market concentration affects a firm's ability to shift the burden of the benchmark penalty.

Through the benchmark penalty, the risk of the CDP is created but not its certainty. If a firm goes out of business at the end is dependent on how it can deal with the financial burden. For example, once a firm in a competitive industry is subject to a high fine their marginal costs would increase and the cost curve would shift to the left. Ideally, they would want to increase prices to shift the burden of the fine to consumers which could help them cope with any financial distress after a sentencing. However, firms in competitive markets are still price takers and an individual firm could not inflate prices in an intent to let consumers absorb part of the financial impact. Due to the high degree of competition, consumers would rather just switch to a different supplier, who can maintain offering the market price.

Figure 2: Change of costs in concentrated markets

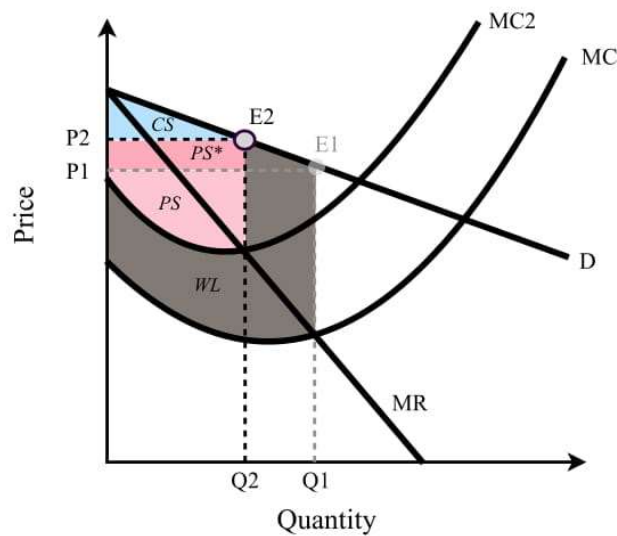


Figure 3 shows the shift in the MC curve and the following change in equilibrium from  $E_1$  to  $E_2$  and the increase in price from  $P_1$  to  $P_2$ .

|  |                            |
|--|----------------------------|
| $E_i$ : Point of Equilibrium             | $Q_i$ : Quantity in $E_i$  |
| $P_i$ : Price in $E_i$                   | CS : Consumer Surplus Area |
| D : Demand Curve                         | PS : Producer Surplus Area |
| MR : Marginal Revenue Curve              | PS* : New PS/Old CS        |
| MC : Marginal Cost Curve                 | WL : Welfare Loss          |
| MC2 : Marginal Cost Curve after Sanction |                            |

However, in concentrated, monopolistic industries, firms already have market power. A monopolistic firm that is subject to the benchmark penalty would have the same shift in marginal costs that a competitive firm would face (MC to MC2 in Figure 3). The monopolistic corporation wants once again to produce at a level where marginal costs and marginal revenues are equal, in order to maximize profits. This incentive would result in a further reduction of quantity produced and raise prices for consumers even more, as we can see in the shift of point  $E_1$  to  $E_2$  in figure 3.

In such a scenario, a firm could lessen the impact of the penalty by increasing prices and shifting parts of the burden to consumers. As seen by the area marked in grey in the figure 3, further welfare would be lost. The welfare loss consists of a reduction in producer surplus, since a firm would nevertheless have been better off without the incremental costs, but also in a decrease of consumer surplus, since a part of the impact is now absorbed by the consumers through price increases.

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Ultimately, we can examine that the benchmark penalty could increase costs for an individual firms, which in a monopolistic industry could lead to further price increases and welfare loss, manifesting itself through producer but also consumer surplus reduction. Thus, subjecting monopolistic firms to the benchmark penalty would be critically difficult if enforcement agencies want to avoid any fallout on consumers.

### 3.6.2 Penalty Impact Discounts

In prominent corporate criminal cases, the press is often promoting the “large” penalties that are inflicted on corporations, however the de facto imposed penalty might be less than what is expressed to the public. For example, in the United States, corporations can file for two types of bankruptcy: chapter 7 and chapter 11. A chapter 7 filing means that a corporation goes out of business (United States Courts, 2020). The US government appoints then a trustee to sell all assets and redistribute their value to stakeholders. However, in chapter 11 bankruptcy, the filing corporation can continue operating as usual<sup>34</sup>. The main goal of chapter 11 is the reorganization of the enterprise. This means that under strict government supervision, the company could downsize operations, sell assets, or try to renegotiate debt in order to return to profitability. An interesting insight is that one of the largest creditors would be the same government who issued the benchmark penalty that induced corporate bankruptcy. A company in distress could therefore readjust the level of penalty post-conviction via debt negotiations. Similar bankruptcy systems also exist in Europe<sup>35</sup>. The bottom line is that bankruptcy not automatically means corporate death and that corporations can restructure and mediate ways to stay operative.

An additional critical feature of the punishment for corporations is the time frame, in which they have to pay the penalty. A short time frame makes payment of a harsh fine increasingly difficult to handle, but if a company can pay in multiple installments, stretched over numerous years then the penalty can be managed more effortlessly. Longer periods to pay the fine could

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<sup>34</sup> Normally a corporation can continue operating under the same management, but if the bankruptcy is induced by fraud or dishonesty, a trustee can be appointed to take over. See: United States Courts (2020)

<sup>35</sup> In Germany, a bankrupt corporation can offer a redevelopment plan to emerge from insolvency (§270 b Insolvenzordnung InsO, German Insolvency Law)

affect the deterrent value of the benchmark penalty, as more time to pay means less short-term financial harm<sup>36</sup>.

Finally, the tax deductibility of fines can play an important role in the de facto amount that a corporation must pay. In the United States, fines that must be paid to the government are generally not applicable for tax deduction. However, this law does not hold for the wide-spread use of NTR. A settlement is categorically different than a fine, and thus many cases that involved NTRs result in the corporation's ability to deduct parts of the fine from their tax payments. For example, in 10 major U.S. settlements that amounted to a total value of 80 billion USD in fines, at least 48 billion USD were applicable for tax deduction (Surka, 2015). In Europe, fines and penalties that need to be paid to enforcement agencies are in general also not deductible. However, for example Germany prohibits tax deduction of fines<sup>37</sup>, but not for payments meant for reparation and the skimming off economic profits (Kuilwijk & Phelan, 2010). A precedent would be the 1 billion Euro penalty on Volkswagen AG in 2018. Only 5 million Euro of the penalty was considered a fine, while the remaining 995 million Euro were meant to skim off the economic gain from the crime, which makes them tax deductible (Public Prosecution Lower Saxony, 2018). Therefore, some accounting loopholes to write off payments do exist also in European legislation<sup>38</sup>.

Here, I listed some of the ways in which a corporation can decrease the de facto impact of a sanction. Consequently, the deterrence effect of the CDP could be reduced in some cases. It is vital to be aware of these affects, as some companies might go out of business when subjected to the CDP, all the while other firms remain undeterred since they believe they are able to influence the real value of any possible sanctions, for example through either debt renegotiation or longer periods for payments.

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<sup>36</sup> Spending large amount of cash for sanction payments is costly as firms lose the opportunity to invest it and gain interest on it. Longer periods to pay a fine would allow corporations to invest in risk free assets and use the proceeds for the down payments. A corporations can therefore choose to surrender less of their own capital to pay the sanction. For literature on investment decisions see: Berk and DeMarzo (2016)

<sup>37</sup> See §12, paragraph 4 Einkommenssteuergesetz (EstG)- Income Tax Act

<sup>38</sup> With regard to the benchmark penalty, the implication of these loopholes is not as clear. In general, if the benchmark penalty has been sentenced through a court verdict, tax deductibility should be impossible for corporations.



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## 3.7 Summary of the Theory

So far, I have addressed two questions: When can a CDP be enforced based on a deterrence standpoint and when does it generate harmful consequences for consumers or producers? To answer these questions, I have analyzed literature on optimal deterrence, and collateral implications of harsh penalties.

Corporations have powerful and effective measures of prevention and policing at hand to deter crime. However, to induce these measures corporate liability is needed. By enforcing the harshest sanction which can risk the CDP, only when a corporation did not self-report their crime or fully cooperate, enforcement agencies can establish a framework that creates the highest incentive to comply. Moreover, Hamdani and Klement (2007) support a pervasiveness standard for the use of harsh penalties, in order to keep the harshest systematic punishment limited to only systematic crime. A pervasiveness standard would allow corporation to avoid experiencing the CDP when only one rogue employee has committed a crime. Thus, I find three deterrence-based variables for the use of the benchmark penalty: (1) the crime was not self-reported, (2) the firm did not fully cooperate, (3) the crime is pervasive and thus committed by multiple employees (Table 4).

By analyzing consequences on society, I derive the consequence-based variables: market concentration and industry leverage (Table 4). The extent of market concentration can give a signal about the harmful effects on consumers, which are lower when the market is very competitive, and the competitive benefits for producers, which can only exist in concentrated markets. Industry debt levels can indicate the extent of harm that producers face via the contagion effect, which is more expressed in highly levered industries (Lang & Stulz, 1992). With the degree of both market concentration and leverage, it is possible to estimate the severity of CDP consequences for producers and consumers.

Table 4: Deterrence-based variables and consequence-based variables

| <u>Relevant Variables for the Use of the Benchmark Penalty (CDP)</u> |
|--|
| ➤ Not Self-Reported  |
| ➤ No Full Cooperation  |
| ➤ Pervasiveness of Criminal Act                                      |
| <u>Estimators to Categorize Consequences of the CDP</u>              |
| ➤ Degree of Market Concentration                                     |
| ➤ Degree of Industry Leverage  |

*Table 4 shows the combined deterrence and consequence-based variables Together they could determine whether the benchmark penalty is relevant to enforce and ho to what extent consumers and producers would be affected after a CDP.*

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## 4. Analysis

I have deducted three deterrence-based and two consequence-based variables that estimate when the benchmark penalty and the risk of the CDP is relevant to enforce from a deterrence standpoint and which stakeholders are affected by corporate bankruptcy. In this section, I evaluate these variables to demonstrate the level of applicability of the benchmark penalty and the CDP in real corporate crime cases. While insufficient to prove causal relations, this analysis exhibits the real-life relevance of sanction induced bankruptcy.

I analyse the original data sample provided by Auriol et al. (forthcoming), which contains 50 completed enforcement cases that happened in five countries during the 2000s. Information about enforcement cases is often very limited, even to academic researchers, which makes the availability of this sample by Auriol et al. (forthcoming) even more advantageous for this thesis. The types of crimes from the sample are divided into 20 competition, 11 anti-money-laundering (AML) and 19 corruption cases. The crimes historically were dealt with in the jurisdictions of the United Kingdom, Germany, the Netherlands, Sweden, and Norway, with each country assigned ten cases.

In the first part of the analysis, I will apply the three deterrence-based variables, not self-reported, no full cooperation and pervasiveness, on these cases to find if the benchmark penalty could have been used from a deterrence standpoint, which would give us an inclination in how many of these cases the CDP could have been risked. Following, I will analyse the consequence-based variables, market competition levels and the degree of leverage, for the CDP-relevant cases. Ultimately, I will determine whether collateral consequences would have either affected consumers or producers.

### 4.1 Case Analysis: CDP Relevance

To evaluate if the deterrence-based variables are met, I conduct a search in legal databases to examine court sentences and official statements, or use the Internet's available search engines. However, several of these cases have been completed with NTR, and settled deals often involve limited transparency to the public (Auriol et al., forthcoming). For 12 of these cases information was too uncertain or not available to make a reasonable assumption about the variables and are hence excluded from further analysis. For other cases, although the available

information was insufficient to determine the state of the variables with complete certainty, it was sufficient to make assumptions about these variables based on proxy information.

I distinguish between variables that were met<sup>39</sup> (black checkmarks; Table A 1) and variables that were not met (black crosses; Table A 1) with certainty. I also differentiate the cases where the information was either concealed or unclear, but an assumption can still be made about the variables state (grey checkmarks and crosses; Table A 1).

#### 4.1.1 Results CDP Relevance

From the remaining 38 cases, I find that the corporations did not self-report their crime 33 times (87%) and reported it 5 times (13%). The firms did not fully cooperate in 16 cases (42%) but cooperated in 22 (58%). Except for two instances, all cases could be deemed pervasive (95%) (Table 5).

Table 5: Results from deterrence-based variables

| Condition met? | Not Self-Reported | No Full Cooperation | Pervasiveness |
|----------------|-------------------|---------------------|---------------|
| ✓              | 21                | 7                   | 15            |
| ✓              | 12                | 9                   | 21            |
| ✗              | 5                 | 19                  | 0             |
| ✗              | 0                 | 3                   | 2             |

*Table 5 presents the results from the analysis. A checkmark and cross determines if the variable has been met or not, respectively. The grey symbols indicate that available information was not definite but the sources gave an indication about the variable.*

The benchmark penalty can only be applied if all three relevance conditions have been met, which happens in 16 cases (42%) (Table A 1). From these 16 cases where the benchmark penalty could have been used, 12 are competition cases and 4 AML cases, with no corruption cases among them. The sentencing government was the United Kingdom in two, Germany in one, the Netherlands in four, Sweden in five and Norway in four cases.

The low number of self-reports, in contrast to the high instances of full cooperation, could indicate that corporations are either hiding their crimes until it is revealed and only then start being compliant, for example to receive sanction reduction through a settlement. On the other hand, it may also indicate that corporations have no proper monitoring in place that

<sup>39</sup> In competition cases, where multiple companies colluded together, I make a checkmark if one of the corporations did not self-report or not fully-cooperate.

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would enable them to detect crime before enforcement agencies. Furthermore, I differentiate between full-cooperation and just willingness for cooperation. In some cases, like the “Nordea Decision (2015)” or the “Handelsbanken Decision (2015)”, the firm has engaged in cooperative acts, with the goal of sentence reduction. However, the court decided that their actions were not enough to be a mitigating factor. Although some aspects of the optimal liability framework, like sentence reduction only when a firm has fully cooperated, are implemented in certain jurisdictions, it seems that corporations are lacking the clarity and certainty of what is needed to receive the benefits of full cooperation. Either that or they had hopes of being granted alleviating benefits although they knew they did fulfill the requirements to deserve them.

The pervasiveness standard is apparent in nearly all cases. In the two cases where I cannot confidently deduce that the condition was met, it would have made no difference for the imposition of the benchmark penalty, since in both cases, the firm self-reported and fully cooperated. Regarding the trade-off with broad liability and pervasiveness, it seems that this might be of less significance as originally anticipated. Including the pervasiveness variable or removing it to create a broad liability condition would have no effect on the original result.

From the 38 cases, the benchmark fine could have been applied in 16 cases. This 42% share signals that corporations are not properly deterred by the threat of high fines. The result provides further insights to the level of practical implementation of optimal liability regimes. As I have established in Section 2, governments have yet to create the proper incentives for self-reporting and full cooperation that are vital to increase deterrence levels (Arlen, 2020).

## 4.2 Case Analysis: Collateral Consequences

To indicate to which extent consumers and producers are affected by the consequence of the CDP, I estimate the market concentration and debt levels for each industry of the 16 CDP-relevant cases. To receive the degree of market concentration, this thesis again can benefit from the work and availability of the data provided by Auriol et al. (forthcoming). Auriol et al. (forthcoming) estimate in their research the relevant markets to be either concentrated or

competitive, using the Herfindahl-Index and the company specific Lerner Ratio<sup>40</sup> (Table A 2). To estimate industry debt levels, I use Europe wide fundamental debt data provided by Aswath Damodaran (Damodaran, 2020)<sup>41</sup>. To decide whether an industry is either low or highly levered, I compare the debt to capital ratio from each industry to the total market ratio. I classify every industry's debt ratio higher than the market ratio as high levered, and every ratio below it low levered (Table A 2)<sup>42</sup>.

#### **4.2.1 Results Collateral Consequences**

From the 16 cases that are benchmark penalty relevant, five are operating in a high levered industry (31%) while 11 are operating in industries with low debt levels (92%) (Table A 3). Concerning the degree of competition, it is not possible to estimate the value in four of the 16 industries, mostly caused by the lack of financial data. From the remaining 12 cases, only one operated in a competitive market (8%), while the remaining experience high levels of market concentration (92%) (Table A 2).

#### **4.2.2 Extent of Collateral Consequences**

As I have discussed in section 3.3, consumers are harmed once the CDP is enforced in a concentrated market and I assume that they can get no immediate advantage from the CDP. The consequences for producers, the remaining firms in the industry, are ambiguous. Market concentration can trigger the competitive effect and create positive value effects for the industry. This effect is independent from leverage. The contagion effect can persist in concentrated and competitive markets; however, its extent is dependent on industry debt levels. Low leverage levels would limit the negative contagion effect, while high debt levels maximize it. We can make a clear assumption about the outcome of a CDP on producers, in cases where the CDP would be in concentrated markets with low leverage, assuming that the contagion effect is smaller than the competitive effect and in competitive markets, where only

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<sup>40</sup> Auriol et al. (forthcoming) use a Lerner Ratio above 20% as an indicator for market concentration.

<sup>41</sup> I use Europe wide data as a proxy for industry leverage levels, although not all cases involve companies that operate internationally. However, I assume that incentives to accumulate high or low amounts of debt are similar in European countries.

<sup>42</sup> Note that two cases can have the same industry and same indication of leverage level but different estimates for market concentration. Leverage is derived from Industry data, while Concentration levels are estimated by looking at the specific company and its competitors.

the contagion effect persists. Instances in concentrated markets with high debt levels give uncertain results, as contagion and competitive effect challenge each other.

From the 16 cases, I can only make an indication for the consequences in twelve of them, as four are having missing information in the degree of market concentration (Table A 2).

**Table 6: Consequences on consumers and producers**

|          | <b>Consumer Harm</b> | <b>Producer Harm</b> | <b>Producer Benefit</b> | <b>Producer effect unclear</b> |
|----------|----------------------|----------------------|-------------------------|--------------------------------|
| <b>#</b> | 11                   | 1                    | 7                       | 4                              |
| <b>%</b> | 92%                  | 8%                   | 58%                     | 33%                            |

*Table 6 shows the consumers and producers harm or benefit from the CDP. The hash mark states the number of instances consumers or producers are effected out of 12 cases. The percentage symbol determines the share of the number of instances consumers or producers are affected out of the total 12 cases.*

Since 11 out of 12 cases where in concentrated markets, consumers would suffer consequences in 11 instances (Table 6). Producers vice versa would benefit seven times from the decreasing competition and a low contagion effect. However, in four cases, the crime occurred in concentrated markets with high leverage. Therefore, the consequences for producers remain unclear. Only in one case can I deduct that producers would have been harmed, as high market competition prevents competitive advantages.

The results indicate that consumers are the most affected stakeholder group. This could be due to a sample bias, since only 8 of the original 50 cases are determined to operate in competitive industries. On the other hand, crimes also happen more often in concentrated industries (Auriol et al., forthcoming), which would explain the many cases in concentrated markets. However, regardless of the allocation of crime to concentrated and competitive industries, this case approach shows that consumers would be frequently harmed by the CDP. In contrast to consumers, producers can benefit in seven cases from the CDP. This is reasonable due to the previously established relationship between producers and consumers. Producers can benefit from the competitive advantage that can lead to increased prices, which ultimately harm consumers. This relation also works vice versa, as we can see in the one case where producers suffer negative consequences and consumer do not. However, in four cases the effect on producers remains unclear, which could result in difficulties estimating the potential effect of the CDP.

In summary, I have distinguished the cases where the benchmark penalty would be relevant to enforce from a deterrence standpoint, and also where the main collateral consequence would occur. As a final point, I address the question if this high penalty and the resulting risk of

corporate bankruptcy could be deemed appropriate by a government and could have been enforced.



## **5. Discussion**

In this section, I first examine when governments could find risking the CDP appropriate. Moreover, I discuss a potential extension on the framework of corporate liability, and relevant aspects for future research. Finally, I address the limitations of this study and potential policy implications.

### **5.1 Governments Political Inclination**

So far, I have established optimal framework and grouped the potential consequences of the CDP. In this section, I want to elaborate on the importance of political priorities and how a specific government's idea of what is good for society can impact the use of the CDP. On the one hand, governments may focus on protecting corporate profits, while assuming that these profits translate into their associated societal benefits. On the other hand, governments may assume a more active role and decide to directly protect society and its consumers, in lieu of corporate profit. In this section, I first use a quantifiable variable, the corporate tax rate, to identify which of these two lines of action different governments would favor. Second, I analyze in how many of the CDP-relevant cases governments could have actually enforced the benchmark penalty, or whether they would have blocked any harsh prosecution to avoid the collateral consequences, according to their producer versus consumer emphasis.

#### **5.1.1 Consumer and Producer Emphasis**

The sentencing in corporate crime cases is ultimately given by enforcement agencies and the judiciary. Through the principles of separation of power, the government, the executive branch, should have little access to the decision-making process of corporate crime sentencing. However, regulations of corporate punishment are not as clearly structured as other parts of the law. In fact, enforcement agencies often have a degree of flexibility to make decisions, which allows them to alter sanctions and negotiate with firms for NTR. This flexibility creates an opportunity for governments to influence the final decision on a corporate sanction, for example in the form of shielding the firm from harsh sanctions (Auriol et al., forthcoming). Countries can differ substantially in the flexibility of prosecution, nevertheless even in very

de jure inflexible countries<sup>43</sup>, like the UK, governments have proven their ability to make an effect on the enforcement of corporate crime cases<sup>44</sup>. Thus, governments, in practice, have the power to decide whether they want to interfere in the enforcement of corporate liability.

This decision can be influenced by the incentives a government has to control corporate crime. Auriol et al. (forthcoming) find that this incentive depends on how much a government values corporate profits, and also the harmful consequences of the corporate offense. In this thesis, I extend this framework by arguing that as governments can be motivated by the consequences of crime, they can also be motivated by the consequences of punishment, which would be the repercussions on stakeholders after a CDP.

A government can have multiple motivations to value corporate profit. Foremost, larger profits imply larger corporate tax revenue for governments, regardless of how high their corporate tax rate of the country is. But furthermore, larger corporate profits can have additional beneficial effects for society that governments may value. For example, larger profits could mean higher wages and employment rates (York, 2018). Moreover, it could lead to corporate cash reserves for economic downturns, which would help stabilize the firm and thus the employment. Finally, profits could also be used to invest in research and development, which could create better products for society or higher productivity. All of these reasons give governments rational incentives to protect producers and their profits<sup>45</sup>.

On the other hand, some corporations might decide to not spend profits on any of these causes beneficial for society, and spend them to benefit only a few instead, for example by issuing dividends for their shareholders. Hence, governments might also be rationally inclined to not put that much emphasis on protecting corporate profits, and instead focus on protecting consumers and consumer surplus. For example, by promoting competition, governments could keep prices low and consumer surplus high, albeit reducing producer surplus. Moreover, they

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<sup>43</sup> See Søreide and Vagle (2020)

<sup>44</sup> An example would be the BAE Systems case, in which the then prime minister Tony Blair interfered in the investigations and shielded the company from harsh sanctions, although ample evidence for BAE's involvement in corporate crime was available. See: Auriol et al. (forthcoming)

<sup>45</sup> In contrast, governments can also be captured, implying that they make decisions to protect corporations that are irrational. However, the fact that a government decides to protect producers is not necessarily an indication for capture, as they might just consider the social consequences of harming industries (Auriol et al., forthcoming).

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could increase the corporate tax rate to reduce the profits for corporations while increasing the government budget for public expenditures<sup>46</sup>.

The decision whether governments interfere in the enforcement of corporate liability partially depends on how much they tend to value corporate profits and harmful consequences (Auriol et al., forthcoming). Thus, the degree of emphasis governments put on producers and consumers could be a pivotal factor in their decision. If governments put a higher degree of emphasis on consumers, they would tend to avoid any collateral harm on them; similarly if governments value producers and corporate profits. Governments could be inclined to allow the enforcement of the benchmark penalty in order to gain the optimal deterrence benefits only when the favored stakeholder is not critically affected by the consequences of the CDP. With this insight, two governments faced with the decision whether to enforce the benchmark penalty could reach two contradicting decisions on whether the risk of the CDP is appropriate, based on the degree of emphasis on either consumers or producers alone. By identifying where this emphasis lies for each government and assessing whether CDP consequences affect more heavily either producers or consumers in each of the CDP-relevant cases, I can identify whether governments could have deemed the risk of the CDP appropriate in these cases.

### **5.1.2 Estimating Government Emphasis**

Before analysing whether a government would find it appropriate to enforce the benchmark penalty in the case sample, I measure the degree of emphasis a government puts on either consumers or producers using the corporate tax rate as a proxy. Corporate taxes have a direct impact on corporate profits. Governments that put more emphasis on producers and the potential benefits of increased profits would be motivated to keep these taxes low. On the other hand, high corporate taxes lead to higher state income that could be spent for public benefits and consumers. Thus, a high corporate tax rate could indicate a high consumer emphasis and a lower emphasis on producers, and vice versa. To quantify this emphasis, I collect data

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<sup>46</sup> A extension here would be the geographic location of cost and benefits of the criminal act. For example if consumers in another country are harmed, either through the crime or consequences of the CDP, a government would have little incentives to internalize these costs. An exception could be in regions with international cooperation, where integrity and collaboration are valued and countries can be motivated to take harmful consequences for consumers in other jurisdiction into account, like in the European Union, where supranational bodies are present (Auriol et al., forthcoming). Since all the cases in this thesis are located in Europe, I assume that the geographic location does not take a primary role going forward.

provided by KPMG (2020a) on corporate tax rates from 2010 to 2020 from members of the OECD.

By comparing the mean tax rate over time for each country with the overall OECD median, I estimate the government's emphasis on consumers or producers. I classify countries with a mean tax above the median to have a government consumer emphasis, while countries with a lower than the median corporate tax are classified to have a government producer emphasis (Table A 4). For the countries where the cases in this thesis occur - the United Kingdom, Germany, the Netherlands, Sweden, and Norway - this corporate tax classification implies that Germany, the Netherlands, and Norway have a consumer emphasis, while the United Kingdom and Sweden have a producer emphasis (Table A 4.).

However, ruling regimes and corporate tax rates may change with time, and in turn the consumers vs. producers emphasis classification may change as well. Thus, these corporate tax policy changes over time can have a confounding effect of this classification based on mean tax rates over time. On the other hand, these corporate tax rate changes do not happen overnight with a change of government, but rather may take from months to several years to materialize. Thus, basing this classification on corporate tax rates synchronous to the case sentencing may not reflect the government's emphasis accurately. For these reasons, I use both a mean over time corporate tax rates as well as synchronous rates to classify governmental emphasis for this analysis.

### **5.1.3 Appropriateness Using Mean Corporate Tax Rate Emphasis**

Applying the government emphasis estimates on the 12 CDP-relevant and complete cases, shows that the governments could have find risking the CDP appropriate in three out 12 instances (Table A 5). Germany and the Netherlands only have cases in concentrated markets, where consumers would be harmed, and as consumer emphasised governments, they would refrain from pursuing harsh sanctions that could risk corporate bankruptcy. Similarly, Norway is confronted with harmful consequences for consumers and would thus refrain from enforcing the benchmark penalty in two cases. However, in one case the high market competition would limit the negative effect of the CDP on consumers, which implies that Norway could have enforced the benchmark penalty in this case. Producers would feel the consequences due to the high contagion effect, but the government could still find the enforcement appropriate.

Moreover, Sweden who puts a higher weight on producers, could have enforced the benchmark penalty in two cases, since although consumers would be harmed, producers would benefit from the competitive effect, all the while the contagion effect is minimized due to low debt levels. However, three of Sweden's cases remain unclear. Nonetheless, this uncertainty could provide an indication in itself. When the government does not know if and where consequence of a CDP would gather, it increases risk. Moreover, governments are risk averse and "happier to do nothing or little rather than do something that might lead them to be blamed for failure" (Harris, 2014). Uncertainty about the fallout of the benchmark penalty could therefore be treated with extreme caution and would rather motivate avoiding benchmark penalties that can risk the CDP.

In conclusion, we originally had 16 cases in which the benchmark penalty could have been enforced, based on a deterrence standpoint. I categorized the collateral consequences for 12 of them and from these remaining 12, the government could have risked the CDP in three cases, based on the categorization of consequences and the countries degree of emphasis.

#### **5.1.4 Appropriateness Using Yearly Corporate Tax Rate Emphasis**

In the last analysis, I used mean corporate tax rates to estimate a government's weight on producers or consumers. However, a government can change their emphasis every election cycle. We can see that for example in the United States, where the corporate tax fell from 40% in 2016 to only 27% in 2018, a fall caused by a change of the ruling regime. In contrast, other countries do not change their respective taxes over time (Figure 4). As much as eight countries have not adjusted their taxes in the last 11 years. Looking at the development over time in figure 4, we see that some of the case relevant countries experience a downward shift in their taxes. Note however that although the median corporate tax is slightly decreasing, it hovers at a ~24% level. This could imply that for some countries, the decision could have been different from the mean-analysis.

Figure 3: Corporate tax rate over time

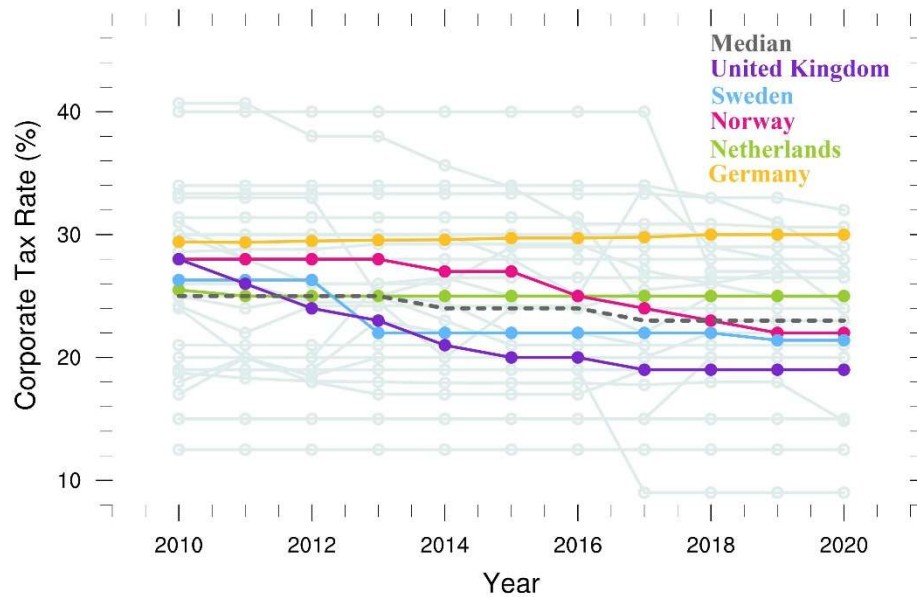


Figure 4 shows the evolution of corporate tax rates in OECD member states. The dotted line shows the evolution of the median, while the coloured lines represent the five case relevant countries

Hence, I analyse how a governments emphasis is affecting the likelihood of enforcing the CDP, based only on the corporate tax in the year where the sentencing was given. In nine of the 12 cases, the emphasis remains unchanged (Table A 6). However, in the Sweden “Asphalt cartel (2009)” case, the corporate tax rate suggest that the government was rather consumer than producer focused<sup>47</sup>. Due to the high market concentration, the CDP would have not been enforced in that case. Moreover, Norway puts a higher degree of emphasis in 2019 on producers, which switches the result in the cases of “Koppang Landbruks- og Næringsmegling AS (2019)” and the “Sædberg & Hodne AS (2019)”. The latter case that was previously appropriate to enforce by Norway would now have been shielded from harsh sanctions to protect producers. In contrast, the “Koppang Landbruks- og Næringsmegling AS (2019)” case would inherit benefits for producers once the CDP is enforced and hence Norway could find harsh penalties appropriate. Ultimately, using synchronous corporate tax rates rather than mean over time tax rates reduces the number of instances the CDP could have been enforced down to only two.

<sup>47</sup> I used the 2010 corporate tax rate from Sweden, which is nearly equal than the one from 2009. See Ydstedt (2013)

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## 5.2 Outlook and Limitations

In this section, I want to address several caveats and outlooks that I have so far not discussed. First, I address an additional consequence from the CDP on producers: The ability to attract investors. Second, I elaborate on the damages on employees, that I have discussed earlier, and analyse a promising proposal of mandatory equity issuances to reduce collateral consequences for the workforce and other stakeholders. I then address the impartiality of the framework that I have discussed in this thesis. Ultimately, I mention possible limitations for this study.

### 5.2.1 Ability to Attract Investors

As a final comment on potential consequences on producers, I want to address the ability to attract investors and raise capital as an interesting potential fallout of the application of the CDP.

Traditionally, the literature characterizes investors as rational beings, making investments purely based on expected return and risk (Beal, Goyen, & Philips, 2005; Markowitz, 1959; Miller & Modigliani, 1961)<sup>48</sup>. Thus, for a rational investor, the CDP could increase the associated risk for a different company to be subjected to a sanction-induced bankruptcy. The use of the CDP in an industry could, like the contagion effect, change investors perception of the entire industry and the associated risk to expected returns ratio. As a result, investors might shift their capital to other industries, where the sharp ratio is higher<sup>4950</sup>. An increased scrutiny about the market could create problems for firms to raise capital to engage in profitable projects, either through equity issuance or debt<sup>51</sup>. As the demand for an industry's stock decreases, a Seasoned Equity Offering (SEO) would also be more expensive to implement. A

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<sup>48</sup> The basis of rational investment decision is derived on the works of Miller and Modigliani (1961) and Markowitz (1959). See: Beal et al. (2005)

<sup>49</sup> The Sharp ratio is performance ratio that shows how a stock's return above the risk-free stands in relation to the stock's volatility. Assuming an industry has increased risk due to the enforcement of the CDP, in order for them to maintain the same sharp ratio, they would have to increase their expected return. In concentrated markets, the competitive effect of the CDP might deliver this increase in expected return due to the benefits of competitive advantage, however in more competitive industries, it could be extremely difficult for corporations to increase their returns without criminal means.

<sup>50</sup> The Sharp ratio in other industries could be higher because investors believe that an industry is less criminal, however there is the possibility that the risk of criminal behavior is the same, it's just the rate of detection that is lower.

<sup>51</sup> Benmelech and Bergman (2011) find an increased cost of debt for competitors since the collateral value of assets is reduced due to oversupply through fire sales of the bankrupt corporation. With a lower value of collateral assets, even secured debt becomes more costly.

SEO implies that the firm is issuing new shares and selling them to the market. With lower demand for a stock, the price per share is reduced and the firm must issue more shares to gain the capital that they wanted to raise. Moreover, through the increased perception in risk, creditors might require higher interest payments in exchange for their capital. On the other hand, investors might be more optimistic about the remaining industry after a CDP has been enforced. They could have elevated confidence in the competitors to put more weight on compliance in their operations and to avoid any scrutiny from enforcement agencies. How and if the CDP could have a consequence for companies to raise capital remains unclear. Nevertheless, I believe this effect to be an interesting topic for future research.

### **5.2.2 Mandatory SEO, Method of Payment and Employees**

This thesis mainly focuses on collateral consequences of consumers and producers. Nevertheless, as I mentioned in section 3.1, employees are often considered to be a vital stakeholder that should not be discounted when estimating the fallout of harsh penalties (Atkinson, 2020; Hulpke, 2017). In this regard, Atkinson (2020) proposes a framework that critically reduces collateral consequences not only for employees but most major stakeholders: SEO as mandatory payment method.

A firm generally has different option when deciding how to finance a penalty. If cash reserves are not abundant enough to pay the fine directly, a corporation can receive capital either by raising debt, selling assets or by issuing new equity. The shareholders of a firm in general would prefer issuing new debt or selling assets. First, debt issuance would not dilute the equity value of the corporation. Moreover, selling assets would decrease the value of debt and equity in the firm, however, equity holder would be still better off compared to a funding scenario through equity alone. By increasing the probability that creditors are paid back in full, selling assets transfers some extent of liability from equity holders to debt holders (Atkinson, 2020).

Raising debt levels and selling assets increases the likelihood of financial distress (Andrade & Kaplan, 1998) and thus corporate bankruptcy, which could create the collateral consequences on employees and other stakeholders alike. Shareholder would also be harmed, yet they would still prefer the negative effects of increasing debt and selling assets and the increased risk of bankruptcy to the negative effects of equity issuance (Atkinson, 2020).

An equity issuance through a SEO could raise capital to pay a penalty in exchange for issuing new shares. With an increased number of total shares, the value of each share is lower, and the



holdings of the initial investors are diluted. This payment method would therefore certainly harm the firm's investors, but debt, assets, and solvency would stay the same, as well as employment. Hence a SEO would minimize the risk of corporate bankruptcy and could avoid the collateral consequences on most stakeholders.

Although fines that would be higher than the market capitalization of a company could still be too much to handle and result in bankruptcy, Atkinson (2020) provides crucial insight to the enforcement of the benchmark penalty. As long as the benchmark penalty can be paid with a SEO, governments could enforce it without fearing the collateral consequences that arise with the CDP, all the while maintaining optimal deterrence. A firm's shareholders would need to bear the costs, however, they remain compensated for the degree risk they take. Overall, Atkinson (2020) provides interesting new research and ideas to reform corporate liability as we use it today.

### **5.2.3 Impartiality**

The analysis of our case sample suggests that not all benchmark penalties would be enforced by governments. One aspect that I have yet to address is the impartiality of this type of corporate punishment (Hulpke, 2017).

Out of 12 cases that are relevant and applicable for the benchmark penalty, two to three could have been appropriate to enforce by governments. For the remaining cases, Governments could have intervened to lower the benchmark penalty, in order to avoid corporate bankruptcy and the collateral consequences for producers or consumers or because they are averse to the uncertainty that they bring.

This provides an important insight for the entire economic industry. The punishment is not equal for everybody. In a country with more weight on consumers, like Germany, harsh penalties that risk the CDP could categorically be refrained from in concentrated markets. As a result, large companies, who often have market power and operate in more concentrated industries, are benefitting from preferred treatment. The lack of real threats of harsh penalties for these companies could result in trivial deterrence and increased corporate crime. In contrast, small firms in competitive markets could still be subjected to the CDP. Although the discussed framework certainly provides some degree of deterrence in competitive markets, where Germany could find enforcing the benchmark penalty appropriate, it is not impartial that some corporations can benefit from this unequal treatment. According to German

legislation, all natural persons are equal under law<sup>52</sup>. It would be questionable if this concept is not transferred to legal persons.

In rather producer focused countries, like the United Kingdom, debt levels could similarly stimulate unjustified advantages for some industries. When debt levels are very high, the government would rather not engage in harsh sanctions as the contagion effect could be severely damaging for the remaining producers. This framework would especially benefit industries that can afford high leverage levels. If the nature of the industry creates very consistent income, debt levels can be extended as the risk of missing interest payments is minimized. As a result, certain industries can create “debt shields”, that could disincentivize governments to act and prosecute diligently.

Ultimately, we can see that the framework would not be impartial. Including alternative policies might provide some solutions, like the Atkinson (2020) proposal of a mandatory SEO payment. While this would certainly limit the impartial treatment, as the CDP would not be risked in as many cases, it would still not solve the issue entirely. As mentioned previously, if the benchmark penalty is higher than the market capitalisation of a corporation, then the threat of the CDP still exists, and governments would still make impartial decision in regard for what they think is best for society.

#### **5.2.4 Limitations**

The conclusions in this study are based on a relatively small case sample. Limited transparency in case proceedings remains an issue, which makes collecting larger samples a difficult undertaking. This limits our ability to go beyond potentially circumstantial correlations and towards significant causal relationships.

Moreover, this thesis is based on the condition that the benchmark penalty can induce corporate bankruptcy. While this is certainly true for some cases, in others the likelihood that the fines would be so high that they impose a CDP is arguably extremely low. In practice, for fines to be threatening corporate bankruptcy the nature of the crime and the generated harm should also be considered to keep a certain level of proportionality. A further distinction between benchmark penalties that are so severe that they induce corporate bankruptcy, and

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<sup>52</sup> See § 3, paragraph 1, German constitution

benchmark penalties that are the maximum fine appropriate for the given crime but certainly not high enough to allow for extreme collateral consequences, would have been valuable for this analysis. However, the main implication of this thesis remains: the harshest sanction should be reserved for non-complying firms and these sanctions generally are the ones that can create sanction-induced bankruptcy.

Ultimately, I use consumer and producer emphasis as an indicator for a government's willingness to enforce benchmark penalties. However, this emphasis may not always be as clear and easily estimated with one variable alone. Using a larger range of proxies could help to more robustly classify the consumer vs. producer emphasis. However, finding an appropriate set of proxies to characterize this emphasis, while being unaffected by other political aspects or governmental ideologies, remains challenging.

For example, employer social security tax rates could be a prime proxy candidate. Under comparatively lower social security taxes, corporations could employ each worker for fewer costs, thus having more money available for new hires or higher wages. On the other hand, additional profits could also be spent as dividends for shareholders. As in the case of corporate tax rates, whether governments choose lower versus higher social security tax rates for the benefit of society could depend on whether governments assume that producers would actually use the excess profits to benefit broader parts of society, or rather just to benefit their shareholders. Hence comparatively higher social security taxes could indicate that governments rather raise the money on societal benefits themselves, instead of letting producers act independently.

As for mean corporate tax rates, I define lower social security tax rates as a proxy for more producer emphasis, and vice versa higher rates for consumer emphasis<sup>53</sup>. However, following this classification leads to substantially different results compared to the corporate tax rate classification (Table A 7). Only the characterization of the United Kingdom remains unchanged under the different proxies. The governments previously categorized as having consumer emphasis - Germany, Netherlands and Norway - have all now producer emphasis. Moreover, Sweden, previously characterized as having producer emphasis, is now classified as having consumer emphasis. These findings highlight again the problems with identifying

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<sup>53</sup> Data of employer social security tax rate is provided by KPMG (2020b)

robust proxies, indicating that, possibly, either corporate tax rates, social security tax rates, or both, are not reliable estimators of governmental ideologies.

In addition, producer vs. consumer emphasis is not necessarily the sole motivation driving governments to change their corporate or social security tax rates, nor to enforce or not enforce corporate liability. Other criteria may be also at play, and these new criteria must not necessarily directly relate to prices for consumers or corporate profits. For example, British prime minister Tony Blair intervened to stop the investigation of the firm BAE systems for paying bribes to Saudi Arabian princes in exchange for arms contracts. Allegedly, Blair was also concerned of severing the British-Saudi Arabian diplomatic tie if the investigation were to proceed. This would have halted the flow of intelligence about certain terrorist groups that Saudi Arabia provided, which ultimately could endanger British security (Leigh & Evans, 2007). While this case could have occurred under a rare array of circumstances, it nevertheless demonstrates that governments could be indeed influenced by motivations beyond producer and consumer consequences.

### 5.3 The Bottomline of the CDP and Policy Implications

In this thesis, I analysed the relevant conditions to risk the CDP through the benchmark penalty and consider the circumstances where the CDP would have been appropriate to use. From the original 50 cases, the benchmark penalty would have been relevant and appropriate to enforce in two to three cases. In the remaining cases, the CDP is either not relevant to use or the consequences for society would have been too harsh for the ruling government to suffer.

This gives an important insight: the optimal corporate liability framework might be difficult to implement. The CDP is not an impossibly inappropriate tool, as there are instances where government agencies could face the risk of enforcing maximum penalties and endure any bankruptcy fallouts. In these cases, it would be vital that enforcement agencies do not back away, as the CDP is not only relevant but also appropriate to risk from a government's perspective. However, these cases are rare and overshadowed by the instances a government would have not risked the bankruptcy of a firm.

Some industries and specific corporations can have significant advantages by operating with different debt levels or in distinctive competitive conditions. Since the benchmark penalty is limited by a government's incentive of keeping certain collateral harm at bay, some industries

can evade harsh sanctions and optimal fines are not met. As a result of the difficulties of reliable enforcing benchmark penalties, the twofold incentive of optimal corporate liability does not work for every case. Without the certainty of the threat of harsh sanctions, deterrence is undermined, and compliance efforts reduced.

In this regard, it seems that the punishment of corporations remains a problem. In practice, governments are pushing for NTR to enforce corporate liability. However, supranational binding guidelines that are consistent with the optimal framework for deterrence are yet to be established. Moreover, how can governments effectively combat corporate crime, if they cannot regularly rely on enforcing harsh sanctions that could risk the CDP, for extremely harmful crimes and for corporations that have not complied? For example, Germany is on the verge of introducing a new law for corporate liability. This law would increase the maximum fines for large firms, but they would still be kept limited to a certain threshold (Behr & Haas, 2020). This restriction in corporate punishment would on the one hand minimize the risk of the CDP as a side effect of harsh fines, but it does not solve the difficulty of creating a powerful deterrent for the most harmful crimes.

From this insight, I deduct two policy implications. First, I suggest to assess the option recommended by Atkinson (2020) of mandatory SEO payments. As long as the benchmark penalty is below the total market capitalization of the firm, mandatory SEO could always be enforced without risking severe collateral damages. This could create opportunities for Enforcement Agencies to devise a powerful and also believable threat of sanctions, even for firms that were originally exempted from harsh penalties that could risk bankruptcy. Mandatory SEOs would also only hit the stakeholders with decisive influence: the owners. In order to avoid any diluting of their investments, shareholders could be increasingly motivated to step in more actively and make sure that proper compliance and cooperation with authorities is established. However, the application of mandatory SEOs might be more difficult in practice. SEOs are only possible in public firms, and hence provide no solution in the private sector. They also present a critical infringement in the freedom of corporate governance and financing decision, which might be difficult to regulate. Moreover, optimal fines could be higher than the market capitalization of a corporations, which could then again risk the CDP and induce suboptimal deterrence and compliance levels. Nevertheless, embracing new ideas to solve the corporate punishment dilemma could be a potential remedy.

As a second policy recommendation, I argue that individual liability must be extended. Corporate liability will remain vital to achieve maximum deterrence, however, its reach is limited and would often favour certain companies and industries. In such cases, the culpable individuals need to be put to justice. As it was established at the beginning of this thesis, corporations do not commit crimes, but the persons behind the firm do. In industries, where corporations are feeling secure from the threat of corporate liability, because they are too important to fail, and employees do not fear prosecution, individual liability must be rigorously enforced in order to create the deterrence levels that are needed<sup>54</sup>. This is especially important in cases where the benchmark penalty cannot be enforced, as intense investigations on individuals could counteract the perception of feeble enforcement agencies that is created by limited corporate punishments. For example, establishing an organisation whose primary focus is to investigate culpable individuals in corporations that are not applicable for the benchmark penalty, could provide an increase in individual prosecutions<sup>55</sup>.

Still, it is crucial to acknowledge the limitations of individual liability. Gathering sufficient evidence to proof guilt remains an obstacle for enforcement agencies, and corporations also could present scapegoats, while simultaneously protecting other involved employees from prosecutions. All culpable individuals should be put to justice and not just the few employees who take all the blame, as otherwise crime would still be beneficial for most individuals. Achieving this goal will be challenging for enforcement agencies, since even identifying culpable employees in complex business transactions without the help of the firm remains difficult, but it could provide a crucial turning point for corporate crime deterrence.

Apart from the policy recommendations, I deduct that harsh fines that can risk the CDP remains an unreliable tool for crime deterrence. However, there are instances when a government could find the risk of sanction-induced bankruptcy appropriate. In these cases where the CDP can be enforced, other factors could also play a role to promote corporate compliance, like the availability bias. This bias finds that deterrence is decreasing over time, as potential violators are forgetting about historic punishments for corporate crime. In this

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<sup>54</sup> From 1999 to 2018, 74 % of all sanctions against natural person for foreign bribery were enforced in Germany and the US, while 27 member countries had each only a share of less than 1% (OECD, 2019a).

<sup>55</sup> Similar groups already exist in a different context. For example, the Dodd-Frank Act introduced the Financial Stability Oversight Council, which monitors the financial stability of firms that are deemed too important for the U.S. economy to fail.

regard, even one CDP could attract great memorable public attention, which could create a short-term boost of compliance and deterrence. With this insight, even unique and inconsistent enforcements of the CDP through the benchmark penalty could give a powerful warning for some corporations.

## 6. Conclusion

In this thesis, I describe the most effective corporate liability framework for optimal crime deterrence. The foremost crucial piece in this framework is the dilemma between the social benefits of optimal deterrence on one side, and the societal harm from fines so harsh that they lead to corporate bankruptcy on the other. I evaluate whether the harshest corporate fine, the benchmark penalty, is relevant and appropriate to enforce. The relevance of this penalty is defined from the crime deterrence perspective, according to the firms compliant, versus non-compliant behaviour. In contrast, the appropriateness of the penalty is defined from the government's perspective, according to the collateral consequences of this penalty on different stakeholder groups and how the government regards them.

I present a framework in which the benchmark penalty is considered relevant by enforcement agencies in the case that firms do not self-report their crime, do not fully cooperate, and the crime is committed systematically, by more than one rogue employee. By using a data sample of 50 completed enforcement cases, 38 of which present sufficient information for my analysis, I find that the benchmark penalty could have been enforced in 16 cases from a deterrence standpoint. From these 16 cases, only 12 present sufficient information to determine whether the use of the CDP would be appropriate from a government's perspective. 11 out of these 12 cases occur in concentrated markets, implying consumers are the main group affected by the consequences of the CDP. On the other hand, the remaining producers benefit in seven of the cases due to increased market power and are harmed in one of the cases due to reputational and other spill-over repercussions; while in the remaining four cases this analysis is not sufficient to discern whether producers are benefited or harmed by the CDP.

By examining to which extent governments put emphasis on either consumers or producers, I estimate whether a government could consider the CDP as an appropriate risk and enforce the benchmark penalty depending on how much the favoured groups are damaged by it. This analysis indicates that in no more than three out of 12 cases would governments find the enforcement of the benchmark penalty, and its associated risk of corporate bankruptcy, appropriate.

My findings highlight the impediments that the current status quo of corporate liability presents for crime deterrence. Although the theory on the optimal liability framework is well established, these results demonstrate the unfeasibility of the reliable enforcement of harsh



penalties that could lead to corporate bankruptcy. Currently, it is a government's prerogative whether to actually allow harsh penalties, and they can use this prerogative to favour their preferred groups. This behaviour lessens the threat of prosecution for certain firms and industries, which in turn hinders crime deterrence.

Therefore, I propose an extension of this framework by extending prosecution and investigative efforts on individuals, who are after all the main culprits. Furthermore, promoting SEOs as the mandatory payment method for corporate fines could provide a potential remedy to the current deterrence predicament. SEOs can limit the financial impact of sanctions and decrease the risk of the CDP and its associated collateral consequences to stakeholders.

Currently, the CDP is an uncertain threat, one that most governments tend to avoid. However, I also demonstrate that there are instances where the CDP could be classified as a relevant and appropriate risk. Due to potential government biases to favour preferred stakeholder groups, I argue that the CDP is not a reliable strategy to combat inadequate crime deterrence; yet in the rare cases where its use is both relevant and appropriate, corporate death might be the wake-up call that corrupt corporations require.

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## Appendix

Table A 1: Cases and deterrence-based variables

| Violation   | Case   | Country        | Not Self reported | No Full Cooperation | Pervasiveness | Benchmark Penalty |
|-------------|--|----------------|-------------------|---------------------|---------------|-------------------|
| Competition | British Airways (2012)                                 | United Kingdom | ✓                 | ×                   | ✓             | ×                 |
| Competition | Galvanised steel tanks (2016)                          | United Kingdom | ✓                 | ✓                   | ✓             | ✓                 |
| AML         | Standard Bank (2014)                                   | United Kingdom | ✓                 | ×                   | ✓             | ×                 |
| AML         | Deutsche Bank (2017)                                   | United Kingdom | ✓                 | ×                   | ✓             | ×                 |
| AML         | Standard Chartered Bank (2019)                         | United Kingdom | ✓                 | n.a.                | ✓             | n.a.              |
| Corruption  | Standard Bank (2015)                                   | United Kingdom | ×                 | ×                   | ✓             | ×                 |
| Corruption  | Rolls Royce case                                       | United Kingdom | ✓                 | ×                   | ✓             | ×                 |
| Corruption  | Smith & Ouzman Ltd. (2014)                             | United Kingdom | ✓                 | ×                   | ✓             | ×                 |
| Corruption  | XYZ/Sarclad case (2016)                                | United Kingdom | ×                 | ×                   | ✓             | ×                 |
| Competition | Beer price fixing(2015-2016)                           | United Kingdom | ✓                 | ✓                   | ✓             | ✓                 |
| Competition | Candy price fixing (2015)                              | Germany        | ✓                 | ✓                   | ✓             | ✓                 |
| Competition | Asphalt manufacture price fixing (2018)                | Germany        | ✓                 | ×                   | ✓             | ×                 |
| Competition | SodaStream abuse of dominant position (2015)           | Germany        | ✓                 | n.a.                | ✓             | n.a.              |
| Competition | ZEG bicycle wholesaler (2018)                          | Germany        | ✓                 | ×                   | ✓             | ×                 |
| Corruption  | Siemens resolution (2008)                              | Germany        | ✓                 | ×                   | ✓             | ×                 |
| Corruption  | Airbus Defence and Space GmbH (2018)                   | Germany        | ✓                 | ×                   | ✓             | ×                 |
| Corruption  | MAN Ferrostaal (2011)                                  | Germany        | n.a.              | n.a.                | ×             | n.a.              |
| Corruption  | DB Schenker (2016)                                     | Germany        | ×                 | ×                   | ✓             | ×                 |
| Corruption  | No identity Case Bav 2011/2                            | Germany        | n.a.              | n.a.                | n.a.          | n.a.              |
| Corruption  | Atlas Elektronik (2017)                                | Germany        | ✓                 | ×                   | ✓             | ×                 |
| Competition | Concrete cartel case (2015)                            | Netherlands    | ✓                 | ✓                   | ✓             | ✓                 |
| Competition | Vinegar cartel (2015)                                  | Netherlands    | ✓                 | ✓                   | ✓             | ✓                 |
| Competition | Dutch Railways NS (2017)                               | Netherlands    | ✓                 | ✓                   | ✓             | ✓                 |
| Competition | Forklift truck batteries                               | Netherlands    | ✓                 | ✓                   | ✓             | ✓                 |
| AML         | ING Groep NV (2018)                                    | Netherlands    | ✓                 | ×                   | ✓             | ×                 |
| AML         | No identity (2018)                                     | Netherlands    | n.a.              | n.a.                | n.a.          | n.a.              |
| Corruption  | Ballast Nedam case (2012)                              | Netherlands    | ✓                 | ×                   | ✓             | ×                 |
| Corruption  | Telia case (2017)                                      | Netherlands    | ✓                 | ×                   | ✓             | ×                 |
| Corruption  | VimpelCom case (2016)                                  | Netherlands    | ✓                 | ×                   | ✓             | ×                 |
| Corruption  | SBM Offshore case (2014)                               | Netherlands    | ✓                 | ×                   | ✓             | ×                 |
| Competition | Svenska Försäkrings- och Tjänstingsnämningen AB (2018) | Sweden         | n.a.              | n.a.                | n.a.          | n.a.              |
| Competition | Ragn-Sells AB and Billfrakt Botnana AB (2016)          | Sweden         | ✓                 | ✓                   | ✓             | ✓                 |
| Competition | D'ackia/Euronmaster (2014)                             | Sweden         | ✓                 | n.a.                | ✓             | n.a.              |
| Competition | TeliaSonera case (2013)                                | Sweden         | ✓                 | ✓                   | ✓             | ✓                 |
| Competition | Scandorama AB and O' Ivermarks Holiday AB (2012)       | Sweden         | ✓                 | ×                   | ✓             | ×                 |
| Competition | Asphalt cartel (2009)                                  | Sweden         | ✓                 | ✓                   | ✓             | ✓                 |
| AML         | Nordca decision (2015)                                 | Sweden         | ✓                 | ✓                   | ✓             | ✓                 |



Table A 1 continued

| Violation   | Case   | Country | Not Self reported | No Full Cooperation | Pervasiveness | Benchmark Penalty |
|-------------|--|---------|-------------------|---------------------|---------------|-------------------|
| AML         | Handelsbanken decision (2015)                  | Sweden  | ✓                 | ✓                   | ✓             | ✓                 |
| Corruption  | Bravur and Dynamic Sailing (2016)              | Sweden  | n.a.              | n.a.                | n.a.          | n.a.              |
| Corruption  | KEWB (2018)                                    | Sweden  | n.a.              | n.a.                | n.a.          | n.a.              |
| Competition | Gran & Ekran (2012)                            | Norway  | n.a.              | n.a.                | n.a.          | n.a.              |
| Competition | Telenor case (2018)                            | Norway  | ✓                 | ✓                   | ✓             | ✓                 |
| Competition | El-profien case(2017)                          | Norway  | ✓                 | ✓                   | ✓             | ✓                 |
| AML         | Santander (2019)                               | Norway  | ✗                 | ✗                   | ✗             | ✗                 |
| AML         | DNB case (2019)                                | Norway  | ✓                 | ✗                   | ✓             | ✗                 |
| AML         | Kopgang Landbruks- og Næringsmegling AS (2019) | Norway  | ✓                 | ✓                   | ✓             | ✓                 |
| AML         | Sædberg & Hodne AS (2019)                      | Norway  | ✓                 | ✓                   | ✓             | ✓                 |
| Corruption  | Peab Vannverk-saken (2008)                     | Norway  | n.a.              | n.a.                | n.a.          | n.a.              |
| Corruption  | Yara (2014)                                    | Norway  | ✗                 | ✗                   | ✗             | ✗                 |
| Corruption  | Store Norske (2011)                            | Norway  | n.a.              | n.a.                | n.a.          | n.a.              |

Table A 1 shows the 50 completed enforcement cases and the deterrence based variables. If all variables are met, the benchmark penalty could be enforced from a deterrence standpoint. If even one variable is not met, the benchmark penalty is

Table A 2: Consequences on consumers and producers

| Case  | Industry                          | Leverage | Market       | Consumer Harm | Producer Harm | Producer Benefit |
|---|-----------------------------------|----------|--------------|---------------|---------------|------------------|
| Galvanised steel tanks (2016)                   | Steel                             | low      | n.a.         | n.a.          | n.a.          | n.a.             |
| Beer price fixing(2015-2016)                    | Retail (Grocery and Food)         | low      | n.a.         | n.a.          | n.a.          | n.a.             |
| Candy price fixing (2015)                       | Retail (Grocery and Food)         | low      | Concentrated | ✓             | ✗             | ✓                |
| Concrete cartel case (2015)                     | Engineering/Construction          | low      | Concentrated | ✓             | ✗             | ✓                |
| Vinegar cartel (2015)                           | Food Processing                   | low      | n.a.         | n.a.          | n.a.          | n.a.             |
| Dutch Railways NS (2017)                        | Transportation (Railroads)        | low      | Concentrated | ✓             | ✗             | ✓                |
| Forklift truck batteries                        | Auto Parts                        | low      | Concentrated | ✓             | ✗             | ✓                |
| Ragn-Sells AB and Bilfrakt Bothnia AB (2016)    | Environmental & Waste Services    | low      | Concentrated | ✓             | ✗             | ✓                |
| TeliaSonera case (2013)                         | Telecom. Services                 | high     | Concentrated | ✓             | ~             | ~                |
| Asphalt cartel (2009)                           | Engineering/Construction          | low      | Concentrated | ✓             | ✗             | ✓                |
| Nordca decision (2015)                          | Banks (regional)                  | high     | Concentrated | ✓             | ~             | ~                |
| Handelsbanken decision (2015)                   | Banks (regional)                  | high     | Concentrated | ✓             | ~             | ~                |
| Telenor case (2018)                             | Telecom. Services                 | high     | Concentrated | ✓             | ~             | ~                |
| El-proffen case(2017)                           | Electronics (General)             | low      | n.a.         | n.a.          | n.a.          | n.a.             |
| Kopparng Landbruks- og Næringsmegling AS (2019) | Real Estate (Development)         | low      | Concentrated | ✓             | ✗             | ✓                |
| Sædberg & Hodne AS (2019)                       | Real Estate (General/Diversified) | high     | Competitive  | ✗             | ✓             | ✗                |

Table A 2 covers the CDP-relevant cases and depicts leverage levels and the degree of market competition. It also shows whether consumers or producers would be harmed in the CDP-relevant cases.

Table A 3: Debt levels of CDP relevant industries

| Industry Name                     | Debt to Capital Ratio | Leverage |
|-----------------------------------|-----------------------|----------|
| Auto Parts                        | 33%                   | low      |
| Banks (Regional)                  | 73%                   | high     |
| Electronics (General)             | 13%                   | low      |
| Engineering/Construction          | 42%                   | low      |
| Environmental & Waste Services    | 24%                   | low      |
| Food Processing                   | 16%                   | low      |
| Real Estate (Development)         | 43%                   | low      |
| Real Estate (General/Diversified) | 49%                   | high     |
| Retail (Grocery and Food)         | 44%                   | low      |
| Steel                             | 41%                   | low      |
| Telecom. Services                 | 51%                   | high     |
| Transportation (Railroads)        | 34%                   | low      |
| Total Market                      | 46.3%                 |          |

Table A 3 presents the debt to capital ratios from the CDP-relevant industries. The Leverage is considered high, when the debt to capital ratio of a specific industry is above the total market debt ratio.

Table A 4: Corporate tax rate over time in OECD member states

| Country        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Mean Tax Rate | Emphasis |
|----------------|------|------|------|------|------|------|------|------|------|------|------|---------------|----------|
| Australia      | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%           | C        |
| Austria        | 25%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%           | C        |
| Belgium        | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 29%  | 29%  | 29%  | 33%           | C        |
| Canada         | 31%  | 28%  | 26%  | 26%  | 27%  | 27%  | 27%  | 27%  | 27%  | 27%  | 27%  | 27%           | C        |
| Chile          | 17%  | 20%  | 19%  | 20%  | 20%  | 24%  | 24%  | 26%  | 26%  | 27%  | 27%  | 23%           | P        |
| Colombia       | 33%  | 33%  | 33%  | 25%  | 25%  | 25%  | 25%  | 34%  | 33%  | 33%  | 32%  | 30%           | C        |
| Czech Republic | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%           | P        |
| Denmark        | 25%  | 25%  | 25%  | 25%  | 25%  | 22%  | 22%  | 22%  | 22%  | 22%  | 22%  | 23%           | P        |
| Estonia        | 21%  | 21%  | 21%  | 21%  | 21%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%           | P        |
| Finland        | 26%  | 26%  | 25%  | 25%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%  | 22%           | P        |
| France         | 33%  | 33%  | 33%  | 33%  | 33%  | 33%  | 33%  | 33%  | 33%  | 31%  | 28%  | 33%           | C        |
| Germany        | 29%  | 29%  | 29%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%           | C        |
| Greece         | 24%  | 20%  | 20%  | 26%  | 26%  | 29%  | 29%  | 29%  | 29%  | 28%  | 24%  | 26%           | P        |
| Hungary        | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 9%   | 9%   | 9%   | 9%   | 15%           | P        |
| Iceland        | 18%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%           | P        |
| Ireland        | 13%  | 13%  | 13%  | 13%  | 13%  | 13%  | 13%  | 13%  | 13%  | 13%  | 13%  | 13%           | P        |
| Israel         | 25%  | 24%  | 25%  | 25%  | 27%  | 25%  | 25%  | 24%  | 23%  | 23%  | 23%  | 24%           | C        |
| Italy          | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 24%  | 24%  | 24%  | 24%  | 29%           | C        |
| Japan          | 41%  | 41%  | 38%  | 38%  | 36%  | 34%  | 31%  | 31%  | 31%  | 31%  | 31%  | 35%           | C        |
| South Korea    | 24%  | 22%  | 24%  | 24%  | 24%  | 24%  | 24%  | 22%  | 25%  | 25%  | 25%  | 24%           | P        |
| Latvia         | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 20%  | 16%           | P        |
| Lithuania      | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%           | P        |
| Luxembourg     | 29%  | 29%  | 29%  | 29%  | 29%  | 29%  | 29%  | 27%  | 26%  | 25%  | 25%  | 28%           | C        |
| Mexico         | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%           | C        |
| Netherlands    | 26%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%  | 25%           | C        |
| New Zealand    | 30%  | 28%  | 28%  | 28%  | 28%  | 28%  | 28%  | 28%  | 28%  | 28%  | 28%  | 28%           | C        |
| Norway         | 28%  | 28%  | 28%  | 28%  | 27%  | 27%  | 25%  | 24%  | 23%  | 22%  | 22%  | 26%           | C        |
| Poland         | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%  | 19%           | P        |
| Portugal       | 25%  | 25%  | 25%  | 25%  | 23%  | 21%  | 21%  | 21%  | 21%  | 21%  | 21%  | 23%           | P        |
| Slovakia       | 19%  | 19%  | 19%  | 23%  | 22%  | 22%  | 22%  | 21%  | 21%  | 21%  | 21%  | 21%           | P        |
| Slovenia       | 20%  | 20%  | 18%  | 17%  | 17%  | 17%  | 17%  | 19%  | 19%  | 19%  | 19%  | 18%           | P        |
| Spain          | 30%  | 30%  | 30%  | 30%  | 30%  | 28%  | 25%  | 25%  | 25%  | 25%  | 25%  | 28%           | C        |
| Sweden         | 26%  | 26%  | 26%  | 22%  | 22%  | 22%  | 22%  | 22%  | 22%  | 21%  | 21%  | 23%           | P        |
| Switzerland    | 19%  | 18%  | 18%  | 18%  | 18%  | 18%  | 18%  | 18%  | 18%  | 18%  | 18%  | 18%           | P        |
| Turkey         | 20%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%  | 20%  | 22%  | 22%  | 22%  | 21%           | P        |
| United Kingdom | 28%  | 26%  | 24%  | 23%  | 21%  | 20%  | 20%  | 19%  | 19%  | 19%  | 19%  | 22%           | P        |
| United States  | 40%  | 40%  | 40%  | 40%  | 40%  | 40%  | 40%  | 40%  | 27%  | 27%  | 27%  | 36%           | C        |
| Median         | 25%  | 25%  | 25%  | 25%  | 24%  | 24%  | 24%  | 23%  | 23%  | 23%  | 23%  | 24%           |          |

Table A 4 shows the corporate tax rate over time in OECD member states. Countries with a tax rate higher than the OECD median are classified as consumer emphasized (C), while the remaining are categorized as producer (P) focused.

Table A 5: CDP appropriateness and government emphasis for mean corporate tax rate

| Country     | Case   | Consumer Harm | Producer Harm | Producer Benefit | Emphasis (Mean) | CDP appropriate? |
|-------------|--|---------------|---------------|------------------|-----------------|------------------|
| Germany     | Candy price fixing (2015)                      | ✓             | x             | ✓                | C               | x                |
| Netherlands | Concrete cartel case (2015)                    | ✓             | x             | ✓                | C               | x                |
| Netherlands | Dutch Railways NS (2017)                       | ✓             | x             | ✓                | C               | x                |
| Netherlands | Forklift truck batteries                       | ✓             | x             | ✓                | C               | x                |
| Sweden      | Ragn-Sells AB and Bilfrakt Bothnia AB (2016)   | ✓             | x             | ✓                | P               | ✓                |
| Sweden      | TeliaSonera case (2013)                        | ✓             | ~             | ~                | P               | ~                |
| Sweden      | Asphalt cartel (2009)                          | ✓             | x             | ✓                | P               | ✓                |
| Sweden      | Nordea decision (2015)                         | ✓             | ~             | ~                | P               | ~                |
| Sweden      | Handelsbanken decision (2015)                  | ✓             | ~             | ~                | P               | ~                |
| Norway      | Telenor case (2018)                            | ✓             | ~             | ~                | C               | x                |
| Norway      | Koppang Landbruks- og Næringsmegling AS (2019) | ✓             | x             | ✓                | C               | x                |
| Norway      | Sædberg & Hodne AS (2019)                      | x             | ✓             | x                | C               | ✓                |

Table A 5 shows if government could have found the CDP appropriate, based on their emphasis on either consumers (C) or producers (P) and if the emphasized stakeholder group is affected by the CDP. The emphasis is derived via mean corporate tax rates. The «~» symbol indicates that the result is ambiguous.

Table A 6: CDP appropriateness and government emphasis for yearly corporate tax rate

| Country     | Case   | Consumer Harm | Producer Harm | Producer Benefit | Emphasis (Year) | CDP appropriate? |
|-------------|--|---------------|---------------|------------------|-----------------|------------------|
| Germany     | Candy price fixing (2015)                      | ✓             | x             | ✓                | C               | x                |
| Netherlands | Concrete cartel case (2015)                    | ✓             | x             | ✓                | C               | x                |
| Netherlands | Dutch Railways NS (2017)                       | ✓             | x             | ✓                | C               | x                |
| Netherlands | Forklift truck batteries                       | ✓             | x             | ✓                | C               | x                |
| Sweden      | Ragn-Sells AB and Bilfrakt Bothnia AB (2016)   | ✓             | x             | ✓                | P               | ✓                |
| Sweden      | Tehasonera case (2013)                         | ✓             | ~             | ~                | P               | ~                |
| Sweden      | Asphalt cartel (2009)                          | ✓             | x             | ✓                | C               | x                |
| Sweden      | Nordea decision (2015)                         | ✓             | ~             | ~                | P               | ~                |
| Sweden      | Handelsbanken decision (2015)                  | ✓             | ~             | ~                | P               | ~                |
| Norway      | Telenor case (2018)                            | ✓             | ~             | ~                | C               | x                |
| Norway      | Koppang Landbruks- og Næringsmegling AS (2019) | ✓             | x             | ✓                | P               | ✓                |
| Norway      | Sædberg & Hodne AS (2019)                      | x             | ✓             | x                | P               | x                |

Table A 6 shows if government could have find the CDP appropriate, based on their emphasis on either consumers (C) or producers (P) and if the emphasized stakeholder group is affected by the CDP. The emphasis is derived via the corporate tax rates in the specific year a case was enforced. The «~» symbol indicates that the result is unclear.

Table A 7: Employer social security tax rate over time in OECD member states

| Country        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Mean Social Tax | Emphasis |
|----------------|------|------|------|------|------|------|------|------|------|------|------|-----------------|----------|
| Austria        | 22%  | 22%  | 22%  | 22%  | 22%  | 22%  | 22%  | 21%  | 21%  | 21%  | 21%  | 22%             | C        |
| Belgium        | 35%  | 35%  | 35%  | 35%  | 35%  | 35%  | 35%  | 33%  | 28%  | 28%  | 28%  | 33%             | C        |
| Canada         | 7%   | 7%   | 7%   | 8%   | 8%   | 8%   | 8%   | 7%   | 7%   | 7%   | 7%   | 7%              | P        |
| Chile          | -    | -    | -    | -    | -    | -    | 5%   | 5%   | 5%   | 5%   | 5%   | 5%              | P        |
| Colombia       | -    | 21%  | 21%  | 21%  | 21%  | 21%  | 21%  | 21%  | 21%  | 21%  | 21%  | 21%             | P        |
| Czech Republic | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%             | C        |
| Denmark        | -    | -    | -    | -    | -    | -    | -    | 0%   | 0%   | 0%   | 0%   | 0%              | P        |
| Estonia        | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%  | 34%             | C        |
| Finland        | 26%  | 23%  | 23%  | 24%  | 24%  | 23%  | 25%  | 23%  | 22%  | 20%  | 21%  | 23%             | C        |
| France         | -    | -    | -    | -    | -    | 45%  | 43%  | 45%  | 45%  | 45%  | 45%  | 45%             | C        |
| Germany        | 19%  | 19%  | 20%  | 20%  | 20%  | 19%  | 19%  | 19%  | 19%  | 20%  | 20%  | 20%             | P        |
| Greece         | 28%  | 28%  | 28%  | 27%  | 27%  | 25%  | 25%  | 24%  | 25%  | 25%  | 25%  | 26%             | C        |
| Hungary        | 32%  | 27%  | 27%  | 29%  | 29%  | 29%  | 29%  | 24%  | 17%  | 17%  | 17%  | 25%             | C        |
| Iceland        | 7%   | 9%   | 9%   | 8%   | 8%   | 7%   | 7%   | 7%   | 7%   | 7%   | 6%   | 7%              | P        |
| Ireland        | 11%  | 11%  | 11%  | 11%  | 11%  | 11%  | 11%  | 11%  | 11%  | 11%  | 11%  | 11%             | P        |
| Israel         | 5%   | 6%   | 6%   | 6%   | 6%   | 7%   | 8%   | 8%   | 8%   | 8%   | 8%   | 7%              | P        |
| Italy          | -    | -    | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%             | C        |
| Japan          | 13%  | 14%  | 14%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%             | P        |
| Latvia         | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%             | C        |
| Lithuania      | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 2%   | 2%   | 26%             | C        |
| Luxembourg     | 19%  | 19%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 15%  | 16%             | P        |
| Mexico         | 31%  | 31%  | 31%  | 31%  | 31%  | 32%  | 51%  | 51%  | 51%  | 51%  | 51%  | 40%             | C        |
| Netherlands    | -    | 20%  | 20%  | 17%  | 19%  | 18%  | 18%  | 18%  | 19%  | 20%  | 23%  | 19%             | P        |
| Norway         | 14%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%             | P        |
| Poland         | 19%  | 19%  | 18%  | 20%  | 20%  | 21%  | 21%  | 21%  | 21%  | 21%  | 22%  | 20%             | P        |
| Portugal       | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%  | 24%             | C        |
| Slovakia       | 35%  | 35%  | 35%  | 35%  | 35%  | 35%  | 35%  | 35%  | 35%  | 35%  | 35%  | 35%             | C        |
| Slovenia       | 16%  | 16%  | 16%  | 16%  | 16%  | 16%  | 16%  | 16%  | 16%  | 16%  | 16%  | 16%             | P        |
| South Korea    | 9%   | 9%   | 9%   | 9%   | 9%   | 9%   | 9%   | 9%   | 9%   | 10%  | 10%  | 9%              | P        |
| Spain          | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%  | 30%             | C        |
| Sweden         | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 31%  | 31%             | C        |
| Switzerland    | 6%   | 6%   | 6%   | 6%   | 6%   | 6%   | 6%   | 6%   | 6%   | 6%   | 6%   | 6%              | P        |
| Turkey         | 22%  | 22%  | 22%  | 22%  | 22%  | 22%  | 22%  | 23%  | 23%  | 23%  | 23%  | 22%             | C        |
| United Kingdom | 13%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%  | 14%             | P        |
| United States  | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%              | P        |
| Median         | 22%  | 21%  | 21%  | 21%  | 21%  | 22%  | 21%  | 21%  | 21%  | 20%  | 21%  | 21%             |          |

Table A 7 shows the employer social security tax rate over time in OECD member states. Countries with a tax rate higher than the OECD median are classified as consumer emphasized (C), while the remaining are categorized as producer (P) focused.

Table A 8: Sources for analysis

| Case  | Sources   |
|---|---|
| British Airways (2012)                                  | <a href="https://www.lexology.com/library/detail.aspx?g=9cd978e9-83e5-49a3-a87d-6511710f4679">https://www.lexology.com/library/detail.aspx?g=9cd978e9-83e5-49a3-a87d-6511710f4679</a>   |
| Galvanised steel tanks (2016)                           | <a href="https://www.gov.uk/government/news/cma-fines-water-tank-firms-over-27-million">https://www.gov.uk/government/news/cma-fines-water-tank-firms-over-27-million</a>   |
| Standard Bank (2014)                                    | <a href="https://assets.publishing.service.gov.uk/media/58db91e440f0b606e3000046/ce-9691-12-main-cartel-decision.pdf">https://assets.publishing.service.gov.uk/media/58db91e440f0b606e3000046/ce-9691-12-main-cartel-decision.pdf</a><br><a href="https://www.mortgagefinancegazette.com/market-news/fraud/standard-bank-fined-7-6m-for-failures-in-its-anti-money-laundering-controls-23-01-2014/">https://www.mortgagefinancegazette.com/market-news/fraud/standard-bank-fined-7-6m-for-failures-in-its-anti-money-laundering-controls-23-01-2014/</a>  |
| Deutsche Bank (2017)                                    | <a href="https://www.fca.org.uk/news/press-releases/standard-bank-plc-fined-%C2%A376m-failures-its-anti-money-laundering-controls">https://www.fca.org.uk/news/press-releases/standard-bank-plc-fined-%C2%A376m-failures-its-anti-money-laundering-controls</a>   |
| Standard Chartered Bank (2019)                          | <a href="https://www.fca.org.uk/news/press-releases/fca-fines-deutsche-bank-163-million-anti-money-laundering-controls-failure">https://www.fca.org.uk/news/press-releases/fca-fines-deutsche-bank-163-million-anti-money-laundering-controls-failure</a>   |
| Standard Bank (2015)                                    | <a href="https://www.theguardian.com/business/2015/apr/09/standard-chartered-fined-money-laundering-sanctions-breaches">https://www.theguardian.com/business/2015/apr/09/standard-chartered-fined-money-laundering-sanctions-breaches</a><br><a href="https://www.theguardian.com/business/2015/nov/30/standard-bank-fine-defer-prosecution-tanzania-bribery-scandal">https://www.theguardian.com/business/2015/nov/30/standard-bank-fine-defer-prosecution-tanzania-bribery-scandal</a><br><a href="https://www.sfo.gov.uk/2015/11/30/sfo-agrees-first-uk-dpa-with-standard-bank/">https://www.sfo.gov.uk/2015/11/30/sfo-agrees-first-uk-dpa-with-standard-bank/</a>   |
| Rolls Royce case  | <a href="https://www.theguardian.com/business/2019/feb/22/campaigns-condemn-closure-of-rolls-royce-bribery-inquiry">https://www.theguardian.com/business/2019/feb/22/campaigns-condemn-closure-of-rolls-royce-bribery-inquiry</a><br><a href="https://www.sfo.gov.uk/2017/01/17/sfo-completes-497-25m-deferred-prosecution-agreement-rolls-royce-plc/">https://www.sfo.gov.uk/2017/01/17/sfo-completes-497-25m-deferred-prosecution-agreement-rolls-royce-plc/</a><br><a href="https://www.bbc.com/news/business-38644114">https://www.bbc.com/news/business-38644114</a>   |
| Smith & Ouzman Ltd. (2014)                              | <a href="https://www.printweek.com/news/article/smith-ouzman-fined-2-2m-following-corruption-verdict">https://www.printweek.com/news/article/smith-ouzman-fined-2-2m-following-corruption-verdict</a><br><a href="https://www.cms-lawnow.com/ealerts/2016/01/smith--ouzman-ltd-first-corporate-convicted-for-overseas-bribery-to-pay-22m">https://www.cms-lawnow.com/ealerts/2016/01/smith--ouzman-ltd-first-corporate-convicted-for-overseas-bribery-to-pay-22m</a>  |
| XYZ/Sarclad case (2016)                                 | <a href="https://www.sfo.gov.uk/cases/sarclad-ltd/">https://www.sfo.gov.uk/cases/sarclad-ltd/</a><br><a href="https://fulcrumchambers.com/sfo-suffers-further-blow-as-sarclad-ltd-dpa-revealed/">https://fulcrumchambers.com/sfo-suffers-further-blow-as-sarclad-ltd-dpa-revealed/</a>  |
| Beer price fixing (2015-2016)                           | <a href="https://www.bundeskartellamt.de/SharedDocs/Entscheidung/EN/Fallberichte/Kartellverbot/2016/B10-20-15.pdf?__blob=publicationFile&amp;v=3">https://www.bundeskartellamt.de/SharedDocs/Entscheidung/EN/Fallberichte/Kartellverbot/2016/B10-20-15.pdf?__blob=publicationFile&amp;v=3</a><br><a href="https://www.local.de/20160510/supermarkets-fined-millions-in-beer-price-fixing-scandal">https://www.local.de/20160510/supermarkets-fined-millions-in-beer-price-fixing-scandal</a>  |
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| KEWB (2018)   | n.a.  |
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Table A 7 shows the references used for the evaluation of the deterrence based variables in section 4.