



Investigation and penalty on major industrial accidents in China: The influence of environmental pressures



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ABSTRACT

Hundreds of major industrial accidents happened in China every year which resulted in serious physical and social damage to the whole society. The post-accident investigation and penalties have caused great concern in recent years. Our study extends the research on accident investigation and penalty under different kinds of environmental pressures. Using 150 major industrial accidents and their disclosed investigation reports from the State Administrative of Work Safety of China (SAWSC), we found that the number of administrative penalty, judicial penalty, fines and the accident investigation duration by the government are significantly affected by the environmental pressures including the legal environment pressure, media attention pressure, enterprise ownership pressure and the industry pressure. According to the Deterrence Theory and the Social Learning Theory, the involvement and promptness of penalties significantly influence the deterrent effect for observing peers. Our study shed light on the accident penalties under certain environmental pressure in order to achieve the optimum deterrent effect by giving suggestions to the accident-related stakeholders.

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1. Introduction

The past three decades has witnessed China's rapid economic development, China has become the second largest country in the world economy since 2011. Meanwhile, thousands of industrial accidents happened every year. Among them some are general accidents and others are serious ones. According to the statistical data from the State Administrative of Work Safety of China (SAWSC), the number of industrial accidents arrived to 272,900 cases, which caused 58,968 deaths in 2013. Those accidents brought huge personal casualties, enormous economic losses and social panic for the country and the society. For example the "11.22" Sinopec oil pipeline leak explosion accidents in Qingdao city of Shandong province in 2013, which resulted in 62 people dead, 136 injured and a direct economic loss of 751.72 million RMB.¹

Accident impacts can be divided into physical impacts and social impacts (Lindell and Prater, 2003; Wei et al., 2009). The physical impacts of accidents include casualties (e.g., deaths and injuries) and property damage. Social impacts usually include psychosocial, socio-demographic, socioeconomic and sociopolitical

impacts (Lindell and Prater, 2003). The statistics data show that the direct economic loss of industrial accidents in China is over 100 billion RMB, and over 200 billion RMB including the indirect loss, which accounts for 2.5% of China's annual GDP. Besides the enormous physical and social damages, the major industrial accident is different from the natural disaster for its man-made causation and social influence. Results of the analysis on 254 accidents showed that human factors account for 94.09% in the direct causes (Chen et al., 2011). To apportion blame and by extension liability for an accident it is necessary to decide causality, who caused the accident and how it was caused (Hudson, 2014). Hence, after the major industrial accidents, the state administration of work safety in China will organize accident investigation team together with the local security bureau officials, experts, public security bureau officials and others to find out the accident origins. Severe punishments will be published after the investigation and processing of the industrial accidents together with the accident investigation reports. All walks of society pay more and more attention to the accident damage, post investigation and penalties. According to Duff (2001), it is important to pay attention to the rights of all stakeholders in the criminal justice system. Tyler (1990) also found that perceived procedural justice is the best predictor of voluntary compliance with the law. What's more, the post-accident learning is of great significance. Lecoze (2013) reviewed the literature about extracting lessons from accidents

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¹ 1 US dollar = 6.13 RMB, Aug. 20, 2014 (Bank of China, <http://www.boc.cn>).

in psychology, sociology and political aspects. [Cedergren and Petersen \(2011\)](#) analyzed the railway accident investigation reports during a two-year period and carried out exhaustive investigations that have deep insights of the factors leading to failures, which contribute with an increased ability to learn from accidents. Based on qualitative interviews with 34 gas pipeline engineers, [Maslen \(2014\)](#) investigated the methods for building safety knowledge in Australian gas pipeline industry.

The effective processing and punishment of the major industrial accidents not only reflect social justice and government effectiveness, but also can educate and alert other enterprises which contribute to build a harmonious society. When a perpetrator is caught, it is desirable to ensure that others learn the consequences of violating the rule ([Kevin et al., 2002](#)). Safety related laws in China stipulate the accident investigation and penalty principles, and we have noticed that, some of the principles relate to social environmental factors. For example, the Article 48 and 69 of the Law of Dealing with Emergency Affairs stated that accident dispose and punishment should consider its devastating social consequence. Coincidentally, the Administrative Penalty Law of China also clearly outline the discretion rules for the minor, general or serious plot crime. The direct causes of major accidents are easy to define, whereas, some indirect and potential reasons behind are hard to know. What's more, China is a country pay attention to interpersonal relationships, the number of penalties has much elastic space. We are interested to explore the potential factors that influence the major accidents' investigation processing and penalties in China.

The purpose of this paper is to find out the determinants of processing and punishments on major industrial accidents from the perspective of environmental pressures, and thus get the optimal deterrent effect on the whole society. So our study contributes to the literature and practice in the following ways. First, using the exact data, we take a pilot study on the field of major industrial accident processing and punishments based on the Deterrence Theory and the Social Learning Theory. Second, we explore some potential factors that influence the investigation duration and punishment decision of the industrial accidents under certain environmental pressures in China. Furthermore, our results highlight the importance of accident punishment outcome for the observing peer firms to learn from the severe punishments and thus deter their industrial accidents. Finally, this study helps to realize an objective, justice and high-efficiency accident investigation and punishments by giving some suggestions to the government, judicial departments, enterprises and the public in the near future.

The paper is organized as follows. In Section 2, we review the literature about justification and multi-dimensional concepts of punishments, insufficient of law and discretion in China, social environmental pressures and then give our hypotheses. The methods and data are given in Section 3. In Section 4, the results of the regression models are presented. After that, we concluded the environmental pressures and important factors which influence the accident processing and penalties. The managerial implications, limitations and future research are discussed finally.

2. Theories and hypotheses

2.1. Punishment, insufficient of law and discretion

In the criminal justice system, punishment refers to the intentional imposition of a burden on an individual following his or her violation of important social norms that are intended to protect significant common interests of members of the political community ([Bennett, 2008](#); [Beylveled and Brownsword, 2008](#)). Classically, there are two broad justifications for the use of

punishment: retribution and utility ([Bentham, 1962](#); [Kant, 1952](#); [Vidmar and Miller, 1980](#)). [Van den Haag \(1981\)](#) cited five functions fulfilled by punishment: specific deterrence, general deterrence, retribution, rehabilitation and incapacitation. Studies have revealed that when asked to provide an explanation or justification for assigning punishment, individuals strongly endorse utilitarian ideals ([Vidmar and Ellsworth, 1974](#); [Ellsworth and Ross, 1983](#)). Most forms of punishment fit this description—fines, jail time, corporal punishments are designed to induce all individuals to complete the cost–benefit analysis and to generally inhibit them from perpetrating the harm ([Kevin et al., 2002](#)).

It is the law that define the crime and the punishments for it. However, the generality, abstraction and hysteresis of law make it ambiguity and not flexible to use. According to “The Production Safety Law of the People’s Republic of China” issued in 2002 by the Chinese government, the commonly used penalties of the major industrial accidents to the accident units and respondents are administrative penalty, judicial penalty and fine penalty. The above law together with the criminal law, has stipulated the magnitude of penalty according to the seriousness of the accident, but it didn’t tell how many people should be punished accurately and how much was the fine, it only stipulated the range of punishments within reason.

The complex of modern crimes, insufficient of law together with the particularity of Chinese situation make discretion necessary and reasonable, especially in China. About discretion, the explanation in Black’s Law Dictionary is: under certain conditions, the power of making decision in accordance with the authority to make it fair and in the right way. The famous legist [Merryman \(1983\)](#) pointed that discretion, in order to realize the real justice, cannot stick to the law, will also be able to constantly understand law conforms with the change of the society. Discretion objectively exists in the judicial practice and is widely used in accident penalties. For example, the Article 48 and 69 of the Law of Dealing with Emergency Affairs stated that accident dispose and punishment should consider its devastating social consequence. Coincidentally, the Administrative Penalties Law of China also clearly outline the discretion rules for the minor, general and serious plot crime.

2.2. The influence of environmental pressures in accident penalty

Upon penalty decision many factors should be concerned. [Clegg and Dunkerley \(1980\)](#) suggested that decision making made on the basis of past experience, stereotypes, prejudices and highly particularized views of present stimuli. [Thompson \(1967\)](#) identified that uncertainty associated with cause and effect relationships is particularly salient to judicial exercise of discretion at sentencing. Amounts of empirical research couched within a legal/extra-legal debate influenced by opposing assumptions about the operations of the criminal justice system ([Horton, 1966](#); [Chambliss and Robert, 1971](#); [Quinney, 1972](#)). For the influence of extra-legal variables on sentencing outcome, [Farrell and Swigert \(1978\)](#), [Hagan et al. \(1980\)](#), [Spohn et al. \(1981\)](#) found a direct effect of socioeconomic status on sentence severity. [Carroll and Payne \(1976\)](#), [Shaver \(1975\)](#) and [Hawkins \(1980\)](#) suggested that judgments of causality are premised on both personal and environmental forces that contribute to behavior. Nowadays, China is experiencing transformation, with the change of economic system, social structure and social form, the diversified interests demand make the discretion to consider more factors ([Peng et al., 2014](#)).

To apportion blame and by extension liability for an accident it is necessary to decide causality, who caused the accident and how it was caused ([Hudson, 2014](#)). [Jane \(1999\)](#) argued against the use of simple, single measures to assess punitiveness, and noted that

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