Cities and Corporate Social Performance

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ABSTRACT

This study examines how and why pollution levels in global cities influence the adoption of corporate social performance (CSP) by firms headquartered in these cities. Drawing on resource-dependence and institutional theories, this study found that urban air pollution is likely to decrease CSP due to low level of regulatory stringency and firms' cost-reduction motives. However, our research also discovered that environmental CSP is higher when urban air pollution increases in large cities, while environmental CSP is lower when air pollution increases in small cities. Unveiling the influence of city-level characteristics on CSP has a number of theoretical and managerial implications: (1) *Theoretically***,** the adoption of CSP studies at the city level refines institutional theory and resource-dependence theory on drivers of CSP at the subnational (city) level, which hitherto focused on the national and organisational levels. (2) *Regarding practical relevance***,** policymakers can benefit from understanding the mechanisms that explain the relationships between their cities' environmental concerns and CSP.

***Keywords*: Corporate social performance, city characteristics, urban air pollution, institutional theory, resource dependence theory**

DECLARATION

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree. I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying, subject to the provisions of the Copyright Act 1968. I also give permission for the digital version of my thesis to be made available on the web, via the University's digital research repository, the Library Search and also through web search engines, unless permission has been granted by the University to restrict access for a period of time. I acknowledge the support I have received for my research through the provision of an Australian Government Research Training Program Scholarship.

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CHAPTER 1

INTRODUCTION

"What drives corporate social performance?" has become an essential question in the business studies field (Ioannou & Serafeim 2012; Orlitzky et al. 2015). Corporate Social Performance (CSP) is "a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships" (Wood 1991:63). Current literature has largely covered why organisational and institutional factors influence CSP, yet the direct effects of the immediate environment in which multinational enterprises (MNEs) are located still remain unclear. In response to CSP, the international business agenda is gravitating towards a sub-national trend, as current country-level literature is insufficiently specific in describing external pressures revolving around CSP, which informs such decisions. Motivated by the fact that there are large differences at the city level, which previous literature has often overlooked, this research presents the city as a new unit of analysis, thus examining whether city-level characteristics determine aspects of CSP.

Meanwhile, there are two theoretical schools of thought about why subnational differences may influence CSP. The first school of thought claims that different location-specific factors (Dunning 1998, 2000; Goerzen, Asmussen & Nielsen 2013) across the nation shape corporate performances and strategies. The second school of thought indicates that subnational institutions affect CSR performance, since regulations, cognitions and values vary across the nation and these institutional pressures establish different rules of games with which firms need to comply (Campbell 2007; Chan, Makino & Isobe 2010; Ding et al. 2014; Ioannou & Serafeim 2012). However, separately subscribing to just one of the schools will result in insufficiencies when analysing the heterogeneity of CSP strategies, since firms are multiply embedded at different levels and in

different domains. Using an integrative approach from the previous two schools of thought to analyse the relationship between CSP and city-level characteristics, this research will focus on two constructs: environmental concerns and urban competitiveness. This is because how firms respond to unfavourable conditions as environmental issues still remains elusive (Begg 1999; Gladwin, Kennelly & Krause 1995; P Kresl 1995; Shrivastava 1995; Starik 1995; Starik & Rands 1995). As a result, this thesis aims to enhance the knowledge of which city drivers influence CSP in corporations, and to what extent.

By evidencing variations of firm practices under the influence of different city attributes, we argue that cities differ within a country and such differences could determine environmental performance, suggesting that city is an important unit of analysis at subnational level. Our research aims to identify whether environmental issues and other city attributes can determine CSP, and under what conditions such effects are intensified. We found that urban air pollution is negatively related to environmental CSP. However, this relationship between air pollution and CSP is moderated by city size. In large cities, CSP is more likely to increase as urban air pollution increases, while in smaller cities, CSP tends to decrease as urban air pollution grows. Our findings suggest that environmental issues may have different impacts on how firms behave responsibly under different city conditions.

Most importantly, the thesis hopes to provide a city framework contributing to the subnational discussion. We propose to extend the current external factors on CSP literature by bridging the gap between business studies and economic geography, thus augment the understanding of subnational influences on CSP; proposing the role of location in resource dependence and institution theory, and advancing the understanding of global cities by introducing a novel framework into current literature. This research project also has potential application to aid as a

guideline for firms in decision-making process, determining under which city attributes organizations could adopt suitable CSP practices. In addition, based on these platforms, policy makers can encourage CSP engagement in their cities to help them create prosperous and sustainable cities.

This thesis is subdivided into seven chapters, which cover, in addition to this introductory chapter, a review of the theoretical foundations and the related literature (Chapter 2), hypotheses development (Chapter 3), a methods chapter that provides details on the database and the analytical procedures (Chapter 4), a general description of corporate social performance considering city-level pollution and broader geographic characteristics (Chapter 5), the empirical results and hypotheses tests (Chapter 6), and a discussion of this study's implications (Chapter 7).

CHAPTER 2

LITERATURE REVIEW

Initially, the thesis introduces two main sets of literature; Corporate Social Performance and research related to city environments (hereinafter referred to as City). This review will then examine why should we bridge City and CSP, thus shedding light on two schools of thought in this interdisciplinary study; subnational factor endowments and subnational institution influences. The thesis integrates resource dependence theory and institutional theory to underpin these two streams. Subsequently, we refine the knowledge by highlighting the gap existing in the schools of thought, which is the role of environmental issues and urban competitiveness in determining CSP. Two steps are followed: (1) revisiting the literature on issues that have been proven to influence corporate social engagement, and explaining why environmental issues can determine CSP; (2) revisiting the literature on urban competitiveness, and addressing why it could affect CSP. The literature review is illustrated as follows:

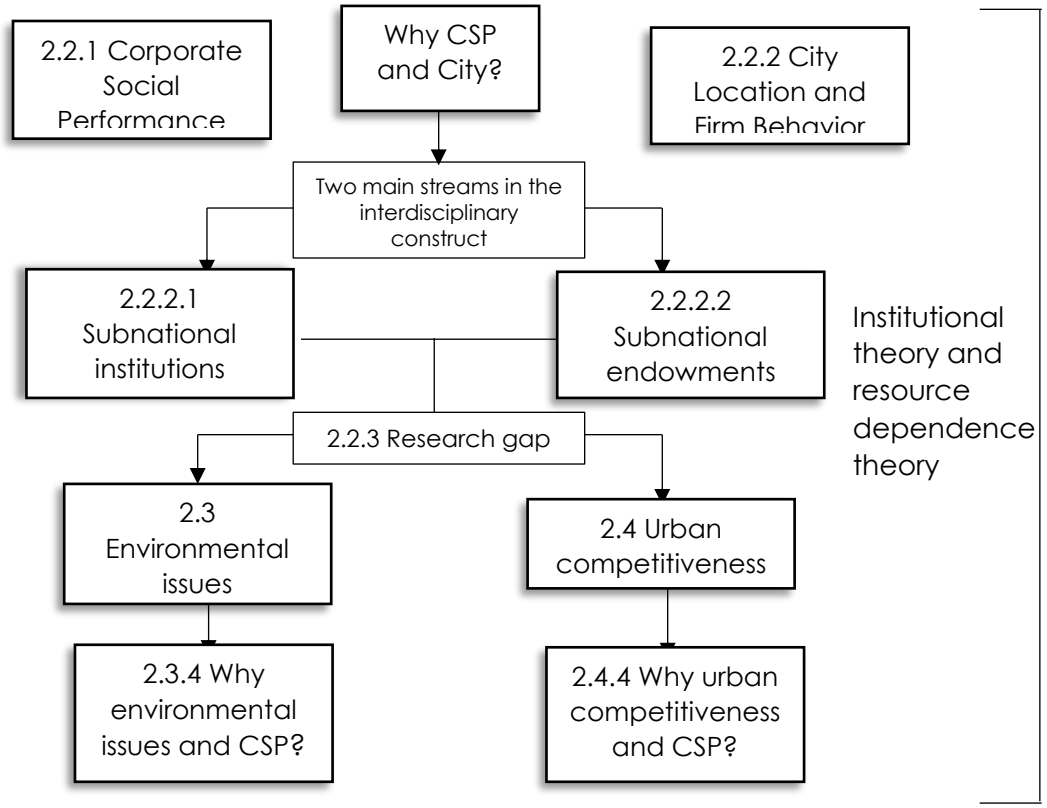

Figure 1 Literature review map

2.1 Theories in use

2.1.1 Institutional theory

In this thesis, an understanding of institutional theory is developed from the framework of DiMaggio and Powell (1983). Corporations do not autonomously exist, but they interconnect with other entities, thus are constrained by various forces, rules and norms. To survive and succeed, corporations seek legitimacy from the prevailing institutional pressures in their environment and embed these regulations and norms into their operations through isomorphism. Isomorphism is a process that transcends differences in organisational characteristics to begin to resemble each other (DiMaggio & Powell 1983). An external environment can encompass diverse and peculiar customer tastes, intra-cultural variations, different knowledge and asset acquisitions, education norms and legislation, etc. Acknowledging that those influences stem from different sources, Di Maggio and Powell (1983) probe isomorphic mechanisms under three lenses: coercive isomorphism, mimetic isomorphism, and normative isomorphism. *Coercive isomorphism* refers to regulatory forces, *normative isomorphism* means the cognition, culture and acceptable behaviors, and *mimetic isomorphism* applies to the pressures to imitate the practices and operations of local actors. Organisations, as the *raison d'etre* of the city, pursue institutional isomorphism in order to reduce uncertainty as well as political and cultural pressure, and to maneuver professionalism.

2.1.2 Resource dependence theory

The core argument in resource-dependence is that, in order to analyse organisational behaviours, we need to understand the context and particularities surrounding the company rather than its internal dynamics. Furthermore, Pfeffer and Salancik (1978) premise that organisations are embedded in networks of stakeholders and rely on external actors to acquire resources. Accessing

resources can even determine internal competence through, for example, innovations, infrastructure, or specialised strengths such as skilled labour forces.

There are three main arguments in resource-dependence theory:

The first argument is one of munificence. Constraints of resource acquisition affect organisational decisions. As discussed in the theory, companies face competing demands from different stakeholders. Meanwhile, companies can only select the most compatible demands in order to cooperate with certain stakeholders. As companies rely on external organisations for resources, the survival of companies depends on how successfully they can negotiate with external stakeholders to leverage their resources and how they continue that commitment over time. Consequently, companies design and develop certain strategies to meet such demands.

The second argument is one of interdependence. This emphasises the networks and the strengths of linkages that companies develop through their transactions with business partners. Interdependence refers to any event that depends on more than a single causal agent, which is an outcome based on interdependence. Interdependence is characterised by the relationship between agents, not the outcome itself.

Interdependence can be categorised as behaviour interdependence and outcome interdependence. The former means activities of agent A are dependent on activities of agent B. For example, a soccer match requires two teams to participate. Outcome interdependence, on a simpler note, means products of agent A are inputs for agent B. This classification can be divided into two relationships, one is symbiotic and the other is competitive outcome interdependence. Symbiotic interdependence exemplifies one relationship that exists in vertical linkages such as A causes B and thus causes C. Meanwhile, competitive outcome interdependence states that these actors use

identical resources. For example, after the introduction of the iPhone by Apple, another smartphone brand named Oppo appeared in developing countries but aimed at the lower-income class and directly competed with Apple.

From this emerges the question of interconnectedness and asymmetric interdependence. Interconnectedness causes another problem. As the organisation becomes increasingly connected with other agents, the more uncertain and unstable the environment becomes, as changes can unprecedentedly occur and produce unexpected consequences.

The third argument is one of power. Power is a key attribute in understanding why one organisation depends on other organisations. Those who have more resources have more power, and thus determine other actors' actions, as others need to rely on the resources of the more powerful in order to survive and succeed.

There are three limitations in resource-dependence theory: First, Palmer (1983) pointed out that resource-dependence theory has not fully addressed space, geography and social class, which can determine organisational behaviours. Second, another critique regarding social theory is that, in the contemporary world, the power of the financial markets has become increasingly boundary-less in terms of production processes, which have made the sort of decisions described in resource-dependence theory less relevant today. Third, the theory also goes silent regarding certain strategies reacting towards changes in the environment over time.

2.2 Interdisciplinary construct of Corporate Social Performance (CSP) and City

Corporate Social Performance (CSP) and city-related environment literature would be revised in the following section, thus generalises the school of thoughts and provides insights on academic research gaps between two literatures, from there, we would also justify the role of city location in investigating CSP.

2.2.1 Corporate Social Performance (CSP)

Carroll (1979) provides the most widely accepted definition of Corporate Social Responsibility (CSR). Their conceptual model is a four-level pyramid, which incorporates four categories of responsibilities, including economic, legal, ethical, and discretionary/philanthropic activities. This definition stresses the role of business entities rather than a set of institutional principles, and takes an instrumental and integrative approach rather than a political–socioeconomic perspective. Meanwhile, Davis (1973) approaches the concept differently by claiming that businesses should act as social institutions. He discusses the iron law, which states that businesses have a social contract with the society in which they operate. Therefore, the actual existence of such businesses depends upon social assent.

Emanating from Aguilera et al. (2007), who proposed the need for a multilevel framework for organisations, another evolving definition of CSR is the study of Aguinis and Glavas (2012), which refers to CSR as "context-specific organizational actions and policies that take into account stakeholders' expectations and the triple-bottom line of economic, social, and environmental performance" (2012:855). This conceptualises CSR actions and policies as being influenced and implemented at all levels of analysis, which paves a new direction for researchers to explore the underlying meaning behind multilevel analyses and CSR. A multilevel framework is vital because each level exerts a different type and different magnitude of influence on firm behaviours,

decision-making processes and strategy designations. Such importance calls for further explanatory research.

Therefore, inspired by previous works which recognised the importance of levels of analysis, to deeply investigate a subnational level, we join an extensive stream of work specifically addressing Corporate Social Performance (CSP) (Albinger & Freeman 2000; Ioannou & Serafeim 2012; Turker 2009; Waddock & Graves 1997). The principles of CSP rest on social responsibility, and how the outcome and performance of businesses affect the society in which they operate. Wood defines CSP as "a business organization's configuration of principles of social responsibility processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships" (1991, p. 693). In other words, CSP embraces both descriptive and normative areas of CSR and measures businesses' fulfilment of their CSR.

2.2.2 The role of city location in determining firm behaviours

Previous literature has explained different nations influence different CSP practices (Ioannou & Serafeim 2012; Matten & Moon 2008). However, little has been known how subnational framework could determine corporate environmental performance. In this thesis, built on existing literature addressing how subnational characteristics impact firm practices (Chan, Makino & Isobe 2010; Goerzen, Asmussen & Nielsen 2013; Meyer & Nguyen 2005), we argue that these variations within a nation, represented by cities, can also affect various CSP practices. This section will review current literature on subnational influences and offer insights on how cities differ firm practices, thus accentuates why cities could be a powerful subnational framework in orientating and influencing each CSP movement. There are two schools of thoughts in city framework, including how resource endowments in cities facilitate corporate activities, and the second school of thought argues subnational institutions embedded in cities orientate firm behaviours here.

2.2.2.1 Cities as institutional environment for corporate behaviours

So often institutionalism is misconstrued as a theory of isomorphism and stability (Hirsch & Lounsbury 1997). Therefore, the study of Lounsbury (2007) empirically evidences how geographic heterogeneity diversifies mutual fund management practices even though this financial industry originates from the same source. The research assumes two main propositions. One, professionalising money management was among the most vital growth influencing mutual fund management. Two, instead of positioning that firm strategy lies at a manager's discretion, the technical rationality of whether to pursue efficiency or performance is institutionally contingent.

Combining these two conditions, Lounsbury argues that switching from in-house to external money management would depend on the type of fund, with growth funds adhering to performance logics and non-growth funds adopting product-cost logics. Further, because funds with wealth-preservation purposes were initially born in Boston in the 1940s, firms located in Boston are more conservative. This increases the probability that firms would adopt the trustee (product-cost) logics and mitigate the effects of external money management as such practice goes against traditional practices. Meanwhile, the 1950s in New York City witnessed subpopulation growth promulgating professionalised money management. The presence of this movement radically shifted the industry's orientation in that city. New York-based funds are more likely to act more aggressively in achieving short-term profit rather than pursuing passive, secured and stable goals like their Boston counterparts.

However, this raises a question about how firms would react with growth funds in Boston or non-growth funds in New York. This resonates the fact that organisations are simultaneously exposed to contrasting logics and patterns, which offers new direction for researchers to investigate the juxtaposition of symbolic and strategically embedded strategies. Lounsbury's research indicates

that geographical disparities could change institutional sources. One dominant logic would not only legitimise the whole field, but the process of diffusion would also shift the logic to one that is opposite to the original logic

2.2.2.2 Exogenous role: Cities as locales to facilitate economic activities

Recent studies argue that there exists a variety of city characteristics within a country, which drive firms to locate in one place rather than another, such as the existence of a political or business centre, geographical space, or influences of national cultural values (Ma, Tong & Fitza 2013), and spatial discontinuities within a country (Beugelsdijk & Mudambi 2013). Among studies examining strategic location choice, Goerzen, Asmussen and Nielsen (2013) examine how global city characteristics determine location-related strategy decisions. The study is based on two assumptions. First, the liability of foreignness, including uncertainty, discrimination and complexity, are barriers that firms need to overcome when setting up subsidiaries in foreign countries. Second, global cities share similar characteristics but only vary in the degree of their localities' characteristics.

In their research, Goerzen, Asmussen and Nielsen (2013) argue is that MNEs have a higher propensity to locate in global cities, given that investment motives are demand-driven, moderated by a parent firm's marketing capabilities and the presence of local joint-venture partners. The moderation implies that a firm's internal heterogeneity and its networks have a vital influence over locational choice despite the appeal or otherwise of the environment. Further, the results indicate that MNEs and global cities co-evolve with each other. MNEs not only benefit from interconnectedness, as well as cosmopolitan and advanced producer services, but economic progress of an MNE's subsidiaries also catalyse global connectivity and the cosmopolitan nature of external localities. However, as studies restrict their attention to one given region, questions

may arise as to how the interconnectedness between cities could also facilitate access to crucial resources for corporations.

2.2.3 Gap between Corporate Social Performance and City

2.2.3.1 What do we (not) know about CSP and Cities?

Despite contrasting assumptions, above-mentioned schools of thought converge on one point: investigating how subnational institutions or city idiosyncrasies determine strategic behaviours or decision-making processes. This thesis addresses two schools of thought in the interdisciplinary section between international business and economy geography at the subnational level: the traditional and the modern streams. Both of them explain the antecedences of MNEs' responsiveness, strategies and performance at the subnational level. The traditional school of thought focuses on factor endowments (Dunning 1998, 2000; Porter 1998). Meanwhile, the modern school of thought highlights the institutional environment (Chan, Makino & Isobe 2010; Ma, Tong & Fitza 2013; Meyer & Nguyen 2005). The former assumes that the city is a source of competitive advantage (AJ Scott 1982). On the other hand, the latter assumes that the city is an agglomeration of institutional forces (Chan, Makino & Isobe 2010; Meyer & Nguyen 2005). The two schools of thought can be described as follows:

Factor endowments: these subnational characteristics include labour supply, e.g, high quality employees, or market demand such as cosmopolitan consumers. Cities, hence, are the physical manifestations of these capital accumulation and economic interactions, thus serving as a localised resource to create competitive advantage. In other words, firms take advantage of favourable locational characteristics and embed these into their strategy.

Institutional forces: The second school of thought highlights that subnational institutional pressures influence corporate performance, since regulations, cognitions and values vary within

the nation and these institutional pressures establish different rules of games to which firms need to conform (Chan, Makino & Isobe 2010; Meyer & Nguyen 2005).

Both of these schools of thought discuss external factors which determine a firm's behaviour. The first school of thought discusses the factors at surface level. Meanwhile, the latter better reasons the mechanism of how the external environment translates into firm behaviours. In the project context, firm behaviours refer to CSP. Second, in the first school, location characteristics imply a static approach while the second is more dynamic and focuses on social influences. Thirdly, the first school neglects how an unfavourable environment could turn into a firm's competitive advantage.

As a result, isolating each individual school of thought will be insufficient in explaining CSP at the city level. Without external characteristics, we could be hard pressed to explain why firms are drawn to a particular location. On the other hand, without institutional forces, it is hard to explain how external environment forces shape a firm's response and changes its structure. This project thus combines the two schools by arguing that city level characteristics influence CSP in both schools of thought, because firms are variously embedded in different levels and in different domains (Meyer, Mudambi & Narula 2011). Firms not only take advantage of local resources but also seek legitimacy from local governments and stakeholders.

Taking such an integrative approach, there are two academic gaps which would be addressed in the research: (1) Little is known of how environmental issues influence CSP. Even though firms take advantage of city resources, if environmental issues occur, are corporations willing to adopt environmental commitments to address governmental failures or behave as if this issue is beyond their concern (2) The relationship between urban competitiveness and CSP; although research has examined the benefits that cities offer corporations such as advanced services, resources and

related-locational advantages (Goerzen, Asmussen & Nielsen 2013; Ma & Delios 2007; Sassen 2001), little is known of how these external city localities constrain or encourage a firm's environmental commitment.

2.2.3.2 Why are cities important in determining CSP?

There are two reasons that augment the important role of location in influencing CSP: national-level unit of analysis insufficiently addresses diversity within their countries and cities offer the most proximate context where corporations are headquartered.

First, as practices are diverse within a *country, they may shape different organisational strategies and decision-making process*es*. Examining solely at national level may not be sufficient to understand various corporate social performance practices*.

Studies have shown that cities differ within a country, and such locational features determine organisational behaviours. International business literature has discovered that corporations even relocate their headquarters to easily access key shareholders or financial institutions (Birkinshaw et al. 2006) FDI-restricted companies or they locate near political-oriented stakeholders to maintain good relations with a central government in order to mitigate interventions (Ma, Tong & Fitza 2013). This emphasises that countries consist of heterogeneous environments.

This also emphasises that each city has its own specialised competitive advantage and provides munificent resources for local actors. Meanwhile, corporations headquartered in particular cities rely more heavily on city level resources than national level, especially in high-end value-generating activities. Therefore, they confront higher competitive intensity and regulatory pressures from the government and the society to achieve these things. Due to resource constraints and the fact that organisations are a set of constituents depending on external sources to survive and succeed, they are obliged to seek legitimacy to meet public expectations.

Second, cities offer the most immediate and proximate context to corporations; therefore, issues occurring at city level where companies headquartered are more likely to influence corporate behaviours.

Recent studies have promoted proximity to be the new important construct (Driscoll & Starik 2004; Neville, Bell & Whitwell 2011) in the exhaustive stakeholder salience model (Mitchell, Agle & Wood 1997) In light of this component, research has empirically evidenced how proximity augments corporate social responsibility (Mitchell, Agle & Wood 1997). For example, firms located near large cities or in dense CSR engagement areas are more likely to increase CSP due to higher intensity of interaction with social media, political institutions or transmission practices from other companies in the US and Canada (Husted, Jamali & Saffar 2015), or due to the stronger moderating effect on environmental management at provincial rather than national level in China (Ding et al. 2014).

According to the core principle of proximity, initially proposed by Jones (1991), "people care and relate to people who are close to them (socially, culturally, psychologically, and physically) than they do for the distance" (Jones (1991):231). The Sandy Hook Elementary School massacre would garner more profound attention in the Connecticut area than in other regions. However, in the context of this thesis, we confine our model to physical proximity by studying issues or events occurring inside the city. As such, we expand the moral intensity model to issues and events rather than people as highlighted in the model. However, we know little about how issues could determine corporate behaviours located here, and need to refine the knowledge of how corporations react towards an issue proximate to them in terms of geographical distance.

Others could argue that being proximate to local stakeholders could increase their chances to bribe or muddle through their irresponsible behaviour. This is accurate, especially in developing

economies and where ‘money under the table’ becomes a social norm, or where one party is more dominant than the other. First, companies also need to account if bribery cost exceeds the real practice cost, and in this case, corporate social responsibility cost. Second, corporations could not approach every political actor, party, or media, or reach out to every customer. Corruption could also be a double-edged sword as this could exacerbate irresponsible behaviours.

2.3 The relationship between environmental issues and Corporate Social Performance

Originally from salience theory in the politics arena, issue salience occurs when parties compete by selecting issues on the agenda that are favourable to them and de-emphasising unfavourable ones (Budge 2001). This concept assumes that political parties strategically manipulate an issue to accomplish certain goals such as vote-seeking, office-seeking or cohesion-seeking (Marks & Steenbergen 2004).

2.3.1 Environmental issues that induce firm motivation to go green

In their study explaining why companies are ecologically responsive by identifying firm motivations and the context at different levels, Bansal and Roth (2000) define an issue as “the extent to which a specific ecological issue has meaning for organizational constituents” (2000:729). Developed from stakeholder identification theory (Mitchell, Agle & Wood 1997), in this study, Bansal and Roth present three sub-elements that constitute issue salience including certainty, transparency, and emotivity. Issue salience is positioned as the key driver for corporate ecological responsiveness in an ecological context, in order to achieve legitimacy and a competitive advantage. The study assumes two factors. First, firm motivations can be mixed and despite focusing on dominant motivations, mixed motivations or dominant motivations lead to viable and high responsiveness. Second, in the ecological context, the notion of equifinality could

be applied to an ecological setting, which means that the ecological responsiveness is an open state and not solely a single context specifying firm responsiveness. Ecological responsiveness is assumed to exemplify configurational equifinality (Gresov & Drazin 1997), in which a system could reach similar final state regardless of their initial conditions and paths (Katz & Kahn 1978). Equifinality helps validate the study because it welcomes the exploration of different paths, not only the scope of issue salience. The assumption by itself is a strength, but also signals a weakness in the study, which has been implicitly indicated by the authors. Because the study narrows down to issue salience, such an issue by itself may sometimes lack power to trigger environmental behaviours. Thus, issue salience needs to be moderated especially with respect to other stakeholders, which also proves the validity of stakeholder identification theory. Therefore, as proposed in the study, implying a high responsiveness when two contexts interact with each other, this moderating effect between issue salience and field cohesion proposes an interesting direction for this thesis to evidence whether such interaction induces more environmental legitimation.

However, in particular, by presenting three elements which constitute issue salience: transparency, emotivity and certainty, this avoids the question of issue illegitimacy and equivocality. Besides not addressing power, this thesis argues that the role of location contributes to the issue due to its proximity. Further, Bansal and Roth (2000) have not clearly addressed how issue salience evolves over time (Bansal 2005). Therefore, this thesis investigates the effect of environmental issues using a longitudinal framework.

2.3.2 Issues as stakeholder concerns for firm responsiveness

While Bansal and Roth (2000) examine the potential impact of environmental issues on organisations, other mainstream issue salience research explores the mechanism between these two factors. In other words, such other research addresses how issue salience shapes firm responses

using a strategic cognition framework. Issue salience is defined as "the degree to which a stakeholder issue resonates with and is prioritized by management" (Bundy, Shropshire & Buchholtz 2013, p. 353) (p. 353). No longer operated as a contextual role, issue salience in Bundy, Shropshire and Buchholtz (2013) is presented as the key construct of firm responsiveness to stakeholder concerns. Stakeholder issues materially related to organisational identity follow an expressive logic, and stakeholder issues materially related to a strategic framework follow an instrumental logic. Firms vary their responses from substantive defensive or accommodative negotiation, depending on whether they perceive issues as true threats/opportunities or identity/frame conflict, respectively. There are two assumptions: Firms only react to the issue if they perceive it is related to their organisational identity and/or strategic framework. Issues are distinguished as either conflicting or consistent, and would be translated into opportunities and threats (Dutton and Jacksons, p. 356).

The above study classifies issues as either consistent or conflicting to organisational identity and strategic framework, which clarifies issue salience and provides a foundation for typologies. Nevertheless, this could encounter another problem. According to Sonenshein (2016), there are two impediments that deter corporations from engaging in increasing social welfare: issue illegitimacy and issue equivocality. Issue equivocality means the issue may be ambiguous, thus connotes different meanings that confuse managers as they can interpret the issue differently. Current research has primarily focused on how organisations and stakeholders react to traumatic events in the short term (Mena et al. 2015). This may also hinder the probability of CSP.

2.3.3 Issue as wicked problems

Assuming that the issue or wicked problems are relatively identical, little is known about how firms would react or be responsible for a "wicked problem" that they may not identify with.

Consequently, Reinecke and Ansari (2015) address this gap by exploring two directions: the mechanism of wicked problems on CSP and the role of political and private actors in this process.

The research focuses on answering how governments and NGOs conjointly devolve responsibilities to corporations and describe the shift in mechanism from reactive to proactive social responsibility. Companies are made complicit in the problem through three attributes: *cognitive shortcut* – narrowing wicked problems to make them become a leverage point, thus providing hope for solutions; *causal linkage* – problems occur on a wide scope and as multinational enterprises experience sovereign jurisdiction, governments tend to link problems with an enterprise's activities; and *emotional connectivity* – the problem itself would not trigger emotions, but once attaching strong emotions such as arousing empathy and righteous anger, it would magnify the wicked problem and state it in-front-of-the-mind. By issuing stringent laws and forcing companies to participate in public dialogues, companies can not react in any way except to comply with the law and announce publicly that they will endorse political actors. This is because companies want to appear to be acting appropriately, regardless of what they may actually think, under social judgement and public disclosure.

Reinecke and Ansari (2015) premise that a power shift emerges from regulatory voids and reflects governmental failures in tackling the issues. However, the issues also reflect that corporations are sensitive to environmental changes and regulatory pressures. Therefore, studies about firm motivations could be applied in order to understand why corporations are induced to proactively respond to the issues instead of their public disclosure. For example, motivations could include perceiving benefits in the long term, or when companies are engaged in tackling wicked problems, they may accrue more power. Thus, regulatory stakeholders would be less likely to pressure companies if other issues occur. Furthermore, geographical location may also contribute to the

commitment to solve wicked problems, as firms located proximate to political institutions may be more likely to behave in a responsible way than firms located far from these actors.

2.3.4 Why environmental issues and Corporate Social Performance?

These above-mentioned studies explain why social influences determine firm responsiveness to address an issue regardless of different trajectories. Whether corporate social performance increases or decreases due to strategic cognition (Bundy, Shropshire & Buchholtz 2013) or public disclosures (Reinecke & Ansari 2015), legitimacy-seeking or competitive advantage enhancement (Bansal & Roth 2000; Berrone & Gomez-Mejia 2009), research is in congruence with firm motive to avoid political and social repercussions brought about by the issue. Such unanticipated incidents could influence their stakeholder benefits that do damage to firm performance and reputation, especially if intensifying under social judgment (Reinecke & Ansari 2015) rather than through managerial aspirations or values (Agle, Mitchell & Sonnenfeld 1999).

However, due to their convoluted nature, there has been a lack of empirical evidence testifying on how issues affect Corporate Social Performance. Also, previous literature examines the process of how corporations proactively engage in social welfare, even if the issues may not be identified with the companies (Reinecke & Ansari 2015) or the issue is ambiguous and illegitimate (Sonenshein 2016). Yet all of them present third parties such as social change agents, NGOs and political actors. This motivates us to question whether, at a manager's discretion, without the existence of these actors, would corporations be willing to address these unequivocal issues. Finally, an issue with strong emotional attachment, serious consequences and immediate effects could easily trigger reactions from society, thus prompting actions for companies to tackle. This also raises a question of whether an intractable issue carrying weak causal linkage with companies producing substantial, not highly salient effect could trigger reactions within corporations located

here. As such, environmental degradation attributes could accord with specified conditions, bridging the gap between the organisation's relevant public expectations and what the organisations have actually done (Garriga & Melé 2004).

2.4 The relationship between urban competitiveness and Corporate Social Performance

2.4.1 Definitions

Urban competitiveness describes the state in which one city outperforms other cities in certain aspects. Generally, there are three approaches to defining urban competitiveness. The first one emphasises resource utilisation and the capacity to sustain resources and innovate resources, while minimising adverse effects on the quality of life in the city. Co-operation and Development (2008) defines urban competitiveness as: "The degree to which it can, under free and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long term". Webster and Muller (2000) define city competitiveness as the ability of a city region to produce and market a set of products (goods and services) that represent good value (not necessarily the lowest price) in relation to comparable products of other city regions. Non-tradables, e.g, local services, are part of the competitiveness equation. These definitions emphasise the production capability at national and international levels.

The second approach highlights an environment attractive for investment, especially for international trade. According to Storper and Manville (2006), urban competitiveness reflects the capability of an economy to attract and maintain firms with stable or rising shares in activity, while maintaining stable or increasing standards of living for those who participate in it. Kostiainen (2002) describes urban competitiveness as: "an ability to attract flows of information, technology,

capital, culture, that are important to the regions, and along with it, the ability to maintain and develop the quality of life and standards of living of local residents, as well as an ability to create an innovative operational environment in which companies can develop their competitiveness.

While the first approach focuses on direct factors and the second approach discusses indirect factors that trigger urban competitiveness, the third approach draws attention to institutional forces. Gordon and Chesire (2001) state that urban competitiveness may be conceived of as involving attempts by agencies representing particular areas to enhance their locational advantage by manipulating some of their attributes which contribute to their area's value as a location for various activities. Kresl (1999) argues that urban competitiveness is made up of two determinants, economic determinants and strategic determinants. This approach conveys quantitative and qualitative elements. According to these researchers, the inherent power of locational advantage is in the policies implemented by municipal governments and the assets owned by the people in such environments.

This thesis therefore will focus on the sources that innovate urban competitiveness, because it is argued that products generated could change over temporal development, while innovations, human resources, institutions and other capital are key assets that generate resources. These sources encompass human power and a strong economy. Without these elements, irrespective of the attractiveness of the endowed resources, cities could not fully exploit these advantages or create a sustainable competitive advantage.

2.4.2 Urban competitiveness with hard and soft determinants in developed countries

According to Peter Kresl and Singh (2012), the emerging importance of urban competitiveness is justified as follows. First, there are the reductions in the capability of governments at a national level and the rising engagement with supranational entities and bi-national trade agreements.

Second, mayors and other municipal leaders take initiatives in their economies in receiving acknowledgement of the expectations of their residents. Third, urban competitiveness is important because subnational entities are usually torn between rural development and urban economic interest, as their main revenue comes mainly from cities.

Prior studies have identified the foundations for urban competitiveness by conceptualising this variable as the total changes in value-added manufacturing, retail sales and business service receipts (P Kresl 1995; PK Kresl & Singh 1999). In continuing with these studies, Peter Kresl and Singh (2012) revised and defined urban competitiveness as the composite of changes in payroll per employee, retail sales and professional services.

In comparison with earlier works from previous years, Peter Kresl and Singh (2012) noted that among 23 US cities, softer determinants such as healthcare, transport, security and leisure are replacing per capita income and population growth to become key determinants enhancing urban competitiveness. Most specifically, education of the labour force has changed from a negative to a positive sign over an observed period, suggesting that human capital is growing in importance with respect to urban competitiveness. The rise of smart cities and creative cities in recent years lends credence to Kresl and Singh's study.

Despite significant contribution in urban competitiveness, the study focuses on US territory, where strategic factors and economic power, innovation level, infrastructure and global connectivity are ranked the highest in the world. This raises the question of whether urban competitiveness in a country that represents a range of different values would share similar characteristics with the popular urban competitiveness model of Kresl.

2.4.3 Urban competitiveness in Bowstring models in developing countries

In order to address the above-mentioned gap, Ni, Kresl and Li (2014) explored what factors determine urban competitiveness at a similar scale in China. Their study incorporated the Bowstring model, which consists of hard and soft networks similar to Peter Kresl and Singh (2012) framework. Hard factors include labour and human capital, local demand, outside connection, natural geographic location, etc, and soft factors encompass governmental regulation and service, institutional capital, as well as culture and social values.

The index of urban competitiveness in this study is composed of three elements: GDP per capita, GDP/km^2 and GDP growth rate. The study discovered that in Chinese cities, cheap labour and investment in fixed assets remain major determinants in urban competitiveness. This result contradicts with Kresl's research (2012), which discovered that soft factors are becoming the main pillar of competitiveness in US cities. Levels of openness, access to foreign direct investment and the number of universities also enhance the competitiveness of Chinese city economies. Consistent with Kresl's studies, the research successfully demonstrated the important role of location when specifying a higher developed economy for a national centre, a regional economic centre, or a coastal city. Notably, contradicting conventional belief, they argue that a mega-city size is not advantageous to urban competitiveness, in fact, smaller cities did a better job in contributing to the index.

Not only do Ni and Kresl reflect the picture of Chinese city economies, and strengthen the urban competitiveness indicator and Bowstring model in the Chinese context, the authors also evidence novel insights into city size. Nevertheless, the study has not been able to address how the ecological environment could determine a city economy. Further, despite internally transitioning to market-driven economy, the formal appearance of politics remains unchanged. In particular, the

bureaucratic system which selects and promotes people from the network to protect and elevate their positions could hinder and stagnate an urban economy. Third, the level of openness may not be accurately captured when they choose postage rather than access to the internet.

2.4.4 Why urban competitiveness and CSP?

Urban competitiveness has been aligned with green growth policies as an instrument for increasing city attractiveness to skilled workforces, investing in energy efficiency and pollution-preventing products (Joan Fitzgerald OECD, 2008), and developing and selling green technology which would be in high demand (Kamal-Chaoui & Cointreau 2014). In reality, urban governments are taking initiatives in encouraging green behaviour from local actors in order to increase their competitiveness. Kitakyushu, Japan is a successful example of green economy development. Having been known along with Dokai Bay as 'Sea of Death' due to heavy industrial emissions, city governments implemented an action plan named Eco-Town mainly focused on recycling waste from automobiles to establish a new recycling industry zone. By reducing CO2 emission by 3%, Kitakyushu was commended as the environmental model city of Japan by the central government in 2008 (OECD, 2008). Aiming in another direction, Stuttgart, the city of Mercedes, Porsche, focused its green growth on building and automobiles. City governments have acknowledged the importance of coupling the imperatives of the car industry with the protection of the environment (OECD, 2008).

Recent studies have examined factors that determine urban competitiveness, yet the link between this urban competitiveness and non-market strategies in corporations has not been explicitly indicated. Initiated by World Bank (2002), GM Grossman and Krueger (1994), research from environmental school proposes the famous Kurtnez inverted U-curve between environmental degradation and income per capita (Dasgupta et al. 2002; G Grossman & Krueger 1995a; Holtz-

Eakin & Selden 1995; Stern, Common & Barbier 1996). The level of pollution increases at the early stage of industrialization, but later on the economy becomes prosperous enough to afford cleaning up their environment (Stern, Common & Barbier 1996). High demand for environmental protection from their citizens and governments induced policy response from corporations, given the right institution. Using resource-dependence theory, Kassinis and Vafeas (2006) states that an imbalance in resource dependence favours firm in poorer communities, as these societies tend to depend on firms for resources (jobs, taxes) than the other way around. Therefore, poorer communities may have less voice in addressing their demand for reducing toxic emission in their areas. Despite examining the relationship between GDP per capita and toxic emissions, there has been a gap between urban competitiveness and CSP. Therefore, in this thesis, we would examine how urban competitiveness influences green behaviours of local actors through environmental CSP.

2.5 Reviews of main articles

The final section of this chapter will review some important knowledge that contribute to the development of the thesis, as well as delineate the gap from these articles

Table 1. Article review

	Paper and key questions	Argument	Assumption	Theory/ Method	Contribution/Finding	Gap
CONCEPTUAL PAPER	***Campbell (2007)*** *Why would firms behave in socially responsible way**?***	Economic factors directly influence CSR moderated by institutional factors	Firms are seeking profit economic entity more than a social actor, and institutional factors are relatively static	Institutional theory	Define the threshold between socially responsible behaviours and irresponsible behaviours.	Assumption that CSR lies at manager's discretion, thus CSR is explicitly articulated rather than codified as norms in operations.
	Aguilera et al. (2007) *What catalyses organizations to engage in increasingly robust CSR and initiatives and consequently impact social change?*	Corporations may trigger social changes through CSR	CSR is influenced by combination of internal and external pressures. Thus, CSR may not solely undergo isomorphism when transposed its values to other group of stakeholders but also embedded in a modification process.	Stewardship theory	Providing the multilevel framework of CSR antecedents categorized by three motive groups: instrumental, relational and moral motives. Specifying interaction within level and between level	The framework has not differentiated different level of CSR engagement, thus may not address the internally inconsistent problem (useful for one stakeholder but harmful for others)

Table 1. *Continued*

	Paper and key questions	Argument	Assumption	Theory/ Method	Contribution/Finding	Gap
CONCEPTUAL PAPER	***Marquis, Glynn and Davis (2007)*** *Given the uncertainty of financial performance, what drives corporate social actions?*	There exist isomorphic forces within local communities	Each community exerts similar degree of isomorphism to the actors located inside the community.	Institutional theory	How local communities shape the nature and level of corporate social actions.	As this world becomes more interconnected, the research has not fully answered whether one community could resemble another community in terms of institutional norms?
	Matten and Moon (2008) *How and why CSR differ between countries and how /why it may change?*	Classify CSR into two main types: explicit and implicit. Explicit CSR refers to companies take voluntary actions while implicit CSR means codified norms and values in company operations.	Each institutional aspect within environment is assumed to be homogenous	NBS, institutional theory.	Conceptualise differences between US and European CSR and address why there is recent rise of CSR in Europe	Some aspects of CSR between US and Europe may resemble each other, thus needs further investigation and conceptualization.

Table 1. *Continued*

	Paper and key questions	Argument	Assumption	Theory/ Method	Contribution/Finding	Gap
CONCEPTUAL PAPER	***Bundy, Shropshire and Buchholtz (2013)*** *Why issue salience can trigger firm responsiveness?*	Firm respond to stakeholder pressures according to the type of issue aligning with their identity	Firms only react to the issue if they perceive it is related to their organizational identity and/or strategic frame. Issues are classified as conflicting or consistent with firm identity	Strategic cognition, stakeholder identification.	Typology of issue types and firm responsiveness to translate firm's attention into action.	Despite classifying issue types, the separation between quadrants and classification may be superficial. What is conflicting and what is consistent remains an important issue. As this study focuses on strategic cognition, it did not specify all the exogeneity that may render its salience.
EMPIRICAL PAPER	***Bansal and Roth (2000)*** *Why companies go green?*	Contexts trigger firm motivations which determines corporate ecological responsiveness. Motivations to go green include: issue salience, competitiveness and legitimacy. Contexts range from ecological, organizational to individual context	Motivations can be mixed and equifinality could apply to ecological setting.	Institutional theory and resource-based view	Identify firm motivations and context that precipitates corporate ecological behaviours	This study has not addressed how motivation and context evolved over time, thus a longitudinal study may be needed in investigating how relationships between firm motivations, contexts and their ecological behaviours transform or interact with each other.

Table 1. *Continued*

	Paper and key questions	Argument	Assumption	Theory/ Method	Contribution/Finding	Gap
EMPIRICAL PAPER	***Kassinis and Vafeas (2006)*** *How within-heterogeneity of stakeholder group can influence environmental performance?*	The varying dependences of targeted organizations on heterogenous stakeholder	There are institutional margins to take initiatives and the environmental norms are not codified in their actions	Resource-dependence theory	Provide empirical evidences that, stakeholder pressures associated with environmental performance. Refine understanding on how variations (wealthy or powerful stakeholders) within stakeholder group could influence environmental behaviors.	The study has not fully explained if stakeholder pressures associate with higher environmental performance, in case corporations operate in environment where CSR is embedded in their norms
	Ioannou and Serafeim (2012) *How CSP differs across nations?*	Institutional pressures shape decision-making, organizational behaviours and business outcomes, thus would profoundly determine CSP.	Institutional forces exert similar degree of influence over actors located inside countries	Network based system (NBS) and regression	The research contributes to institutional diversity theory. Provide empirical evidence proving CSP differ across nations based on network based system. Political, educational, and labor institution have greater impacts on CSP than financial system.	The research has not addressed the case in which Corporate social performance may have feedbacks on institutions and shape their behaviours

Table 1. *Continued*

	Paper and key questions	Argument	Assumption	Theory/ Method	Contribution/Finding	Gap
EMPIRICAL PAPER	***Goerzen, Asmussen and Nielsen (2013)***	Why MNEs tend to locate their subsidiaries in global cities are attributable three features: cosmopolitan, interconnectedness and advanced producer services, moderated by internal capabilities .	Global cities exist and emerge due to economic activities of local clusters.	Liability of foreignness and multilevel multinomial model	Offer insights on location strategies and global cities, as well as explore how location strategies and the emergence of certain locales have co-evolved with each other.	The study did not address the variances of industry, and a higher number of subsidiaries are reported to locate in non-global cities.
	Flammer (2013) CSR and shareholder reactions	Environmental CSR depends on both external norms and internal levels of CSR	Shareholders exert certain influence on company behaviours. Production factors has decreasing marginal returns.	Institutional theory and Event study	Provide empirical evidences that shareholders tend to support environmental behaviours, yet such rewards for eco-friendly strategy decreased over time, and vice versa with eco-harmful behaviours These findings propose that external pressures are setting the institutional norms for green initiatives.	The study has not investigated whether CSR exhibits decreasing marginal returns in the long run.

Using external environment angle, research on CSR has greatly focused on how institutional norms and values shape CSR behaviors of corporations in their location (Ioannou & Serafeim 2012; Matten & Moon 2008; Rathert 2016). By dividing into implicit CSR and explicit CSR, comparative CSR research has examined how CSR differs across countries (Gjølberg 2010; Matten & Moon 2008). Previous research has often assumed that institutional environment exerts similar degree of influence over local actors (Ioannou & Serafeim 2012). However, this assumption may encounter argument that study at national level tends to oversee differences existing in one country, thus may prevent a profound understanding of corporate behaviours. Additionally, interconnectedness can detach some cities from their country to integrate the global network (Sassen 2001; Tung 2008). Through such frequent interactions between cities, local actors may gradually modify and incrementally embed of CSR values from city in other countries, and vice versa (Matten & Moon 2008; Tung 2008). Therefore, it brings to question whether cities could be a stronger, more powerful and accurate unit of analysis that could depict the complexity of corporate behaviours within geographic location.

Consequently, we turn our attention to subnational literatures, and discover that research in this stream tends to describe how local advantages influence corporate behavior (Ma, Tong & Fitza 2013; Meyer, Mudambi & Narula 2011). Other environmental aspects such as air pollution in the city, have not received significant attention. Studying the relationship between air pollution and corporate environmental performance is meaningful because: (1) Due to ease of control, national or state government often impose uniform air quality standard yet this approach creates insurmountable challenges to manipulate. (2) Air quality measures represent how local actors take initiatives for issues that are transboundary, and issues that are difficult to control sources of emission (Portney 2003). Recent study has found that city governments are more willing to remedy rather than prevent environmental issues (Kassinis & Vafeas 2006), yet little has been

known how corporations would react in the case of air pollution increases. Beside practical implications, we choose air quality also to address the question, how would corporations behave in the case of institutional gaps, such as tackling air pollution issue may not either implicit or explicit?

Consequently, in this thesis, we will investigate: (1) the relationship between air pollution and CSP at city level, as well as examine the effects of other city attributes on CSP, such as urban competitiveness, city size; (2) how the interaction between the size of city and air pollution determine CSP. The model will be specified in the next chapter.

CHAPTER 3

HYPOTHESES

The conceptual framework illustrates the relationship between environmental Corporate Social Performance (CSP) and three city constructs: urban air pollution, urban competitiveness and city size. As illustrated in the conceptual framework, city-level characteristics are under the control of the national institutions and firm performance. In the thesis, we propose that air pollution and urban competitiveness are positively related to CSP, while city size has a negative relationship with CSP. Furthermore, we postulate that city size moderates the impact of urban air pollution on environmental CSP.

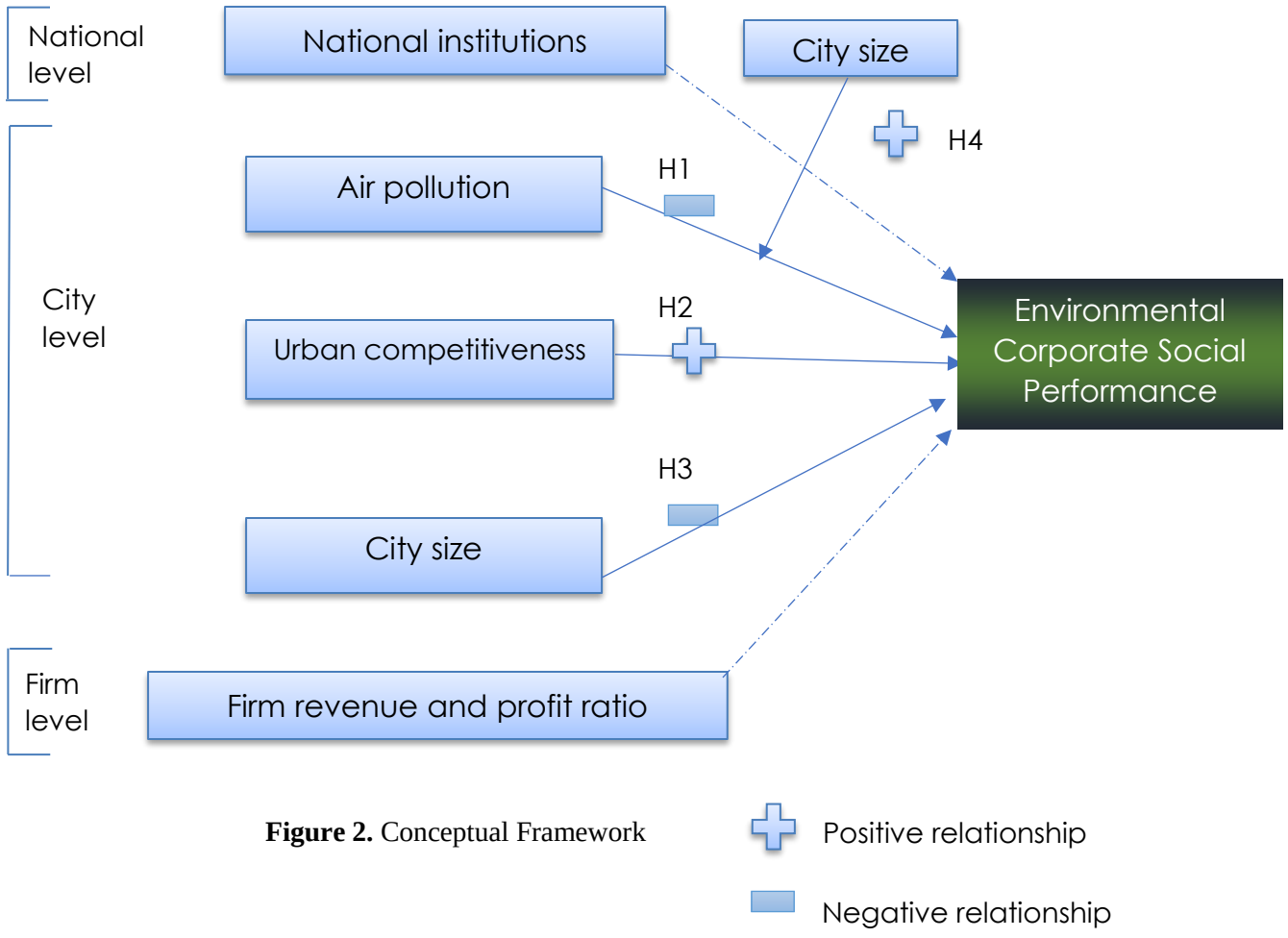

Figure 2. Conceptual Framework

3.1 Urban air pollution and Corporate Social Performance

Research has discussed the extent to which environmental concerns resonate with organisational responses at different levels (Gladwin, Kennelly & Krause 1995; Starik & Rands 1995). Previous research has also addressed economic rationales regarding how CSP can be built into a competitive advantage, which turns into firm motivation (Bansal & Roth 2000; Sharma & Vredenburg 1998; Shrivastava 1995). Taking an integrative approach in the legitimate and instrumental motivations from these studies, I hypothesise that air pollution is negatively related to CSP because low stringency of the institutional environment, corporations cost-saving strategy and non-market instruments.

Initially, we will explain why air pollution could trigger stakeholder pressures. Stakeholder identification theory suggests that air pollution garners public attention and regulatory pressures because this issue brings bad consequences, such as harm to human health and the surrounding environment (Brunekreef & Holgate 2002; O'Neill et al. 2003; Tsukatani & Shigemitsu 1984). For instance, the ozone-related effects of climate change are likely to increase mortality rates in the New York metropolitan area by the 2050s (Goldberg 2007). The increasing formation of ozone due to higher temperatures is proven to exacerbate chronic respiratory diseases and cause short-term reduction in lung functions (Bernard et al. 2001). In other words, the worse air pollution is in a city, the more critical the issue becomes, and the more stakeholders become aware of the detrimental effects of such pollution. How stakeholders interpret the effects of air pollution also contributes to issue salience. Psychologists have illustrated that "the bad is stronger than the good" (Baumeister et al. 2001) because "bad" information is processed more thoroughly than good information and negative events produce more vehement reactions from people than good events. The worse the air pollution is, the worse the image it may create on stakeholders. Consequently,

the high certain cognition and the bad impression of the air pollution's adverse effects become stakeholder pressures.

Nevertheless, whether corporations increase environmental CSP in response to coercive and normative pressures from municipal governments and stakeholders is a different story. Ideally speaking, when air pollution increases, the government may increase the stringency of environmental regulation and law enforcement, and the media and society will become more aware of this issue. By increasing environmental commitment through CSP, companies respond to the issue in order to avoid political and social sanctions, such as fines or customer boycotts (Bansal & Roth 2000), to distract society from their illegal actions (Aguilera et al. 2007) and to achieve a competitive advantage, such as a good reputation, customer brand identification, and customer loyalty (McWilliams & Siegel 2001). Specially, building competitive advantage has been claimed to be more advantageous when only few competitors engaged in CSP, which is also referred as higher opportunity green zone (Zadek 2004).

However, in reality, we argue that corporations are less likely to increase CSP when an environmental issue intensifies due to three reasons: (1) low level of stringency or regulatory voids (2) corporate motives to save cost on environmental expenditure, and (3) non-market strategies such as lobbying, which helps reduce the risk of political and social sanctions. First, with respect to level of stringency, in polluted cities, constituents may lack rules of law and the level of stringency may be lower than expected. Further, it is nearly impossible to impose regulations that become effective within a short amount of time. Environmental policy takes considerable time to propose and undergoes multiple rounds before officially turns to actions, we cannot expect corporations to act immediately according to public expectation.

Second, corporations may be less likely to increase in engaging in environmental management due to cost-saving motives. The process of environmental engagement requires a significant amount of expenditure into manufacturing plants and other infrastructure such as energy-saving and environmentally friendly buildings. Therefore, facing international and domestic competition in low priced products (Campbell 2007), the struggle for firms to survive may lead them to ignore or insufficiently addressing environmental standards. Further, according to issue-contingency theory promoted by Jones (1991), local actors are prone to acting upon issues with immediate consequences rather issues with ambiguous causal linkages and prolonged effects (Jones 1991; Reinecke & Ansari 2015; Sonenshein 2016). This suggests that issues such as air pollution are less likely to be instantly addressed by corporations.

Third, in terms of nonmarket strategies such as lobbying, corporations may arm-twist governments to modify rules of the game in favour of firm operations (Funk & Hirschman 2017). Consequently, these movement would aid in lubricating firm operations that have not met environmental standards, thus could avoid or reduce fines and penalties. Therefore, despite pressures from local citizens, corporations may not face the risk of political sanctions. Although not directly related to air pollution, the BP oil spill case was a typical example of environmental degradation where BP lobbyists helped avoid the company's fines from the initially proposed penalties 10 billion USD by lobbying and evidencing that the oil spills are not subjectively caused by their companies. Due to the above-mentioned reasons, we propose that corporations are less likely to enhance environmental CSP when urban air pollution increases, suggesting a negative relationship between air pollution and CSP.

Hypothesis 1: Urban air pollution is negatively related to Corporate Social Performance.

3.2 Urban competitiveness and Corporate Social Performance

Literature between environmental management and economy geography emphasize how impacts of externalities constraint or encourage firm environmental performance through toxic emission (Glaeser, Kolko & Saiz 2001; Gene Grossman & Krueger 1995b). In other words, results from previous research suggest an indirect relationship between income per capita and corporate social performance, hence, a more explicit link between these two determinants should be examined. Understanding the relationship would offer insight on how city attributes could constraint or orientate organization behaviours. My assumption is urban competitiveness characteristics translate into external location advantages in which firms seek to take advantage of these characteristics. Hence, in this thesis, I argue that urban competitiveness is positively related to environmental CSP due to following reasons:

Under the policy-maker perspective, increasing urban competitiveness would help attract investment and talents, as well as facilitate job creation (Kamal-Chaoui & Robert 2009). On the other hand, increasing urban competitiveness could associate with stronger competition within the city and high demand from customers, the media, and talents. Correspondingly, stronger incentives for green growth from local governments and stakeholder raise up through two forms: (1) forces from local constituents to increase urban competitiveness, including policy's emphasis on gaining urban complementarities and mayor's participation in international agreement in mitigating environmental issues; (2) pressures from customers and the media, potential employees and other stakeholders towards corporations.

(1) Mayors in highly competitive cities tend to represent the nation to be signatories in international climate change agreement (Bulkeley 2010; Engel 2006; Krause 2011) such as ICLEI World Mayor Agreement (Lee & Koski 2015), or their involvement in C40 groups (Lee 2013) to mitigate the

effects of climate change. Therefore, such international agreement's involvement and motivation in urban attractiveness instigate municipal actions. Local constituents tend to implement environmental policy in the form of retrofitting new industries in renewable sources, providing grants for energy-efficient production, environmental friendly technology and research on new innovations (Kamal-Chaoui & Cointreau 2014), green building ordinance (Koski 2010) or congestion taxes (Hårsman & Quigley 2010). These policy movements hence become institutionalised in city environment. Other reason that associated with increasing urban competitiveness with high emphasis on green policy is arising financial interest in clean technology. Highly competitive cities tend to locate financial institutions for global environmental issue, or marketplaces for carbon emission credits (Lee 2013). Therefore, government and shareholders are more prone to encouraging firms' investment in alternate and renewable technology to escalate their profits. This aims at not only local actors in their cities, but also to other business partners from other foreign countries' cities. Such clean technology trading overseas would not only increase government profit, but also augment political advantage. However, due to resource-constraint, our thesis would not address the previous notion that promote the political advantage and inter-city trading.

(2) Media is a source of environmental information (Simon 1992), which plays an active role in framing and reporting stories and publishing them to the public (Bansal 2005). Empirical research has demonstrated that media influence environmental practices in corporations (Bansal 2005; Bansal & Roth 2000; Bowen 2000; Henriques & Sadorsky 1996). The coverage of media increases the firm's visibility thus attracts public attention and scrutiny. World-leading media centres usually situate in highly competitive cities as these locations are highly interconnected and proximate to major political and economic institutions. Being exposed to more media centres may associate with being under greater risk of negative media publicity.

In responding to increasing such institutional pressures such as rules and policy, media and stakeholders at city level, corporations are more likely to increase environmental engagement. Organizations' survival rely on local externalities such as innovation, tacit knowledge, advanced services, facilities and infrastructure and human capital, which is locational features in urban competitiveness (Peter Kresl & Singh 2012; Ni, Kresl & Li 2014). Being embedded in the external resources tenet, corporations are prone to follow the logics of institutional forces (Amezcua et al. 2013). As sustainability becomes institutionalised, strong regulatory mandate institutions are more likely to impose political and social sanctions such as penalties and boycott corporations. Operating in highly competitive and developed environment, firms need to be more aware of their behaviours, solidify relationships with stakeholders, reconcile any contradictory group interests and create a good impression by turning into an identity that lives up to social expectation.

Consequently, as urban competitiveness increases, corporations would orientate their behaviours to adapt with the new demand from the environment, and in this context, green demands. Firms confront high degree of uncertainties due to unprecipitated incidents from the resources such as sudden cut in supplying resources (Pfeffer & Salancik 1978). Therefore, organizations are more likely to adopt environmental policy in order to reduce information asymmetry from these stakeholders. Such incidents include human capital withdrawals, high competitive intensity, and sudden changes in environmental policy between firms and government, social media. Further, corporations adopt environmental policies to create competitive advantage, enhance their reputation in avoidance of losing talents to other employers (Flammer & Luo 2017). Engaging in environmental performance would help strengthen their position in avoidance of any threats from competitors.

To summarise, corporations headquartered in competitive cities are more likely to increase CSP because they can reap economic benefits and increase regulator good will towards demonstrating behaviours (Weigelt & Shittu 2016).

Hypothesis 2: Urban competitiveness is positively related to CSP.

3.3 City size and CSP

Studies that examine the relationship between firm location and CSR engagement argue that firms headquartered in or close to large cities will be more likely to engage in CSR, due to frequent high quality communications as well as proximity to local institutions and NGOs (Husted, Jamali & Saffar 2015; Yao & Liang 2016). Underpinned by resource-dependence theory, I argue that, in a large city, firms are less likely to increase their environmental performance due to dispersed stakeholder concentration and loose interconnectedness.

First, asymmetric demands in large environment may not be able to create powerful pressures to control corporations' environmental behaviours. Demands are the key for value creation that establishes the foundation for an organization's survival (Prahalad & Ramaswamy 2004). However, in large cities, such demands tend to be more diverse and heterogenous which are featured by various groups of people and migrants. Different groups of people have different interests and standards by which to evaluate an organization. In order to seek legitimacy from conflicting demands, organizations must decide which groups to pay attention to and which groups to ignore (Pfeffer & Salancik 1978). Such city attributes and company characteristics magnify a conflict of interest between stakeholders and organizations, augmenting the uncertainty in the external environment. Therefore, dispersed stakeholder pressure does not amount to any significant influence, thus are less likely to influence corporations in "going green".

Second, the second element of a resource-dependence framework is interconnectedness, which refers to the number and pattern of linkages and connections among organizations (Pfeffer & Salancik 1978). On the one hand, the central tenet of stakeholder theory also posits organizations as a set of relationships among stakeholders (Hall, Millo & Barman 2015), augmenting the argument that external linkages and networks are vital in shaping firms' behaviours. While large cities often distinctively feature a high degree of global connectivity (Goerzen, Asmussen & Nielsen 2013; Sassen 2002), interconnectedness in large cities is different from interconnectedness in small cities. As cities develop faster, they develop more linkages with other cities or other institutions beyond their geographical boundaries. Simultaneously, given limited resources, the linkages *within* cities seem to segregate and gradually loosen due to a lack of solidifying the relationships with current city stakeholders. Therefore, each linkage in a city becomes more independent, and thus stakeholders cannot create strong and cohesive links to exert influence on firm behaviour, especially in non-economic activities. On the other hand, stakeholders in *smaller* cities tend to be more interdependent. Therefore, the linkage between stakeholders and organisations is more cohesive, and thus more likely to create stronger pressures on environmental performance from NGOs or the media and citizens of such cities. In smaller cities, if one organization embeds environmental policy, other corporations are more motivated to adhere to similar practices because such management tasks are more visible and can be more easily judged and compared (RJ Jiang & Bansal 2003). To summarise, the pressures for environmental management in large cities are less concentrated than in small cities (1) information asymmetry between firms and stakeholders remains large and (2) loose linkages among local actors. Consequently, without any significant events or catalysts, stakeholder pressures in large cities may not be large thus are less likely to influence corporate CSP compared to smaller cities.

Hypothesis 3: City size is negatively related to CSP.

3.4 City size moderates the impact of urban air pollution on Corporate Social Performance

Previous studies have recognized how the interaction between an issue and firms' stakeholders moderates CSP (Bansal & Roth 2000; Gresov & Drazin 1997; Rathert 2016). While these studies have addressed firm motivation and orientation under different contexts, we seek to specify how external conditions between air pollution and city size determine environmental CSP. Integrating institutional and resource-dependence theory, we postulate that city size moderates the impact of air pollution on environmental performance.

Large cities with large networks, strong budgets and dense clusters of large corporations are thus better positioned to be independent of firm sponsorship (Amezcua et al. 2013; Bonardi, Holburn & Bergh 2006; Oliver 1991). They have better conditions for firms to locate inside the city without fear of losing core companies. As urban air pollution significantly increases, large city governments have a higher capacity to institute local environmental ordinances that require electricity to be obtained from renewable energies, green building standards or energy saving production, and to provide grants to firms that invest in renewable industries (Kamal-Chaoui & Cointreau 2014). Large city governments enforce such policies more stringently than smaller city governments due to their powerful authority and city identity to act as leaders or role models for their followers. These policies with respect to grants, electricity or building standards have direct regulatory effect on corporations' infrastructure and development, as firms are usually headquartered in cities.

In addition to coercive pressures, due to relying on city resources and invaluable locations, firms need to be aware and adjust their growth in congruence with a city's orientation in order to reduce uncertainty in the external environment (Pfeffer & Salancik 1978). Beijing is one pre-eminent

example of a large city that succeeded in substantially cutting air pollution issues to a significant degree during the 2008 Olympics. The municipal government took aggressive action such as relocating heavy-polluting industries, shifting coal fuels to cleaner energy, and strictly enforcing the installation of pollution control devices. Consequently, SO_2 and NO_2 as well as other particular matters decreased by around 40% (Zhang et al. 2010). Further, regardless of regulatory voids or insufficient expertise in tackling urban air pollution, cities learn from previous experience and follow policies and strategies from places that are proximate or congruous with them in terms of size, values and norms. Every problem needs a focalised and leverage point to target, therefore local governments and citizens focus on a most capable group to address the issue, which is corporations (Reinecke & Ansari 2015). Therefore, coercive and mimetic pressures on corporations increase, and thus intensively induce firms to enhance their environmental responses.

In larger cities, firms increase environmental CSP because, with high CSP, firms can avoid fines and penalties (Bansal & Roth 2000) and establish good relationships with local governments by adhering to regulations. This could assist MNEs in accessing local resources (Strike, Gao & Bansal 2006), as municipal governments provide a passport to localised resources. This especially applies in particular to emerging countries, where relationship-based transactions play a dominant role (Peng 2003). Customers become normative pressures to which firms need to conform (Bansal 2005; DiMaggio & Powell 1983). When air pollution in the city climbs higher, MNEs may consequently increase CSP in order to protect their corporations from the scrutiny of their customers and the media. High CSP may also eliminate the risk of reputational sanctions from those actors, especially the media (Bansal & Roth 2000). Furthermore, increasing CSP may help firms avoid profit loss from decreased consumption caused by customer boycotts (Bansal & Roth 2000; McWilliams & Siegel 2001). Moreover, high environmental CSP helps firms dissociate themselves from their illegitimate issues. In other words, it distracts attention away from their

illegal actions, covering up their violations with respect to the environment without the knowledge of their customers, the media or the municipal government or driving attention toward other MNEs with lower CSP (Aguilera et al. 2007).

Less-endowed and smaller cities, on the other hand, are less likely to promulgate environmental policy when air pollution increases to a considerable degree. Due to resource-constraints, smaller cities tend to prioritise other short-term targets that achieve immediate and tangible results for social welfare instead of focusing on long-term growth. Further, these cities are interdependent with corporations to survive, thus firms have more influence in such cities, which are risk-averse to losing such economic powerhouses. Given the conditions of environmental degradation in small cities, when urban air pollution increases, corporations are less likely to adhere to environmental commitments or upgrade their technology to mitigate the consequences from their manufacturing plants. Due to firm sponsorship and struggles to gain an international competitive advantage, corporations may sometimes pressure municipal regulators to ease their stringency in law enforcements, such as tax reductions, business regulations and especially environmental management (Campbell & Pedersen 2001).

Hypothesis 4: City size moderates the impact of urban air pollution on CSP in such a way that as urban air pollution increases, CSP in large cities increases and CSP in small cities decreases.

CHAPTER 4

METHODS

4.1 Data sources and procedures

In order to measure the impact of urban environmental pollution and urban competitiveness on Corporate Social Performance (CSP)**,** we constructed our sample by merging three main datasets: ASSET4, World Health Organization (WHO) air pollution, and Euro Monitor Data. In addition, concerning the controlled variables at firm level, we incorporated data from OSIRIS for firm sizes and firm performance; at country-level, and utilised Environmental Performance Index (EPI) to observe the changes in government effort in diminishing the effect of environmental damage.

Each dataset was coded before merging into one large database. Initially, we used the ASSET4 dataset to obtain a CSP score in each company and encoded "ISIN" for company identification numbers. Second, we prepared an urban air pollution database by combining the WHO air pollution and Euro Monitor data, and coded it with "CITY CODE". Third, we accessed firm information and addresses from OSIRIS data, and coded them with two codes "ISIN" and "CITY CODE". Finally, we started merging the database by merging the OSIRIS firm database with ASSET4 using "ISIN" codes, and continued merging this database with the urban air pollution database using "CITY CODE" codes.

After building the dataset, we cleaned our database from missing values by using summary statistics to identify missing values and patterns, visual illustrations such as box plots to inspect the distribution of the variable, and detecting outliers and scatter plots to identify correlations between CSP and air pollution, as well as the patterns and trends of CSP in each city. This would help eliminate insufficient CSP scores in each city over a year, also selecting the most suitable indicators before formulating CSP scores for the thesis.

In addition, we categorised cities according to geographical proximity. Generally, there are 176 cities divided into 10 regions, namely, Western Europe, Eastern Europe, North America, South America, Eastern Asia, Middle Eastern Asia, South Asia, South East Asia, Oceania, and Africa.

4.2 Measures

4.2.1 Dependent variables

We utilise a global ESG ASSET4 data set, combining three categories: environmental (E), social (S), and corporate governance (G) metrics. This data has been collected since the fiscal year 2002. However, in this research context, we only focus on the environmental category. The data would include information on energy used, water recycled, CO_2 emissions, waste recycled, spills and pollution controversies. There are 250 key performance indicators which are further divided into 18 categories.

The ASSET4 database provides a binary response (Yes/No) for each question. Therefore, we scored "1" for a firm that respond "Yes" to the environmental requirement specified in the indicator and "0" otherwise. Consistent with a range of the prior literature (Aggarwal et al. 2010; Gupta & McIver 2015), the study followed their method by adding all affirmation scores for each company and dividing by the total number of indicators.. The aggregate CSP formula is illustrated as follows:

$$Aggregate\ CSP_{it} = \frac{\sum_1^{10} CSP_{i,j,t}}{10}$$

in which, *i* represents individual company, *t* represents the period of time (t = 2002, 2003, .2013), j is the individual indicator and 10 is the total number of environmental CSP indicators

Besides, this thesis develops another measurement — industry adjusted CSP, which is calculated based on the following steps: First, we created a new variable CSPind by averaging the total CSP

affirmation score in each firm according to its industry and year. Second, we measured industry adjusted CSP as follows:

$$Industry\ adjusted\ CSP_{it} = \frac{CSP_{ijt} - mean(CSPind)}{sd(CSPind)}$$

in which, *i* represents individual company, j is the individual indicator and 10 is the total number of environmental CSP indicators, *t* represents the period of time (*t* = 2002, 2003, …..2013), sd: standard deviation.

4.2.2 Independent variables

Air pollution

There are three main air pollutants which were used in the research, including SO_2 (or Sulphur dioxide) $PM_{2.5}$ and PM_{10}, as abbreviations for particulate matter. These pollutants are emissions from fossil fuels in power plants, construction activities, vehicles or industry, etc. (United States Environmental Protection Agency).

Previous literature has analysed how air pollutants are spatially distributed in cities worldwide in 2005, including nitrogen oxides, non-methane volatile organic compounds, carbon monoxide and sulphur dioxide (Sarzynski 2012). Other studies examine the effect of these pollutants on the health of urban citizens in various social sectors (O'Neill et al. 2003), yet an empirical study of the relationship between these pollutants and CSP at city level has hardly been specified. In this thesis, we followed Jo, Kim and Park (2015) and Ding et al. (2014) in exploring how urban air pollution affects Corporate Social Performance. Combining the two datasets Euro Monitor Passport and WHO air pollution data, we produced a unique database comprising 4 main pollutants at city level: $PM_{2.5}$, PM_{10}, SO_2 and NO_2.

$PM_{2.5}$ and PM_{10} as the abbreviation of particular matter, which is a mixture of small particles released into the air. PM_{10} belongs to "Inhalable coarse particles" group, which is larger than 2.5 but smaller than 10 micrometers in diameter and found in roads and dusty industry. PM2.5 belongs to "Fine particles," which is 2.5 micrometers in diameter and smaller, found in smoke, gases released by forest fires, industry and automobiles. (United States Environmental Protection Agency).

SO_2: Sulphur dioxide, is emissions from fossil fuels in power plants and other industrial facilities. High concentrations of this pollutant are linked to high adverse effects on respiratory systems.

NO_2: Nitrogen dioxide, is emissions from fossil fuels in power plants and other industrial facilities.

Urban competitiveness:

Previous studies have focused on a composite index calculated from multiple indicators (Y Jiang & Shen 2010; Peter Kresl & Singh 2012; Ni, Kresl & Li 2014) or investigating urban amenities and smart cities (Glaeser, Kolko & Saiz 2001; Vanolo 2008). However, this thesis will analyse only the core economic competency to highlight the impact of economic performance. Urban competitiveness is calculated by using the natural logarithm of GDP per capita. This is consistent with definition of urban competitiveness in the World Economic Forum (2009) and Sinkiene (2009).

4.2.3 Moderator variable

City size

Previous studies examining the mechanism between external environments and environmental behaviours often focus on population density to represent stakeholder pressure and neglect the factor of city size (G Grossman & Krueger 1995a; Kassinis & Vafeas 2006). Total population is among the most important and popular classification types of cities: global cities, megacities,

metrocities, etc. Therefore, this thesis will examine whether this important city attribute could mobilise environmental performance in corporations headquartered inside such cities. We chose the natural logarithm of total city population so as to examine factors that affect Corporate Social Performance.

4.2.4 Controlled variables

National level controlled variables

Corruption perception index (or CPI): this composite score measures how corrupt citizens perceive the public sector to be.

Rule of law: We chose rule of law as our institutional variable at country level from the six dimensions of country governance quality in World Bank data: 1) voice and accountability; (2) political stability and absence of violence; (3) government effectiveness; (4) regulatory quality; (5) rule of law; and (6) control of corruption. This is based on Kaufmann, Kraay and Mastruzzi (2006) analysis measuring governance quality which differs from one country to another. Other applications from this dataset include Slangen and Beugelsdijk (2010) study when measuring institutional hazard on foreign activities in multinational corporations. The reason why we only select rule of law as the national institution factor is to avoid multicollinearity among these determinants and to highlight the impacts of embedded rules.

Firm-level controlled variables

We used firm size and firm performance to measure firm-level controlled variables.

Total asset: Total asset includes the natural logarithm of total accounting values, which equals the sum of a stockholder's equity and liabilities.

Return on Shareholder: A measure of the overall profitability of firms by dividing net income after tax and interest into average shareholder equity.

Profit margin: Profit margin refers to actual performance of the company, measured by percentage of the difference between total revenues and cost.

Current ratio: Current ratio refers to the ability to pay short term and long term obligations, measured by total asset over total liabilities.

Table 2. Summary of variables

Variable	Name	
Dependent variables	Aggregate CSP: Aggregate Corporate Social Performance	
	Industry adjusted CSP: Industry adjusted Corporate Social Performance	
Independent variables	H1: Air pollution	PM 2.5: Particular Matter 2.5, measured by $\mu g/m^3$
		PM10: Particular Matter 10, measured by $\mu g/m^3$
		SO_2: Sulphur dioxide, measured by $\mu g/m^3$
		NO_2: Nitrogen dioxide, measured by $\mu g/m^3$
	H2: Urban competitiveness	Ln (City GDP per capita)
	H3: City size	Ln (City Population)
Moderator variable	H4: City size*Air pollution	Ln (City Population) *PM2.5 Ln (City Population) *PM10 Ln (City Population) *SO_2 Ln (City Population) *NO_2
Control variables	Firm-level	Total Asset, Returns on Shareholders, Profit margin, and Current Ratio
	Country-level	CPI, Rule of law

4.3 Data Analysis

Panel method

Panel analysis refers to investigating changes in entities across time, which accounts for individual heterogeneity. Panel data comprises three dimensions: dependent variables (unit), independent variables and time *t*. There are two main types of panel regression, including fixed effects and random effects. My panel regressions use fixed effects in order to control for time-invariant unobserved heterogeneity on the industry at firm level

Proposed model

Model 1, using fixed effects

$$Aggregate\ CSP = f\begin{pmatrix} Air\ pollution\ time, urban\ competitiveness, city\ size, interaction\ effect, time, \\ controlled\ firm-level\ and\ country-level\ variables, \varepsilon \end{pmatrix}$$

Model 2, using random effects:

$$Industry\ adjusted\ CSP = f\begin{pmatrix} Air\ pollution, urban\ competitiveness, city\ size, interaction\ effect, time, \\ industry\ dummy, controlled\ firm-level\ and\ country \\ -level\ variables, \varepsilon \end{pmatrix}$$

***Lagged effects of independent variables**

In this thesis, we will lag the effect of independent variables to 1 year backwards. This is because the effect of the air pollution, urban competitiveness, and city size on CSP are expected to evolve over time, and not occur as one single episode. The process could be described as follows; initially, the level of air pollution is considerably salient in the city, which may motivate the municipal government to set environmental regulations and advocate to actors involved, especially with MNEs (Bansal & Roth 2000). Citizens grow more aware of this issue through media and through the impact of the environmental degradation on their health and daily lives. These pressures evolve over time, thus MNEs hardly neglect them, especially in the case of MNEs which have strong legal

affairs and marketing departments, because these actors are more keenly focused on customer demands and industry practices of management (Delmas & Toffel 2008). Subsequently, CSP evolves over time. The high environmental commitment of firms operating in a city creates mimetic pressures for other firms (Bansal 2005). Over time, MNEs grow more interconnected with the organisational field, due to advances in technology and globalisation and professionalisation, and the boundaries start to blur (Bansal 2005; Jennings & Zandbergen 1995; WR Scott & Meyer 1991). Therefore, the mimetic pressures begin diffusing, which provides an incentive for MNEs to integrate and increase CSP.

To summarise, air pollution may become a salient issue which affects different stakeholders such as citizens, governments, and media in the city, and evoke influences on sub-institutional pressures, as well as affect the competitive strategies of MNEs located in the city. These influences motivate corporations to increase their CSP. However, as this requires time for corporations to plan and implement, the increase in CSP may be more obvious after a period of time.

CHAPTER 5

DESCRIPTIVE STATISTICS

Table 3 reports means, standard deviations, and minimum and maximum values of important variables in the study. There were 1067 companies clustered in 176 cities and 63 countries in the data. The average value of the Corporate Social Performance (CSP) scores was 0.38 (standard deviation: 0.29). The table also includes individual CSP indicators. The highest firm total assets were 237 billion dollars, and the highest recorded pollutant is PM_{10} with 291.3 $\mu g/m^3$.

Table 3. Descriptive statistics

Variable	Obs[a]	N[b]	Mean	S.D.[c]	Min	Max
1.Aggregate CSP	5635	1067	0.38	0.29	0	1
2.Environmental training	5635	1067	0.53	0.48	0	1
3. Environmental management team	5635	1067	0.50	0.50	0	1
4. Climate change awareness	5635	1067	0.38	0.48	0	1
5. Product innovation policy	5635	1067	0.50	0.50	0	1
6. Environmental management system	5635	1067	0.60	0.48	0	1
7. Environmental initiatives	5635	1067	0.21	0.41	0	1
8. Clean technology	5635	1067	0.13	0.34	0	1
9. Environmental products	5635	1067	0.33	0.47	0	1
10.Environmental partnerships	5635	1067	0.45	0.50	0	1
11. Emission trading	5635	1067	0.15	0.36	0	1
12. Total asset (million dollars)	5598	1065	$13.6*10^4$	$22.9*10^3$	25	$2.37*10^5$
13. Number of employees	4065	801	33,184	49,104	11	472,500
14. Net income (million dollars)	5599	1065	593	1491	-803	$2.36*10^4$
15. $PM_{2.5}$ ($\mu g/m^3$)	535	156	15.46	10.75	3.30	150.10
16. PM_{10} ($\mu g/m^3$)	454	137	39.75	32.92	9.10	291.30
17.SO_2 ($\mu g/m^3$)	370	65	7.24	8.00	0.10	61.40
18.NO_2 ($\mu g/m^3$)	382	69	38.81	14.83	1.40	105.00
19. City GDP	4414	77	647994	541634	15493.03	1481638
20. City population	4649	77	$1.56*10^7$	$1.33*10^7$	439213	$3.57*10^7$

Note: [a] Firm-Year Observations (items 1.-14) and City-Year Observations (items 15.-20.);
[b] N stands for the number of companies (items 1.-14) and for the number of cities (items 15.-20); [c] Standard Deviations

Table 4 Levels of pollution in cities from different regions

Region	PM2.5 (ug/m^3)		PM10 (ug/m^3)		SO_2 (ug/m^3)		NO_2 (ug/m^3)	
	Mean	**Std. dev**	**Mean**	**Std. dev**	**Mean**	**Std. dev**	**Mean**	**Std. dev**
Western Europe	17.23	11.50	27.61	7.86	3.82	2.44	41.78	9.74
Eastern Europe	24.46	6.22	40.21	12.64	8.07	4.22	34.83	3.60
North America	11.09	2.95	14.92	3.72	5.09	2.94	23.80	6.73
Central and South America	30.63	10.03	46.49	20.51	11.89	7.78	29.66	13.31
North Asia	27.12	13.62	60.34	34.34	23.09	17.50	46.71	13.38
South Asia	42.43	12.75	172.00	70.24	22.93	10.85	47.06	17.89
South East Asia	22.78	4.65	47.19	7.42	9.28	3.74	43.37	13.54
Middle East	93.43	0.00	100.58	51.96	5.91	2.10	74.00	33.66
Oceania	6.53	1.33	17.08	3.18	1.60	1.64	14.27	13.82
Africa	18.41	10.67	95.33	52.61	27.87	14.81	55.37	29.41
AVERAGE ON TOTAL	**15.61**	**10.56**	**43.57**	**35.90**	**9.44**	**11.76**	**40.12**	**16.49**

Table 4 presents the level of pollution in different cities from 10 different regions in the world over years and summarises CSP scores in cities across 10 regions over years. Pollutants are measured by $\mu g/m^3$, and CSP scores is measured by the number of companies engaged in CSP. The summary showed that cities in Australia and New Zealand are the cleanest areas in the world. The amount of $PM_{2.5}$, PM_{10}, SO_2 and NO_2 only accounted for 42%, 39%, 17% and 36% of the total average value. North American cities also achieved a pollution level considerably below the total average, ranking second in the category of least polluted cities. According to the results, cities in Eastern Europe were more polluted than the Western Europe, yet still maintaining their atmosphere within the WHO's standard. Asian cities, on the other hand, attained the highest recorded pollution level of all time. South Asian cities including Bangalore, Mumbai are well-known for being the most polluted cities on this planet. Within three years, the values for PM_{10} in Bangalore (India) rose significantly from $173.50ug/m^3$ to $248.70ug/m^3$, exceeding more than 12 times the WHO's

recommended level of pollution. Another rising level of pollution was found in Middle East cities. In particular, in 2012, Doha's (Qatar) air pollution surprisingly soared to 93.43ug/m^3 in $PM_{2.5}$ and 167.43ug/m^3 in PM_{10} (which increased the average level of pollution there to 100.58ug/m^3), becoming the second worst polluted city in the world. Among the polluted regions ,Chinese cities could not be neglected, where the SO_2 level was found to be the highest when it reached 61.4ug/m^3 in Wuhan, in 2003 and 61ug/m^3 in Shanghai, in 2010. Different pollution features partly reveal a city's distinctive characteristics. A high amount of SO_2, NO_2 or $PM_{2.5}$ is often associated with large industrial combustion and vehicle emissions, particularly with SO_2 and NO_2 usually being released into the atmosphere from coal-burning fuel plants. PM_{10} comes from construction activities, industrial processes and vehicle emissions. High records of PM_{10} in Beijing and Bangalore or Doha implies rising construction activities in these cities, which may be shown through emerging skyscrapers in recent times. The results indicate that cities from more developed regions were less polluted than cities from poor and developing regions, and pollution in the latter areas displayed no signs of a downward trend.

Figure 3 describes Corporate Social Performance (CSP) across different firm sizes which were categorised by the number of employees. Since our data contains large firm sizes, we decided not to follow company size classification by popular OECD or US standards. As the firm grows larger in size, CSP scores tend to be higher. Further, similar trends were also found in CSP growth: (1) The data reveals that CSP increases in the course of time. (2) In the 2005-2006 period, there were

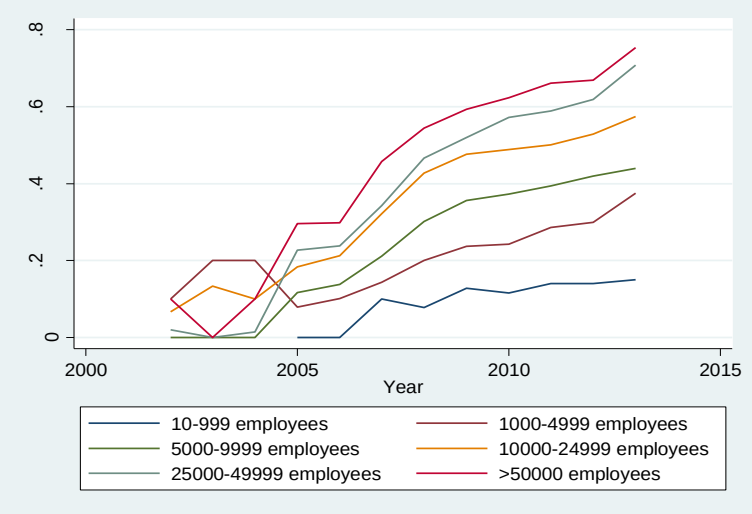

Figure 3 Corporate Social Performance in different firm sizes over years

plateau trends in firms with more than 25000 employees, while smaller sized firms still increased slightly over the same time.

Figure 4 graphed aggregate corporate social performance (CSP) scores across the cities over the 2002-2013 period, divided into ten regions encompassing Western Europe, Eastern Europe, North America, South America, North Asia, South Asia, South East Asia, Middle Eastern Asia, Africa and Oceania. Overall, the distinction in trends and patterns revealed that different cities adhere differently to CSR policy. There had been an upward trend in CSP scores in cities from Western Europe, North America and North Asia. The most prevalent development was seen in Western European cities. Reaching 0.61 in 2013, cities became the leading region with highest CSP scores across cities in the world. North American cities, although continuously growing, only achieved a modest performance compared to other regions, climbing from 0.05 to 0.38 in 12 years. Another region having an upward trend was North Asia, with the CSP score notably jumping from 0.48 to 0.58 within the last two years. In spite of having a clean environment, cities in Australia and New

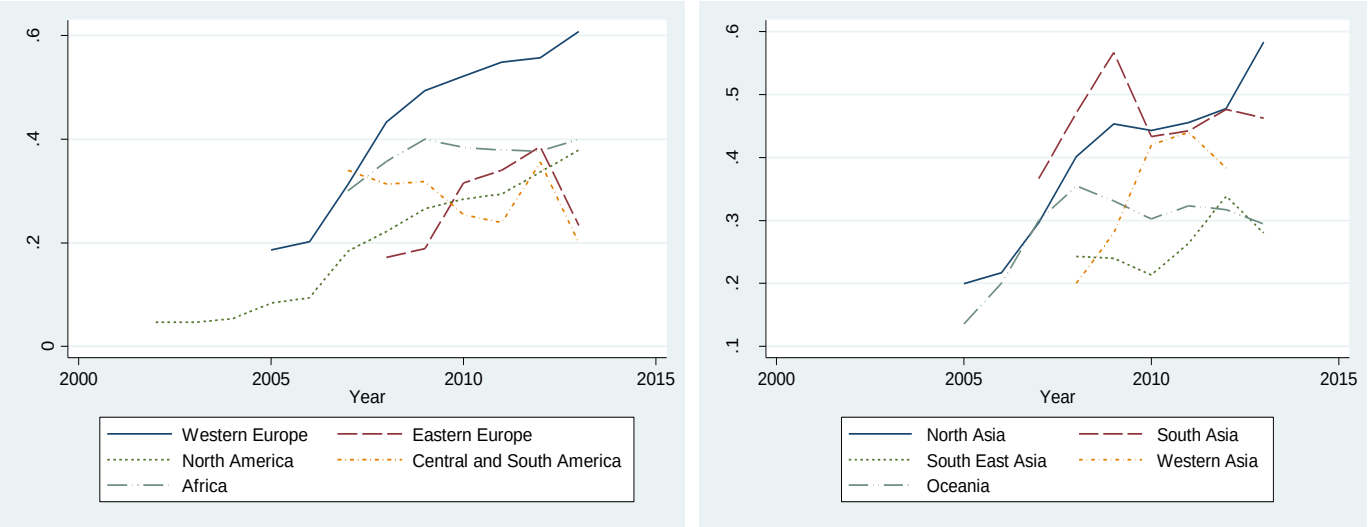

Figure 4. Corporate Social Performance across cities over years

Zealand reported a low commitment CSP score, only affirming around 3 out of ten indicators. This bears resemblance to cities in North America. Interestingly, despite a significant growth rate from 0.37 to 0.57 at the beginning of the period, CSP scores in South Asian cities fluctuated more wildly by plummeting to 0.43 and slightly increasing to 0.46 at the end of the period. A rising score was also seen in Middle Eastern cities, which nearly doubled their CSP values from 0.2 in 2007 to 0.38 in 2012. These contrasting results apparently reveal several noticeable trends. First, the relatively low CSPs in North American cities are contrary to the initial expectation, especially as the US has implemented the Clean Air Act since 1970 and Canada is a hotbed of CSR. The explanation could be that CSP in America is unevenly distributed among cities, which partially confirms the argument that the commitments to the environment may be different within a country. Second, the 2009-2010 period saw a decrease in CSP in many cities including those in South America, Africa, and Asia (except Middle East cities). Nevertheless, there were signs of recovery in cities in Asia and Oceania after 2011, while no sign was found in the remaining regions. This could suggest that those firms located in these cities could have been affected by the economic downturns in 2008-2009 thus were less likely to engage in environmental policy. It could also reveal a fact

that CSP may have become an indispensable component in these European and North American cities, thus their environmental commitment is more stable.

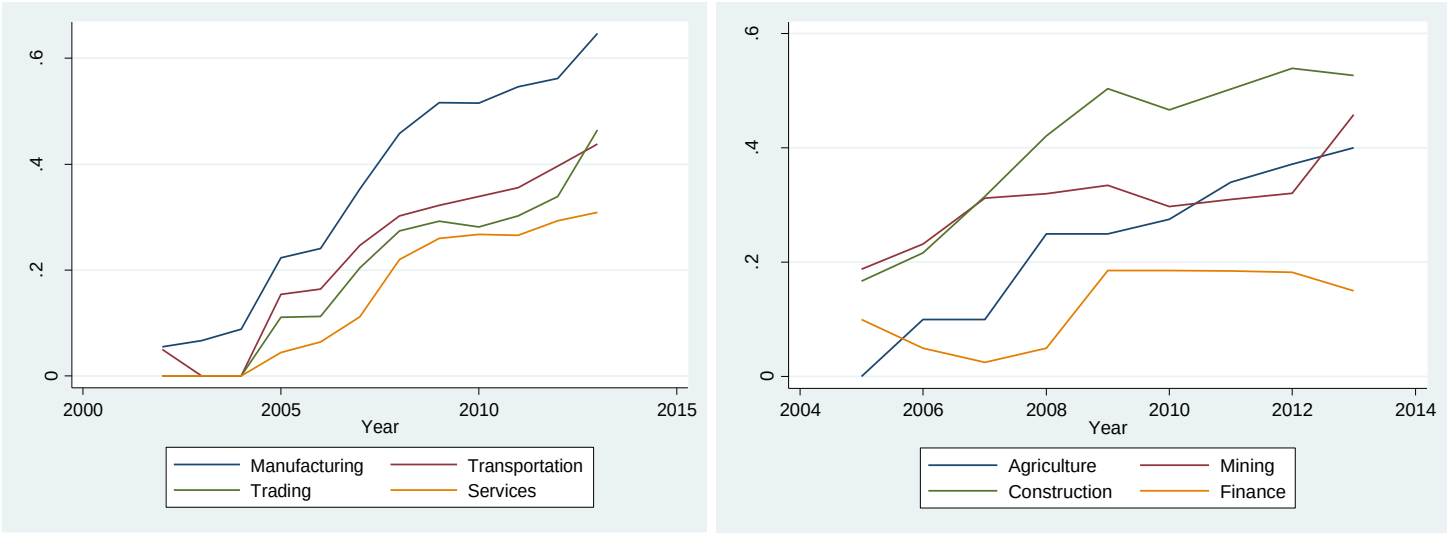

Figure 5. Corporate Social Performance across industries over years

Figure 5 summarises CSP across 8 different industries in the course of time. Manufacturing and construction achieved highest CSP, with its score never going lower than 0.4 since 2008. 2013 witnessed a subtle change in the pattern of these two industries, as manufacturing climbed to over 0.6 while construction hovered around 0.5. Finance and services attained the lowest CSP. Interestingly, trading has become increasingly linked to environmental commitment; despite some fluctuations, CSP score in this industry increased considerably, especially at the end of the period. This could be attributed to customer concerns about the environment recently, urging retailers and wholesalers to advocate environmental engagement to satisfy their stakeholders and achieve competitive advantage over their rivals.

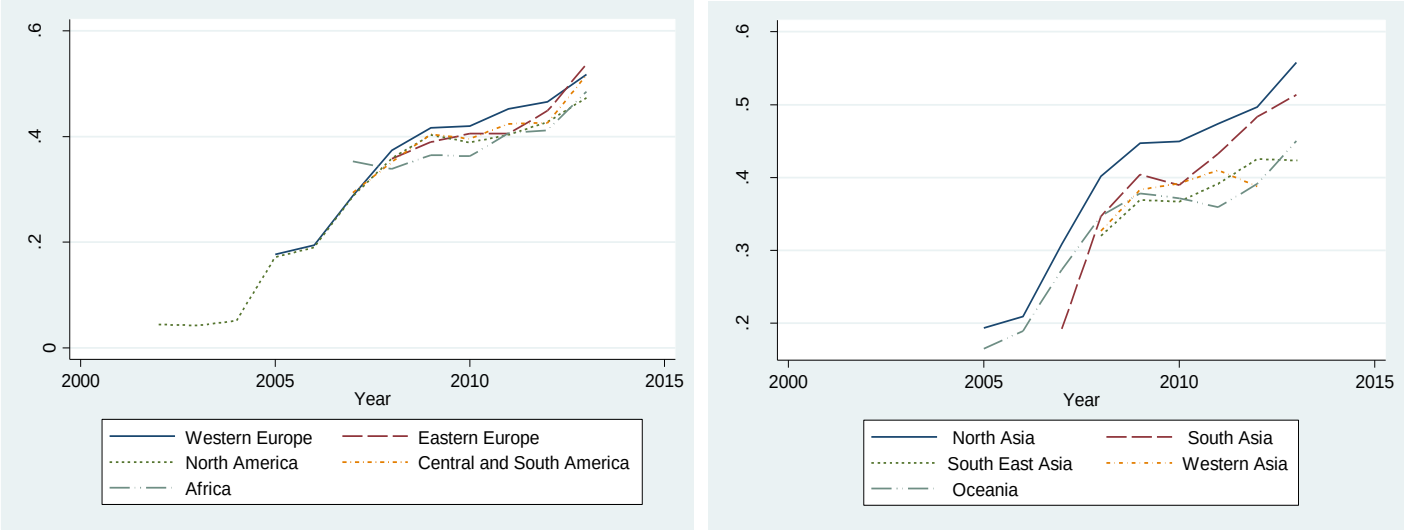

Figure 6. Industry-related Corporate Social Performance across cities over years

Figure 6 discussed standardized CSP patterns in different cities over time. Generally, industry adjusted CSP tends to increase over years and industry adjusted CSP differs across cities, although CSP score is becoming more similar by converging their values at the end of the period. CSP in Western Europe consistently ranked in the top places in comparison with CSP from Eastern Europes or North America. While the Western cities observed a steady growth in industry adjusted CSP, in their Asian counterparts, industry adjusted CSP more rapidly increased in the course of time.

Figure 7 describes the relationship between aggregate CSP and PM_{10} using simple linear regression. PM_{10} and $PM_{2.5}$ are most widely used to understand pollution in different cities, however, as there is not sufficient data on $PM_{2.5}$, PM_{10} is chosen. Generally, the relationship between aggregate CSP and PM_{10} varies depending on regions. Interestingly, cities in Western Europe displayed a negative relationship between CSP and PM_{10} while cities in Eastern Europe displayed a positive relationship. In Asia, CSP from South Asian cities is positively related to PM_{10} while CSP is negatively related to PM_{10} in remaining cities from North Asia, South East Asia or

Western Asia. From this descriptive graph, we can conclude the relationship between PM_{10} and CSP varies depending on the city where firms are headquartered

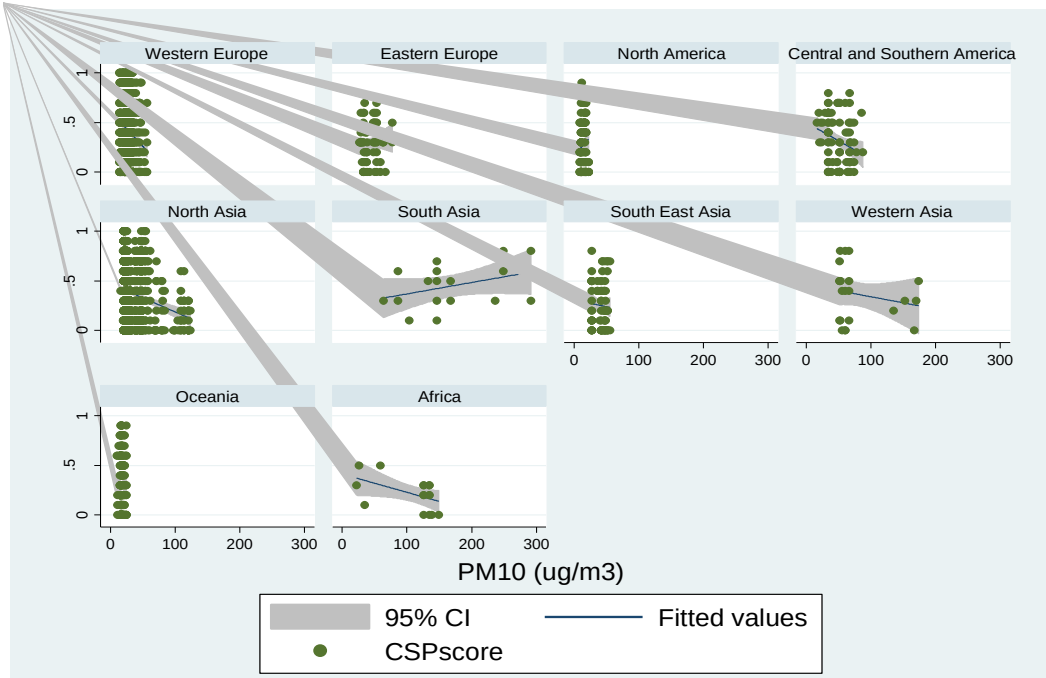

Figure 7. Relationship between PM10 and Corporate Social Performance (Aggregate) across cities over years

In summary, two main implications are observed from descriptive statistics: First, CSP varies across cities and across industries. Second, the relationship between pollution and CSP varies according to geographical location. Therefore, this suggests further exploration into the relationship between city attributes and CSP, which will be discovered in the panel regression analyses in the next section.

CHAPTER 6

RESULTS

Table 5 presents correlations of the dependent, independent, and control variables. At the company level, total assets appeared to be most highly and positively related with CSP score, particularly with aggregate CSP ($r_{\text{Total Asset}} = 0.50$, $p < 0.01$). At the city level**,** SO_2 and PM10 were negatively related to aggregate CSP, while displaying no significant relationship with industry adjusted CSP. The correlation index for SO_2 apparently was higher than that for PM10 ($r_{SO2} = -0.12$, $p < 0.01$; $r_{PM10} = -0.09$, $p < 0.01$). PM2.5 and NO_2, however, displayed positive relationships with aggregate CSP ($r_{PM2.5} = 0.13$, $p < 0.01$; $r_{NO2} = 0.05$, $p < 0.01$). With respect to industry adjusted CSP, a consistent positive relationship was found between PM2.5 and this dependent variable ($r_{PM2.5} = 0.18$, $p < 0.01$), while NO_2 was negatively related to industry adjusted CSP ($r_{NO2} = -0.11$, $p < 0.01$). Variations in relationships between different pollutants and CSP may implicitly confirm the fact that different cities have different pollution patterns, and companies located in cities adhere to different CSP policies for environmental concerns. At the country level**,** corruption perception index (CPI) showed a positive relationship with both aggregate and industry adjusted CSP, with a high impact on industry adjusted CSP ($r_{CPI} = 0.35$, $p < 0.01$). Overall, no correlation was higher than 0.8, suggesting no multicollinearity among variables.

Tables 6, 7, 8 and 9 show findings in aggregate CSP and industry adjusted CSP. Tables 6 and 7 report the results of the panel fixed-effects regression examining the influences of urban air pollution, urban competitiveness and city size on aggregate CSP. Each table is structured as follows: the first model excluded the main effects, the consecutive four models separately investigated four pollutants, and the final model combined all four pollutants. Firm-level

Table 5 Correlations among variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	**Aggregate CSP**	1.00													
2	**Industry adjusted CSP**	0.50***	1.00												
3	**PM2.5**	0.13***	0.18 ***	1.00											
4	**PM10**	-0.09***	0.02	0.27 ***	1.00										
5	**SO_2**	-0.12***	-0.01	0.30 ***	0.68 ***	1.00									
6	**NO_2**	0.05***	-0.11 ***	0.23 ***	0.37 ***	0.39***	1.00								
7	**City GDP per capita[a]**	0.09***	-0.05 ***	0.36 ***	-0.01	-0.08***	0.37***	1.00							
8	**City Population[a]**	0.05***	0.04 ***	0.57 ***	0.21 ***	0.43***	0.27***	0.63 ***	1.00						
9	**Total Asset[a]**	0.50***	0.10 ***	0.21 ***	0.08 ***	0.10***	0.24***	0.18 ***	0.16***	1.00					
10	**Return on Shareholder[a]**	-0.09***	-0.15 ***	-0.10 ***	0.08 ***	-0.03	0.16***	-0.02	-0.18***	-0.09***	1.00				
11	**Profit Margin**	-0.14***	-0.13 ***	-0.06 ***	0.12 ***	0.03**	0.06***	-0.05 ***	-0.07***	-0.06***	0.43***	1.00			
12	**Current Ratio**	-0.10***	-0.01 ***	-0.09 ***	-0.04 ***	-0.05	-0.14***	-0.08 ***	-0.04***	-0.23***	-0.06***	0.22***	1.00		
13	**CPI**	0.19***	0.35 ***	0.01	-0.13 ***	-0.16	-0.24***	-0.03 **	-0.00	-0.01	-0.09***	-0.04***	0.05***	1.00	
14	**Rule of Law**	0.04***	-0.13 ***	-0.44 ***	-0.66 ***	-0.71	-0.35***	-0.03 **	-0.47***	-0.07***	-0.03**	-0.09***	0.06***	0.11***	1.00

[a]: Natural logarithm

***: p-value < 0.01; **: p-value <0.05; * p-value<0.1.

controlled variables included total assets, return on shareholders, profit margin, and current ratio. Nation-level controlled variables included the corruption perception index (CPI) and rule of law.

Table 6 Results of Panel regression on Aggregate CSP using fixed effects, with lagged independent variables and no interaction

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Control effects						
L. City Population[a]	0.0445	-0.787*	0.0755	0.293	0.316	-1.481***
	(0.337)	(0.476)	(0.394)	(0.344)	(0.342)	(0.539)
L. City GDP percapita[a]	-0.130	-4.395*	0.00282	2.000	1.551	-1.591
	(2.072)	(2.443)	(2.184)	(2.383)	(2.171)	(2.423)
L. Total Asset[a]	0.00544	0.0230	0.0233	0.00673	0.0108	0.0542***
	(0.0159)	(0.0197)	(0.0171)	(0.0157)	(0.0154)	(0.0205)
L. Return on Shareholder[a]	-0.000829	-0.00296	-0.00234	0.00198	0.00100	-0.000843
	(0.00536)	(0.00641)	(0.00560)	(0.00533)	(0.00511)	(0.00703)
L. Profit Margin	0.000935	0.000872	0.000650	0.000611	0.000642	-3.08e-05
	(0.000679)	(0.000762)	(0.000831)	(0.000677)	(0.000665)	(0.000920)
L. Current Ratio	0.00134	0.00328	0.00256	0.00126	0.00127	0.00938*
	(0.00250)	(0.00271)	(0.00580)	(0.00256)	(0.00253)	(0.00537)
L. CPI	-0.000483	-0.000545	-0.000630	-0.000492	-0.00113	-0.000909
	(0.000740)	(0.00110)	(0.00113)	(0.00120)	(0.00113)	(0.00108)
L. Rule of Law	-0.0162	-0.0205	0.00107	-0.0160	0.000740	0.130
	(0.0798)	(0.0871)	(0.0884)	(0.0884)	(0.0826)	(0.110)
Year	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Main effects						
L.PM2.5		-0.000787				-0.000812
		(0.000560)				(0.000557)
L.PM10			0.00206			0.00134
			(0.00145)			(0.00151)
L.SO_2				-0.00712*		-0.00922**
				(0.00395)		(0.00468)
L.NO_2					-0.00203	-0.00464**
					(0.00130)	(0.00187)
Constant	-0.612	15.53*	-1.109	-6.221	-5.923	24.05***
	(5.719)	(7.968)	(6.913)	(5.935)	(5.976)	(8.803)
Observations	3,414	2,310	2,910	3,140	3,255	1,713
R-squared (within)	0.596	0.596	0.598	0.595	0.595	0.618
Number of companies	607	553	538	577	582	477

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
[a:] natural logarithm

6.1 Control variables

Country-level variables: CPI displays a significant and negative relationship in the model regressed model 9,11 and 12 (Model 9: β_{PM10}= -0.002; p-value<0.1; Model 11: β= -0.002; p-value<0.1; Model 12: β= -0.002; p-value<0.1). As the perception of corruption increases 1 point, aggregate CSP decreases by approximately 0.002 in model 9,11 and 12. The Rule of Law displays

a significant positive relationship with industry adjusted CSP when excluding pollutants or regressing with PM2.5 and PM10, in which the highest belongs to PM10, either in a no-interaction model (Model 15: β= 0.259; p-value<0.1) or in an interaction model (Model 21: β= 0.238; p-value<0.1). This suggests that Rule of Law has influence on CSP in the case of these pollutants.

Firm-level variables: The results show that firm size and firm performance played important roles in determining environmental CSP, particularly industry adjusted CSP. Particularly, while finding a non-significant relationship for each individual pollutant with aggregate CSP, total assets and firm return on shareholders consistently showed a significant and positive relationship in most of the models regressed with industry adjusted CSP in tables 6 and 7.

6.2 Hypothesis 1: Urban air pollution and CSP

Tables 6 and 7 report the results of regression on aggregate CSP, excluding and including the interaction effect, respectively. Among the four pollutants being separately examined, only SO_2 had a negative and significant effect on aggregate CSP (Model 4: β_{SO2} = -0.007; p-value <0.1). In model 6 (which combined all four pollutants excluding an interaction effect with city size), the relationship for SO_2 and NO_2 remained statistically significant with CSP in this model (p-value <0.01). However, the economic significance in the two models is relatively low. In this model 6, it only accounts for β = -0.009 for SO_2, which means as SO_2 increased 1 μg/m^3, aggregate CSP decreased 0.009 point. This result was less prevalent for NO_2; with β = -0.005, the CSP score decreased 0.004 as NO_2 increased 1 μg/m^3. The results for urban air pollution weakly confirmed hypothesis 1, which had predicted earlier that environmental issues were negatively related to aggregate CSP. However, when entering four interactions into one model (model 6) suggests stronger support for hypothesis 1 given the negative and significant coefficients for SO_2 and NO_2.

Table 7 Results of Panel regression on Aggregate CSP using fixed effects, with lagged independent variables and including interactions

VARIABLES	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Control variables						
L. City Population[a]	0.0445	-0.777	-0.165	-0.147	-0.179	-1.569***
	(0.337)	(0.475)	(0.407)	(0.383)	(0.384)	(0.538)
L. City GDP per capita[a]	-0.130	-4.620*	-1.685	0.291	-1.080	-0.806
	(2.072)	(2.446)	(2.173)	(2.213)	(2.083)	(2.318)
L. Total Asset[a]	0.00544	0.0230	0.0224	0.00510	0.0113	0.0538***
	(0.0159)	(0.0196)	(0.0173)	(0.0160)	(0.0158)	(0.0205)
L. Return on Shareholder[a]	-0.000829	-0.00300	-0.00287	0.00148	0.000397	-0.00117
	(0.00536)	(0.00640)	(0.00560)	(0.00533)	(0.00513)	(0.00706)
L. Profit Margin	0.000935	0.000859	0.000710	0.000650	0.000744	-1.48e-05
	(0.000679)	(0.000758)	(0.000835)	(0.000675)	(0.000660)	(0.000919)
L. Current Ratio	0.00134	0.00329	0.00348	0.00148	0.00173	0.00938*
	(0.00250)	(0.00270)	(0.00591)	(0.00272)	(0.00266)	(0.00543)
L.CPI	-0.000483	-0.000855	-0.00195*	-0.00101	-0.00229**	-0.00230**
	(0.000740)	(0.00114)	(0.00113)	(0.00116)	(0.00116)	(0.00113)
L. Rule of Law	-0.0162	-0.0119	-0.0127	-0.0102	0.00983	0.134
	(0.0798)	(0.0893)	(0.0862)	(0.0847)	(0.0794)	(0.112)
Year	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Main effects						
L.PM2.5		-0.0152				-0.00905
		(0.0105)				(0.0109)
L.PM10			-0.0404**			0.0137
			(0.0159)			(0.0264)
L.SO_2				-0.158***		-0.128
				(0.0485)		(0.105)
L.NO_2					-0.0497***	-0.0365
					(0.0151)	(0.0292)
Interactions						
L. PM2.5*L. City Population[a]		0.000978				0.000566
		(0.000693)				(0.000726)
L. PM10*L. City Population[a]			0.00265***			-0.000765
			(0.00101)			(0.00168)
L.SO_2 * L. City Population[a]				0.00952***		0.00760
				(0.00310)		(0.00680)
L.NO_2* L. City Population[a]					0.00303***	0.00210
					(0.000976)	(0.00194)
Constant	-0.612	15.51*	4.173	2.260	3.762	25.13***
	(5.719)	(7.961)	(7.196)	(6.524)	(6.683)	(8.865)
Observations	3,414	2,310	2,910	3,140	3,255	1,713
R-squared (within)	0.596	0.596	0.601	0.600	0.599	0.620
Number of companies	607	553	538	577	582	477

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
[a:] natural logarithm

With respect to industry adjusted CSP, in model 18, PM2.5 and SO_2 were negatively related with the industry adjusted CSP, similar to the model on aggregate CSP, which has incorporated the interaction with city population (Model 18: $\beta_{PM2.5}$ = -0.006, p-value <0.01; β_{SO2} = -0.03, p-value<0.1). Apparently, SO_2 displayed a significant and negative relationship with both aggregate CSP and industry adjusted CSP, but with higher magnitude with industry adjusted CSP, suggesting that the emission of SO_2 in cities tends to have more weight and impact on environmental management in the industries located in those cities. Moreover, in the model 15 that examined PM10, no industry except mining had a statistically significant relationship with environmental performance. This implies that PM10 is more likely to determine industry adjusted CSP in comparison to other indicators, irrespective of the industry. Similar to aggregate CSP, when industry adjusted CSP was incorporated with the interaction terms between pollution and city size, the main effects' coefficient increased considerably. In particular, in Model 22, SO_2 grew to -0.627. Additionally, this result is higher than the coefficient in a similar model (Model 10: β_{SO2} = -0.158; p-value< 0.01). Interestingly, in model 10, PM10 and NO_2 showed a contrasting influence with industry adjusted CSP. The positive relationship refers to the fact that industry adjusted CSP increased as PM10 increased.

6.3 Hypothesis 2: Urban competitiveness

With respect to aggregate CSP, urban competitiveness, measured by GDP per capita, was significant and negative in the model regressing PM2.5 (Model 2: excluding interaction: β = -4.395; p-value <0.1; Model 8 including interaction β = -4.620; p-value <0.1). This means that as GDP per capita increases 1%, the aggregate CSP score decreases 0.046.

In contrast, *with respect to industry adjusted CSP*, GDP per capita was found to be positively related to the dependent variable (excluding interaction: Model 15: β_{PM10} = 5.296, p-value <0.1;

Model 17: β_{NO2} = 5.429, p-value <0.1). This means that when GDP per capita increases 1%, industry adjusted CSP increases 0.05 points. However, combining all pollutants together, GDP per capita was not significant (model 18). In the table 9 that included interaction with industry adjusted CSP, GDP per capita was intensified by 0.06-0.07 points when GDP per capita increased 1% (Model 21: β_{PM10} = 6.150, p-value <0.1; Model 22: β_{SO2} = 7.010, p-value <0.1 Model 23: β_{NO2} = 6.725, p-value <0.1). Therefore, we reject hypothesis 2 due to these contradictory results and low significance level.

6.4 Hypothesis 3: City size and CSP

City size, however, consistently remained negative and displayed a significant relationship in the combined model using *aggregate CSP* (Model 6: β = -1.481, p-value <0.01; Model 12: β = -1.569, p-value<0.01), while there was no relationship in the separate model. This also gives moderate support to our hypothesis 3, which proposed a negative relationship between CSP and city size. While hypothesis 3 suggested that city size (city population) was negatively related to CSP, the effect of city population was only prevalent in the mixed models of Tables 6 and 7 (Model 6: β = -1.481, p-value <0.01; Model 12: β = -1.569, p-value<0.01).

Meanwhile, city size remained negatively related to *industry adjusted CSP* in the models including interaction, excluding the model regressed with PM2.5. The highest impact was found in the mixed model (Model 24: β = -0.39, p-value <0.01). As coefficients in these models are not very consistent and significant, therefore, hypothesis 3 is rejected.

Table 8 Results of Panel regression on Industry adjusted CSP using random effects, with lagged independent variable and no interaction

VARIABLES	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
Industry						
Mining	0.0561	-0.00642	0.347***		0.201	
	(0.111)	(0.117)	(0.134)		(0.124)	
Construction	-0.269*	-0.269	-0.122	-0.313*	-0.150	-0.341*
	(0.157)	(0.167)	(0.165)	(0.172)	(0.166)	(0.202)
Manufacturing	-0.272***	-0.263***	-0.138	-0.310***	-0.143	-0.409***
	(0.0829)	(0.0856)	(0.0964)	(0.111)	(0.106)	(0.137)
Transportation	-0.305***	-0.374***	-0.173	-0.382***	-0.196*	-0.545***
	(0.0960)	(0.0984)	(0.107)	(0.126)	(0.112)	(0.150)
Trading	-0.303***	-0.359***	-0.147	-0.322**	-0.132	-0.535***
	(0.113)	(0.117)	(0.134)	(0.139)	(0.138)	(0.167)
Finance	0.300	0.0415	0.840	0.294	0.494	0.221
	(0.374)	(0.366)	(0.587)	(0.374)	(0.379)	(0.653)
Services	0.00228	-0.0776	0.202	-0.00696	0.164	-0.167
	(0.131)	(0.139)	(0.136)	(0.139)	(0.137)	(0.164)
Year	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Control variables						
L.City Population[a]	-0.0128	0.0256	-0.0796	-0.0631	-0.0787	-0.00687
	(0.0476)	(0.0516)	(0.0504)	(0.0587)	(0.0505)	(0.0699)
L.City GDP percapita[a]	2.574	-0.719	5.296*	5.173	5.429*	0.185
	(3.141)	(3.393)	(3.167)	(3.666)	(3.217)	(4.219)
L. Total Asset[a]	0.349***	0.383***	0.370***	0.363***	0.366***	0.411***
	(0.0275)	(0.0284)	(0.0264)	(0.0250)	(0.0249)	(0.0251)
L. Return on Shareholder[a]	0.0364*	0.0387*	0.0286	0.0426**	0.0369**	0.0479**
	(0.0187)	(0.0222)	(0.0194)	(0.0185)	(0.0180)	(0.0229)
L. Profit Margin	-0.00309	-0.00440**	-0.00479*	-0.00390*	-0.00368*	-0.00882***
	(0.00216)	(0.00219)	(0.00266)	(0.00219)	(0.00216)	(0.00267)
L. Current Ratio	0.000279	0.00361	0.0166	0.00250	0.00300	0.0326**
	(0.00574)	(0.00547)	(0.0172)	(0.00608)	(0.00613)	(0.0141)
L.CPI	-0.00208	-0.00685	-0.00460	-0.00316	-0.00461	-0.00423
	(0.00329)	(0.00497)	(0.00509)	(0.00539)	(0.00505)	(0.00561)
L. Rule of Law	0.231**	0.202*	0.259*	0.125	0.187	0.145
	(0.116)	(0.122)	(0.145)	(0.132)	(0.129)	(0.154)
Main effects						
L.PM2.5		-0.00556***				-0.00605***
		(0.00183)				(0.00188)
L.PM10			0.00468			0.00262
			(0.00463)			(0.00646)
L.SO_2				-0.0117		-0.0309*
				(0.0129)		(0.0166)
L.NO_2					0.00207	0.00182
					(0.00294)	(0.00368)
Constant	-7.454***	-5.359**	-8.971***	-8.606***	-8.880***	-5.958**
	(2.010)	(2.266)	(1.982)	(2.245)	(1.964)	(2.472)
Observations	3,410	2,306	2,910	3,140	3,255	1,713
R-Squared (overall)	0.322	0.341	0.332	0.330	0.334	0.365
Number of companies	607	553	538	577	582	477

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
[a:] natural logarithm

Table 9 Results of Panel regression on Industry adjusted CSP using random effects, with lagged independent variables and including interaction

VARIABLES	Model 19	Model 20	Model 21	Model 22	Model 23	Model 24
Industry						
Mining	0.0561	-0.00644	0.348**		-0.0471	
	(0.111)	(0.135)	(0.136)		(0.141)	
Construction	-0.269*	-0.269	-0.0932	-0.354**	-0.374**	-0.390*
	(0.157)	(0.173)	(0.169)	(0.172)	(0.180)	(0.204)
Manufacturing	-0.272***	-0.263***	-0.119	-0.373***	-0.371***	-0.462***
	(0.0829)	(0.0913)	(0.0995)	(0.111)	(0.126)	(0.139)
Transportation	-0.305***	-0.373***	-0.148	-0.425***	-0.429***	-0.596***
	(0.0960)	(0.110)	(0.110)	(0.126)	(0.135)	(0.150)
Trading	-0.303***	-0.359***	-0.120	-0.350**	-0.350**	-0.579***
	(0.113)	(0.123)	(0.137)	(0.140)	(0.153)	(0.166)
Finance	0.300	0.0416	0.858	0.228	0.244	0.175
	(0.374)	(0.372)	(0.580)	(0.358)	(0.365)	(0.667)
Services	0.00228	-0.0775	0.223	-0.0519	-0.0609	-0.207
	(0.131)	(0.145)	(0.138)	(0.138)	(0.154)	(0.164)
Year	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
L. City Population[a]	-0.0128	0.0252	-0.184*	-0.275***	-0.354***	-0.390**
	(0.0476)	(0.0817)	(0.0949)	(0.0832)	(0.116)	(0.194)
L. City GDP percapita[a]	2.574	-0.725	6.150*	7.010*	6.725**	0.228
	(3.141)	(3.509)	(3.240)	(3.707)	(3.272)	(4.649)
L. Total Asset[a]	0.349***	0.382***	0.371***	0.358***	0.369***	0.408***
	(0.0275)	(0.0285)	(0.0266)	(0.0254)	(0.0251)	(0.0253)
L. Return on Shareholder[a]	0.0364*	0.0387*	0.0273	0.0383**	0.0338*	0.0452**
	(0.0187)	(0.0222)	(0.0194)	(0.0182)	(0.0178)	(0.0228)
L. Profit Margin	-0.00309	-0.00439**	-0.00469*	-0.00357	-0.00345	-0.00839***
	(0.00216)	(0.00219)	(0.00267)	(0.00217)	(0.00216)	(0.00266)
L. Current Ratio	0.000279	0.00361	0.0181	0.00283	0.00382	0.0319**
	(0.00574)	(0.00548)	(0.0172)	(0.00633)	(0.00628)	(0.0140)
L.CPI	-0.00208	-0.00685	-0.00668	-0.00565	-0.00773	-0.00818
	(0.00329)	(0.00508)	(0.00486)	(0.00533)	(0.00508)	(0.00588)
L. Rule of Law	0.231**	0.202*	0.238*	0.149	0.176	0.188
	(0.116)	(0.123)	(0.144)	(0.133)	(0.127)	(0.157)
Main effects						
L.PM2.5		-0.00578				-0.0501
		(0.0289)				(0.0330)
L.PM10			-0.0564			0.158*
			(0.0456)			(0.0940)
L.SO_2				-0.627***		-0.378
				(0.145)		(0.321)
L.NO_2					-0.109***	-0.175**
					(0.0410)	(0.0787)
Interactions						
L. PM2.5*L. City Population		1.50e-05				0.00301
		(0.00190)				(0.00220)
L. PM10*L. City Population			0.00374			-0.00989
			(0.00284)			(0.00611)
L.SO_2 * L. City Population				0.0382***		0.0222
				(0.00912)		(0.0208)
L.NO_2* L. City Population					0.00689***	0.0115**
					(0.00258)	(0.00511)
Constant	-7.454***	-5.347**	-7.797***	-6.407***	-5.099**	0.120
	(2.010)	(2.221)	(2.109)	(2.235)	(2.443)	(4.354)
Observations	3,410	2,306	2,910	3,140	3,255	1,713
R-Squared (overall)	0.322	0.341	0.330	0.319	0.329	0.361
Number of companies	607	553	538	577	582	477

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
[a:] natural logarithm

6.5 Hypothesis 4: Interaction effects between urban air pollution and city size on CSP

Model 9,10, 11 in aggregate CSP and model 22, 23 and 24 in industry adjusted CSP consistently demonstrated moderate positive and significant relationship between the interaction (city size and air pollution) with dependent CSP, which lends support to our hypothesis 4. To gain further insight into the link between urban air pollution and CSP, we graphed the marginal interactive effects with city size for each pollutant that yielded significant results with aggregate CSP and industry adjusted CSP. We also calculated the interaction effects at the mean and one standard deviation above and below the mean of a city size's natural logarithm (Aiken, West & Reno 1991).

The results of the interaction plot consistently displayed two contrasting relationships between CSP and urban air pollution in large cities and small cities. When the pollution increased, corporations located in large cities enhanced their environmental performance, supporting hypothesis 4. Nevertheless, firms headquartered in smaller cities were less likely to engage in environmental policy as pollution increased. The degree to which companies embedded an environmental strategy also varied depending on pollutant types.

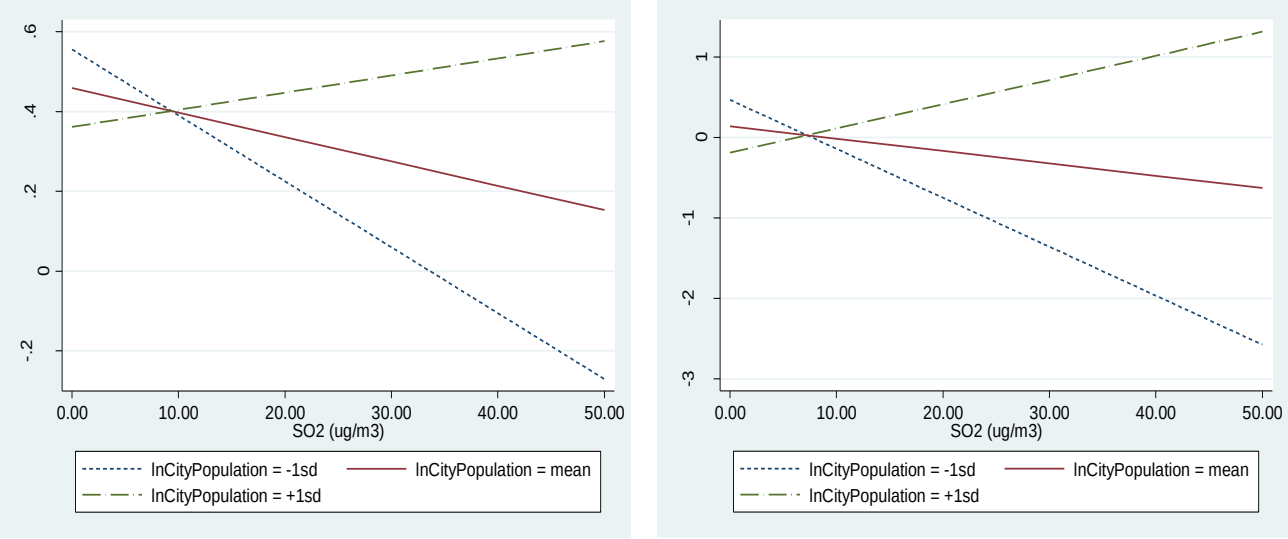

Figure 8. *Interaction plots of SO2 and City Size on Aggregate CSP (left) and Industry adjusted CSP (right)*

Being significantly related in two models, the interaction plot between city size and SO_2 was presented for both industry adjusted and aggregate CSP in Figures 8. At the mean and one lower standard deviation of the city size natural logarithm, which hovered at approximately 2,736,568

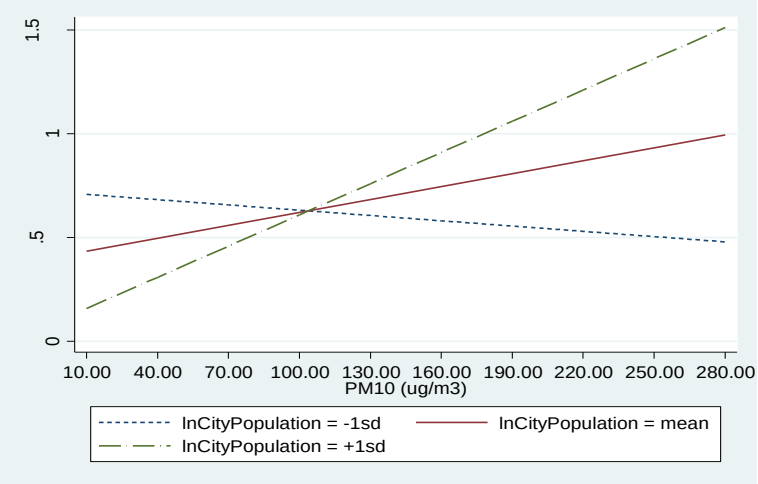

Figure 9. Interaction plot of CSP and PM10 on Aggregate CSP

people and 8,981,154 people, respectively, firms were less likely to adopt CSP when SO_2 increased. The relationship differs when city population increases to 29,477,211 people ($e^{17.199}$); CSP increased as SO_2 increased. Despite a similar pattern between aggregate CSP and industry adjusted CSP, the difference is more pronounced in industry adjusted CSP, resulting in greater environmental performance in more populated cities but very little likelihood of environmental performance in smaller cities.

The average city size and the lower standard deviation displayed a different mechanism towards PM10 (Figure 9), where they illustrate a higher tendency to adopt environmental policy for the average city size of the sample (>8,981,154 people) and less inclination in less populated cities. While other pollutants show negative predicted CSP in the interaction plot, no CSP value below 0 was seen in this graph, suggesting higher pressures emanating from this pollutant. The plot also revealed positive relationships between CSP and pollution in cities larger than 8,981,154 people.

However, in a city size of 29,477,211 people, CSP only becomes more prevalent when the issue becomes highly urgent, with NO_2 reaching 40 μg/m^3 in the atmosphere (Figure 10).

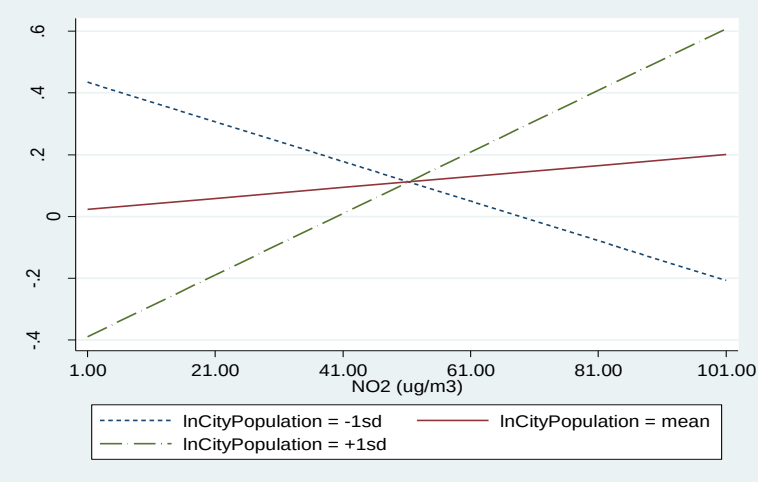

Figure 10. Interaction plot of NO2 and City Size on Industry adjusted CSP

Separating each plot endows us with an accurate and detailed picture of this relationship. First, it demonstrates the overriding effects of a large city population and high issue salience on the sign of CSP. This not only suggests the moderating role of city size but also opens up the possibility of further interpretations: in small cities, due to a greater power in corporations, corporations are more likely to conduct acts at their discretion without considering governments or citizens when the environment is polluted. However, in large cities, corporations tend to moderate their behaviours when environmental issues occur as they feel more pressure from the more powerful actors, or they are more aware of the environmental concern in their stakeholders.

CHAPTER 7

DISCUSSION

Drawing data from 176 cities and 1067 companies, we studied how firms respond to environmental issues in cities, under what conditions this impact is intensified and whether city attributes, such as city size, encourage firm environmental management. Most importantly, we sought to identify variations in firm practices in cities in order to examine and substantiate the importance of city as a subnational unit in shaping firm behaviours.

To begin with, we found that air pollution was negatively related to environmental CSP. This result suggests a lack of congruence between stakeholders' expectation (i.e., governments and citizens) and actual firm environmental commitment when environmental issues arise at city level. Since air pollution represents how city actors take initiatives over issues that they have little control (sources of pollution, emissions originate far downwind of the city), such influence of air pollution on CSP can reflect several cases. The first scenario is, in an environment when CSP is more codified into the norms and operations, margins for pollution abatement are relatively narrow as enterprises assume addressing such issues lies at the discretion of the government (Matten & Moon 2008). Another scenario is, in another environment where CSP is more explicitly articulated, for example, Ford Motor campaign took initiatives to reduce carbon emissions in the US (Ford 2005), the fact that corporations tend to less proactively address air pollution reveals how corporate actual actions mismatches with their CSR report or marketing campaign, or CSR lies only at legitimate level (Suchman 1995). Further, since air quality standards are often instituted at national level or state level, the negative relationship between air pollution and CSP also proposes that a lack of harmony between national standards and their actual performance at city level. This strengthens

the importance of subnational level analyses, together arguing that more further insights should investigate how a subnational level framework determine and orientate local actor.

It is often argued that subnational government plays a representative role where environment companies operate, however, the environmental policy in the city may be more laxative in fear of losing competitive edges (Weibust 2013), yet this thesis provides empirical evidences in strengthening the representative role of the city. Our study demonstrates other crucial finding that alternates this negative relationship between urban air pollution and CSP. The result shows that city size tends to moderate the relationship between urban air pollution and CSP in such a way that: in large cities, corporations are more likely to enhance environmental CSP corresponding to increasing urban air pollution; meanwhile, in smaller cities, corporations are less likely to adhere to environmental policy when air pollution increases. Our finding evidences the power of large cities through controlling firm behaviours in conjunction with arising environmental issues. Above all, this strengthens the role of subnational location where firms are headquartered. Most importantly, the significant relationship between city attributes and CSP substantiates our initial proposition as to not only variations between countries being able to influence firm environmental commitment, but also variations between cities determining firm's adherence to environmental policy. In addition, the contradicting relationships of urban competitiveness and urban air pollution with Corporate Social Performance reveal that heterogeneity within a city can determine firm behaviours. This highlights the influence of the city as a new unit of analysis in examining Corporate Social Performance. Second, significant and meaningful relationships between city attributes and corporate behaviours offers an insight on the fact that cities are detaching themselves from national framework and start to resemble each other in terms of strategy and management, not only confined to cross-cultural norms and values (Tung 2008).

Contributions to the discipline

Economy Geography studies

Previous studies have focused in the mainstream on the propensity of locational choices (Lounsbury 2007; Ma & Delios 2007; Ma, Delios & Lau 2013), while others have investigated locational attributes or firm heterogeneity within the cluster (Goerzen, Asmussen & Nielsen 2013; Sassen 2001). However, little is known on how these locational features and environmental issues influence the environmental performance of corporations headquartered in those places. Therefore, we aim to bridge the gap between economy geography and international business by introducing a novel framework to explore this relationship.

Environmental management

Environmental management is a well-researched arena in Corporate Social Responsibility (Bansal 2005; Bansal & Roth 2000; Berrone & Gomez-Mejia 2009; Delmas & Toffel 2008; Jo, Kim & Park 2015; Kassinis & Vafeas 2006; Sharma 2000; Sharma & Henriques 2005; Sonenshein, DeCelles & Dutton 2014; Yao & Liang 2017). Nevertheless, little is known about the role of subnational influences in their management. Meanwhile, the international business agenda is gravitating towards subnational investigations in order to search for more a powerful unit of analysis for analysing corporate activities. Therefore, we contribute to current knowledge by presenting city-level characteristics as a powerful new tool to explore the trajectories of firm environmental behaviours and. Our thesis found that cities differ within countries, and their heterogeneity influences CSP variations. This calls for future research on under what conditions firms would go green focusing on external dynamics and segregating internal performance.

Managerial implications:

The study suggests that CSP also varies depending on firm capability. Hence, encouraging firms to embed CSP in every company would probably be an ambitious goal because company performance is a priority in business operation.

This importance of city attributes, especially city size, calls for attention from managers in designing strategy to solidify the relationship with stakeholders in their city, beside their national environment. Furthermore, the thesis suggests corporations should gain more awareness of environmental Corporate Social Performance. Although companies may not enhance their environmental commitment when air pollution increases for the time being, the moderating impact in city size implies that corporate environmental management grows in importance under certain city attributes. In the future, there is likelihood that environmental management would become an indispensable and vital trend for sustainability, suggesting corporations consider how they should embed environmental commitment to optimise their operations for long-term development.

Implications for policy makers

Contrary to popular belief, environmental degradation has received little attention from corporations; it is the power of the city revolving around the issue that matters. From a policy maker perspective, it calls for a shift of the emphasis on environmental issues towards the power of their city in terms of finance, technology, infrastructure, or services in order to encourage environmental CSP. This poses a challenge for the government because, paradoxically, cities rely on the power of corporations to increase their influence.

However, another finding related to population suggests that to increase CSP, city governments should control the expansion of their city size. The government can shift citizens towards the

surrounding suburbs rather than be concentrated in the city or relocate less important units towards surrounding new areas, together with setting stronger regulations for firms that want to locate in their city. However, to avoid the loss of economic power from corporations, this should be gradually enacted in an incremental process.

Limitations and Future Directions

This study has several limitations, which could be further explored in future research. First, we assume that city attributes have an equivalent impact on local actors and do not address the interconnectivity between cities, which might have a potential impact on firm performance (Sassen 2010). Due to globalisation forces, Singapore and Hong Kong can bear more similarities to London than their Asian partners, such as Beijing. Therefore, further research could explore these trajectories, to gain deeper insights on economic and non-economic activities that transcend national boundaries. Our thesis has questioned other research avenues underlying the mechanism between Corporate Social Performance and environmental-related issues, for example, advancing understanding on non-market strategies such as lobbying or other lubricating instruments, in legitimising their irresponsible behaviours or gaining competitive advantages for a certain private group instead of the sake of their population (Doh, Lawton & Rajwani 2012).

Other limitations in the research is insufficient data on different pollutants and institutional influence at the city level, and we may have neglected other important data, such as social capital and innovation. Hence, future research could explore other moderating effects in addition to city populations or determine whether there is a curvilinear relationship between city attributes and CSP at the subnational level. Third, although panel regression is suitable for investigating longitudinal data, this regression encompasses different levels; thus, a multilevel modelling method could be appropriate as well

CONCLUSION

Determining whether urban air pollution and city level characteristics have affected Corporate Social Performance (CSP), the thesis reveals that in more polluted cities, corporations are less likely to adhere to environmental policy due to institutional voids and low-cost motives. The research also presents contrasting relationships on city size and urban competitiveness with CSP. Most importantly, our research discovered that environmental CSP is higher when urban air pollution increases in large cities, while environmental CSP is lower when air pollution increases in small cities.

Our thesis refines the knowledge of subnational influences on firm behaviours in the international business agenda, contributing to a comprehensive understanding of corporate non-market strategies across nations. These results propose several implications for researchers and policy makers. Researchers could use these results to develop further investigations into other environmental issues or city drivers beyond urban competitiveness or city size. Policy makers could focus more on liaising with companies in order to encourage CSP in their city, in addition to focusing on the magnitude of the urban air pollution issue.

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APPENDIX

Table 10. A roster of cities

West Europe	*East Europe*	*North America*	*Central and South America*	*East Asia*	*South Asia*	*South East Asia*	*Middle East*	*Oceania*	*Africa*
(n = 51)	*(n = 8)*	*(n = 42)*	*(n = 12)*	*(n = 36)*	*(n = 6)*	*(n = 6)*	*(n =3)*	*(n = 8)*	*(n = 6)*
(N = 259)	*(N = 48)*	*(N = 315)*	*(N = 76)*	*(N = 116)*	*(N = 22)*	*(N = 30)*	*(N = 19)*	*(N = 32)*	*(N = 30)*
Amsterdam	Ankara	Akron	Belo Horizonte	Ansan	Bangalore	Bangkok	Abu Dhabi	Adelaide	Cairo
Athens	Budapest	Baton Rouge	Guadalajara	Anyang	Colombo	Jakarta	Doha	Auckland	Cape Town
Barcelona	Istanbul	Burlington	Lima	Baoding	Hydeberad	Kuala Lumpur	Tel Aviv	Brisbane	Durban
Basel	Moscow	Burnaby	Medellin	Beijing	Mumbai	Manila		Christchurch	Johannesburg
Bergamo	Prague	Calgary	Mexico City	Busan	Navi Mumbai	Petaling Jaya		Hobart	Port Louis
Berlin	Rzeszow	Cedar Rapids	Monterrey	Changsha	Noida	Singapore		Melbourne	Pretoria
Birmingham	Tarnow	Columbus	Porto Alegre	Changwon				Sydney	
Bonn	Warsaw	Corning	Rio de Janeiro	Chiba				Wellington	
Brussels		Dayton	Salvador	Daejeon					
Cagliari		Durham	Santiago	Fukuoka					
Copenhagen		Edmonton	Sao Jose dos	Guangzhou					
Darmstadt		Fort Wayne	Campos	Hamamatsu					
Dublin		Guelph	Sao Paulo	Hangzhou					
Duisburg		Honolulu		Hiroshima					
Dusseldorf		Jacksonville		Incheon					
Essen		Knoxville		Kobe					
Frankfurt		Lancaster		Kyoto					
Glasgow		Laval		Nagoya					
Graz		Longueuil		Nanjing					
Hamburg		Manitowoc		Okayama					
Hannover		Mississauga		Pohang					
Heerlen		Moncton		Qingdao					
Helsinki		Monroe		Saitama					
Kassel		Montreal		Sakai					
Koln		Muscatine		Seongnam					
Leverkusen		Ottawa		Seoul					
Limoges		Peoria		Shanghai					

Linz	Pittsburgh	Shenzhen
Lisbon	Richmond	Suwon
London	Roanoke	Taipei
Lund	Rochester	Tokyo
Luzern	Salt Lake	Ulsan
Madrid	San Antonio	Wuhan
Manchester	Saskatoon	Yokohama
Mannheim	Springfield	Zhuzhou
Milan	Thunder bay	
Munich	Toledo	
Nurnberg	Toronto	
Oslo	Vancouver	
Paris	Wichita	
Rome	Winnipeg	
Rotterdam	Winston-Salem	
Saint-Etienne		
Sevilla		
Stockholm		
Stuttgart		
Wien		
Wiesbaden		
Winterthur		
Zurich		

n: The number of cities N: The number of corporations headquartered in these cities