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Abstract

Using a survey of 1,266 firms in 12 cities in China, this paper investigates the effects of open economy on the corporate social responsibility (CSR) of Chinese domestic firms embedded in the global value chain (GVC). We argue that, under a compliance-based paradigm, foreign domestic investment (FDI) and export not necessarily improve the CSR performance of Chinese firms. The cascade with foreign owned enterprises in the local value chain and CSR pressure from the GVC have important intervening impact on Chinese domestic firms' CSR performance. The CSR performance improves in the domestic firms with foreign clients in the local value chain and under labor and environmental standards pressure from the GVC. There is no prominent improvement of CSR performance in domestic firms only with foreign suppliers in the local value chain. Regressions using the structural equation models show that the FDI has significant direct effect on working overtime and the social security coverage, while the export has no significant direct effect on CSR performance. However, export has significant indirect effect on improvement of the green investment and environment training through the cascade with foreign owned enterprises in the local value chain and pressure from the GVC.

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Introduction

Over the last three decades, China has attracted a large amount of foreign domestic investment (FDI) from the developed countries. Foreign owned enterprises play a very important role in China's fast economic growth by introducing advanced technology and management techniques into the largest transition economy in the world. However, multinational enterprises were also notorious in social irresponsible behaviors when they allocated resources through the global value chain (GVC) during the 1990s. Some of multinational enterprises such as Nike, Adidas and Reebok were even involved in "sweatshop" scandals and caused huge resistance campaigns and consumer boycotts around the world (Harrison and Scorse, 2010).

With the rise of global corporate social responsibility (CSR) movement, multinational enterprises have gradually realized its importance and improved their CSR performance in the GVC. The general public as well as policy makers in China also have been more and more concerned by the CSR issues such as product quality, environmental pollution and excessive exploitation in the foreign invested and exporting enterprises. The evolving public views in a transition economy like China consider the foreign enterprises and export orientation not only the culprits of environmental disasters, financial scandals, and social ills, but also the solutions of global regulation and public goods problems (Scherer and Palazzo, 2008). For both Chinese domestic and foreign owned enterprises, the performance of CSR has increasingly become the bottleneck of their further development. It naturally raises questions whether the open economy such as foreign ownership and export can help improve the CSR performance of Chinese domestic enterprises. If so, what are the motivations, channels and mechanisms of the CSR induced by the foreign investment and export? This paper endeavors to shed new lights on these questions and provides factual evidences for Chinese CSR in the context of globalization.

Before 1990, the widely accepted perception of CSR was the classical dichotomy dividing the corporate and government responsibility for private and public goods. Compliance with the market mechanism and the necessary laws to increase its profits is regarded as the social responsibility for a firm. Firms could not and should not be expected to take the job of government and voluntarily act in a socially or environmentally responsible manner because market might fail to ensure efficient pricing and provision of public goods (Friedman, 1970).

In recent years, however, influential business and society studies have addressed the social responsibility and stakeholders in management perspectives (Freeman, 1984; Wartick and Cochran, 1985; Wood, 1991) and suggested the social justifications for CSR's existence. As the CSR has become a main stream business activity and a high profile public issue, many authors such as Turban and Greening (1996), McWilliams and Siegel (2001) and Kitzmueller and Shimshack (2012), define the CSR as "the fulfillment of responsibilities *beyond* those dictated by market or laws". More recent studies have begun a shift from CSR's existence to the mechanisms to *over-comply* with the laws and provide public goods to stakeholders. We summarize the main mechanisms of CSR in literature as follows:

1) CSR can provide a welfare optimal channel to shift public goods provision from public to mixed or complete private ownership in the case of government failure (Bergstrom et al., 1986; Besley and Ghatak, 2007; Kotchen, 2006);

2) CSR can be seen as a pure form of corporate expenditure to satisfy managers' preference, that is, a manifestation of moral hazard for shareholders (Friedman, 1970; Galaskiewicz, 1997; Jensen, 2002);

3) CSR can form a part of an optimal firm strategy even incurring net losses, should shareholders themselves are social altruism (Campbell et al., 1999; Reinhardt et al., 2008; Rowley, 1997; Wartick and Cochran, 1985; Wood, 1991);

4) CSR can constitute a special form of strategic investment into reputation and innovation that might function as signals to sort consumers, employees and investors with similar preference (Akerlof and Kranton, 2000; Fombrun and Shanley, 1990; Porter, 1991; Porter and Kramer, 2002; Porter and van der Linde, 1995; Simon, 1991);

5) CSR can be induced by demand side pressures from consumers' preference or as a hedge against the risk of future regulation or stakeholder activism, that is, the "insurance-like" property of CSR activity (Baron, 2001; Kytle and Ruggie, 2005; Godfrey et al., 2009; McWilliams and Siegel, 2001).

However, these studies only discuss the stakeholders such as investors, employees, consumers, activists and governments within a closed economy. Both the theory and empirics of CSR in the context of globalization, especially studies for the transition economies in the GVC are underdeveloped (Kitzmueller and Shimshack, 2012). The government oversight, formal regulation and unorganized private politics are typically limited and incoherent in the transition economies under international environment. Hence, CSR is regarded as an important channel to provide global public goods in an international context, as the coordination failures across countries may weaken the role of government provision of global public goods (Lund-Thomsen and Lindgreen, 2014).

Disparate locations between production, consumption and ownership establish an elevated role for preference-based CSR mechanisms. Consumers in developed countries may influence the social performance of firms operating in the transition economies. During the 1990s, activists campaigned to improve conditions for workers in transition countries (Harrison and Scorse, 2010). Multinational firms on the textile, footwear and apparel sectors are boycotted by consumers. These campaigns increased dramatically and put direct and indirect pressure on legislation authorities, foreign and domestic firms, and community organizations in transition countries, so multinational firms begin improving their CSR performance through the GVC. Thus, CSR may be especially important in situations with shortage of international public goods.

The preferences and politics that motivate the CSR of China's foreign owned or export orientated firms may substantively differ from their domestic and abroad counterparts. Cross-border externalities and preferences may interact in nonstandard ways, and therefore the international and especially transition context is an interesting natural laboratory to explore CSR and its mechanisms. However, there has been little academic research that precisely analyzes how these direct and indirect effects of

foreign investment and export on the CSR performance of domestic firms in a transition country such as China. Understanding how Chinese firms engage in global CSR and stakeholders finance the objectives of CSR are the fundamental tasks of this paper.

We use a specific micro dataset from the Chinese CSR Survey (CCSRS 2006) to provide empirical evidences. First, we investigate whether foreign owned and exporting firms have generally better CSR performance than other domestic Chinese firms. Second, we examine how different ownership and exporting status affect the embedment and pressure transfer of Chinese firms in the GVC, and then, the intervening effect of GVC governance on the CSR performance. Last but not least, we apply structural equation model to decompose and combine the direct and indirect effects of the foreign investment and export on the CSR performance. This paper, as far as we know, is the first trial to deal with the global CSR problem incorporating the GVC governance, which sheds light on the relationship between the open economy and CSR performance in China. The remainder of the paper is organized as follows. In Section II, we outline the CSR under the GVC governance and propose the corresponding hypothesis, discuss the identification strategy, and set up a framework for estimation. We describe data statistics in Section III. Section IV presents a research map and corresponding empirical specifications. Section V examines the empirical results of the reduced and structural equation models. The last section concludes and provides some policy implications.

Hypothesis setting

Compliance-based model

International retailers and supermarkets source products from transition countries with abundant labor supplies and much lower wages to reduce their procurement cost through the GVC. These retailers and supermarkets control vast networks of suppliers dispersed throughout the world, however also raise substantial concerns about the social and environmental conditions in which the products are manufactured. Recent studies have sparked renewed concerns about the lack of labor and environmental regulations and the inadequacy of private CSR to ensure a basic level of safety and decent work conditions for laborers in export-oriented industries located in transition countries (Locke, 2013; Locke and Romis, 2007). Due to resistance by governments and enterprise owners in transition countries, it has become increasingly clear that efforts to introduce universal minimum labor and environmental standards could not succeed. Labor rights and environmental activists turned their attention to campaigning against international retailers and supermarkets (Bair and Palpaceur, 2012). These campaigns prompted the “compliance-based model” for working with the CSR in the GVC (Locke et al., 2009; Lund-Thomsen and Lindgreen, 2014).

(Figure 1 around here)

The role of lead enterprise, for example, international supermarkets and retailers

(Gereffi, 1994) is to govern the GVC by determining the main characteristics of production and setting price in market. Suppliers are generally powerless, with few or limited options for influencing the governance of the chain by the lead firms. Gereffi et al. (2005) argue that the value chain relationships among international buyers and their first-tier suppliers can range from arm's-length, market-based relationships such as trade, to hierarchies such as foreign ownership in the transition economies. The compliance-based paradigm assumes that lead firms have the power to dictate and control how products were produced by supplier factories in the transition economies. This assumption further indicates that international lead firms could control both working and environmental conditions in export-oriented firms. Thus, power relationships in the GVC are highly unequal, with first-tier suppliers being held "captive" to the social and environmental requirements of international buyers.

The compliance-based model also assumes that consumers, Non-Governmental Organizations (NGOs), trade unions and the media could bring sufficient pressure on the lead enterprise in developed countries, whether with naming and shaming campaigns in the public media or by mobilizing consumer boycotts of corporations that failed to ensure safe, hygienic work conditions in their supplier factories in transition countries (Locke et al., 2009). Such pressure then should force international lead enterprises to develop corporate codes of conduct or ethical guidelines, stipulating the social and environmental conditions in which their products and services are to be produced. Compliance with these guidelines could be checked through social and environmental audits undertaken by first-, second-, or third-party international monitoring organization to confirm compliance with international buyers' codes of conduct in transition countries (O'Rourke, 2003; O'Rourke, 2006). Moreover, the pressure from the stakeholders in the developed countries could be reflected into the international trade and investment agreement between developed and transition countries. The compliance with international buyers' codes of conduct will be enforced on the lead enterprises and domestic suppliers by the transition country government. Therefore, the stakeholders in transition countries such as consumers, NGOs, trade unions and the media would be finally affected by the compliance-based CSR.

Demonstration effect

This paper focuses on the compliance-based CSR model under the GVC governance rather than the international monitoring and government regulation. The CSR pressure of the lead international enterprise is transferred to the domestic firms through the FDI and international trade. With the rapid progress of the economic globalization, the developed and transition countries have more interaction. In theory, the domestic firms that display a high level of compliance with a buyer's code of conduct would be rewarded with longer term trading relationships, more orders and even investment by international lead enterprises. The domestic firms that refuse to comply with codes of conduct instead would have their orders reduced or even be completely excluded from the GVC. Many relevant empirical studies for transition economies indirectly explore mechanisms for CSR. However, Ruwanpura and Wrigley (2011) find that there is

limited empirical evidence that international buyers systematically cut ties with factories in response to their low social or environmental compliance levels. Nor is there evidence to suggest that suppliers that display high levels of social and environmental compliance receive rewards in the forms of more orders. Thus, we need more empirical evidence for the compliance-based model under the GVC governance.

The empirical evidence to date is not strongly in favor of the compliance model systematically operating in the international setting. First and foremost, several studies investigate the relationship between foreign ownership and environmental performance in transition countries, and find inconclusive results. Seroa da Motta (2006) reports a positive relationship in Brazil. Aden et al. (1999) finds a negative relationship in Korea. Yet others find no significant relationship for several countries in Southeast Asia (Hettige et al., 1996; Pargal and Wheeler, 1996). The firms owned by developed countries seem not necessarily impose on internal standard for all their worldwide operation and induce the domestic producers improve their CSR. More relevant, we test whether the foreign owned enterprises, acting as representatives of consumers in developed countries, can induce the higher standard of CSR in the domestic market. Hypothesis 1 is the CSR demonstration effect of foreign owned enterprises as follows:

H1: Foreign owned enterprises have better CSR performance than those local owned firms.

Moreover, under pressure of stakeholders such as consumers, NGOs and union, developed countries improve the labor standards and environmental standards for imported goods, which make exporting firms in transition countries more concerned with their CSR performance. A handful of studies explore the relationship between the environmental performance of firms producing in transition countries and the presence of exports to developed countries. Related empirical researches try to confirm that exporting enterprises in transition countries have better CSR performance than those do not export goods to developed countries. Christmann and Taylor (2001) and Muller and Kolk (2010) argue that the greater the intensity of trade, the better CSR performance do the domestic exporting firms have. However, more researchers such as Hettige et al. (1996), Dasgupta et al. (2000) and Seroa da Motta (2006) generally finds a non-result. This suggests no decisive evidence that consumer preference in developed countries influence social performance of those producers in transition countries. However, these researches are based on transition country producers owned by both locals and foreigners. In order to estimate the value chain pressure from foreign consumers, we control the all ownership situations and have Hypothesis 2 is the CSR demonstration effect of exporting enterprises as follows:

H2: Exporting firms have better CSR performance than those do not export.

Competition effect

The competition between one value chain and the others is considered to be an important part of market competition (Christopher, 1992). As the CSR behaviors expand from individual enterprises to the GVC, the CSR performance has become an important competitiveness signal of value chain. As foreign owned subsidiaries or joint ventures are established in transition countries as a part of local value chain, the domestic suppliers and clients of the local value chain are also embedded into the GVC. The domestic suppliers provide products (raw materials or semi-finished products, etc.) to foreign owned enterprises which reprocess or brand the products in the host country and sell them to foreign or domestic consumers. Alternatively, they can export to the developed countries by themselves. In this process, the local value chain is likely to violate the CSR norms, for example sweatshop or pollution. Consumers and other stakeholder groups in developed countries, as well as the public with social preference, may boycott the products from transition countries. As long as any one enterprise failed in CSR performance, the entire local value chain is likely to face a CSR crisis and may be excluded from the GVC. Hence, as the important players in the GVC, foreign owned and exporting enterprises need cascade together in the local value chain to reduce the CSR risk and strengthen their competitiveness (Godfrey et al., 2009; Kytle and Ruggie, 2005) . They need coordinate and even monitor their upstream suppliers to improve the CSR performance of the entire value chain. Foreign owned and exporting firms are more likely to be cascaded together in the local value chain and work as a coordinated interest group to transfer the pressure from international buyers. Thus, we have a hypothesis of CSR competition effect in the GVC embedment:

H3: Foreign owned and exporting firms are more likely to cascade together in the local value chain and transfer the pressure of labor and environmental standards from the GVC.

In other words, one firm's gains to improve CSR performance are higher if all firms in the value chain improve. The coordination of all firms in the value chain can take competition advantage in CSR activities so that there is a "strategic complementarity" of coordination (Ball and Romer, 1991; Kang and Peng, 2012; Peng and Kang, 2013). It also indicates that bad CSR performance of firms in the local value chain may be a result of coordination failure in CSR campaign. Increasing pressure from stakeholders induce multinational companies to develop CSR conduct code to meet wider social needs. Generally, the foreign owned enterprises have a number of domestic suppliers in the host country. It is very important for them to control the value chain risk through strict inspection audits, and require the domestic suppliers to implement the relevant social responsibility certification. The cascade of domestic firms with foreign owned firms in the local value chain can improve their coordination with the global CSR and reduce the risk of coordination failure. The CSR pressure from the international buyers in the GVC can be easily transferred to these domestic firms through the arms' length monitoring of the foreign owned firms

in the local value chain. Therefore, we develop another hypothesis of CSR competition effect as follows:

H4: The cascade with foreign owned firms in the local value chain and pressure from the GVC can improve the CSR performance of domestic firms.

In addition, if foreign owned enterprises are upstream suppliers of local value chain, the GVC governance may have totally different sense from the situation that foreign owned enterprises are downstream clients. As downstream clients of local value chain, foreign owned enterprises are closer to the consumer market and at a dominant position in the entire value chain. The domestic suppliers in the local value chain need compete with each other to get the orders from the foreign owned clients. And, foreign owned client in local value chain are capable to monitor their domestic suppliers at arm's length. They are more likely to transfer the CSR pressures from foreign consumers and other stakeholders to domestic suppliers in the local value chain. On the contrary, if foreign owned enterprises are upstream suppliers of local value chain, they need compete with each other to get the orders from the local clients. Foreign owned enterprises could be insulated from the consumer market and at some secondary positions in the entire value chain. They are insensitive to the CSR pressures from consumers and other stakeholders in the either developed or transition countries, even though their local domestic clients violate CSR norms. The "race to bottom" phenomenon would be much easier to happen in this situation. In order to estimate the value chain pressure from the foreign enterprises at upstream or downstream positions of the value chain, we have the last competition hypothesis as follows:

H5 If foreign owned enterprises were the downstream clients of local value chain, the improvement CSR performance of domestic firms would be more significant than they were upstream suppliers.

Structural Equation Model

Many studies have shown that a significant spillover effect of FDI and export on technology, productivity and performance of enterprises in transition countries (Aitken and Harrison, 1999; Greenaway et al., 2004). Following the same vein, the spillover effects of FDI and export on CSR performance of domestic enterprises might be reflected as a direct demonstration effect in H1-H2 and indirect competition effect in H3-H5. On the one hand, multinational companies introduce the advanced concept of CSR to the domestic country through the higher labor and environmental standards for imported goods and the CSR practices in the foreign owned enterprises. Foreign owned firms can become a model and promoter of the CSR campaign, which will help to improve the performance of the CSR in the host country.

On the other hand, foreign owned enterprises with better CSR performance is also likely to influence the host country's product and labor markets, and ultimately rouse the concerns of domestic firms on CSR performance through the embedment

and pressure in the GVC. The identification of the mechanism of value chain pressure can resolve the long term argument on the "race to the bottom" phenomena in global CSR studies, in which the foreign owned enterprises may not have better CSR performance because they choose to align domestic businesses with lower labor standards and environmental standards than their parent companies (Muller and Kolk, 2010; Seroa da Motta, 2006; Surroca et al., 2013). It will be reflected in a vague spillover mechanism of CSR from FDI.

Unfortunately, studies by now did not provide evidence on mechanisms of this effect. This paper attempts to explore the microeconomic foundation of the GVC governance on CSR. As we can measure the embedment and pressure of the GVC, we do not need assume that the foreign owned enterprises have better CSR performance. The direct demonstration effect and indirect competition effect can be identified and decomposed in a structural equation model (SEM). Thus, we can have the SEM hypothesis as follows:

H6: FDI and export can improve the CSR performance of domestic firms directly, or through the embedment and pressure of the GVC indirectly.

Data description and Measurement

The characteristics of the sample that facilitated the tests and the variable measures used are now described. The principle data we use in this paper come from the Chinese CSR Survey (CCSRS) conducted in the spring of 2006 by the International Finance Corporation (IFCT), the China Center for Economic Research (CCER) in the Peking University and the National Bureau of Statistics (NBS). The CCSRS includes 1,266 industry firms in 12 cities (from the north to south): *Changchun, Dandong, Chifeng, Beijing, Shijiazhuang, Xi'an, Zibo, Chongqing, Shiyan, Wujiang, Hangzhou*, and *Shunde* (see Figure 2).[1] The choice of the 12 cities is based on the principle of the representativeness rather than on a random basis. The geographic location of these 12 cities covered by the CCSRS can represent the traditional four growth clubs in China (Fleisher et al., 2010; Giles et al., 2005; Peng and Kang, 2013): the Northeast (*Changchun* and *Dandong*), Coastal (*Beijing, Zibo, Wujiang, Hangzhou* and *Shunde*), Interior (*Chifeng, Shijiazhuang* and *Shiya*n) and West (*Xi'an* and *Chongqing*).

（Figure 2 around here）

Moreover, *Changchun*, *Xi'an* and *Chongqing* used to be among China's industrial powerhouses, but have to go through a painful transformation in the last decade because of the shifting of the economic gravity from the northeast, interior and west to the booming coastal regions in the east and south. *Beijing, Hangzhou, Wujiang,* and *Shunde* are booming cities with fast growing industries and services. *Zibo* is catching up in industrial development, but its service sector is relatively lagging behind. From

[1] The original survey covers 1268 firms, two of which are dropped in this study because of information errors of firm code.

legal and administrative views, *Beijing* and *Chongqing* are two of the four central municipalities (with *Shanghai* and *Tianjin*), which are equivalent to provinces in China. *Changchun, Shijiazhuang, Xi'an*, and *Hangzhou* are provincial capital cities of *Jilin, Hebei, Shannxi*, and *Zhejiang*, respectively. *Wujiang* and *Shunde* are county-level cities. The other cities are medium-sized prefecture-level cities.[2] Each city surveys about 100 industrial firms with an annual sales volume larger than 5 million RMB yuan so that we can match with their corresponding financial information stored in the NBS industrial dataset. The micro-firms with annual sales less than 5 million RMB yuan could not show much variation in the terms of CSR, so may not be the main focus of this paper.

To ensure that the sample represented well the distribution of firms, a stratified sampling strategy was adopted. The first stratum is three categories of firm ownership: state-owned enterprises (SOEs), domestic private firms and foreign owned joint ventures.[3] The second stratum is three categories of firm size: large, medium and small.[4] The shares of firms by ownership and firm size in a city are used in the sampling. Moreover, the primary sector (agriculture, forestry, pasturing, fishery, mining, geographical exploration and water management) is over sampled as about 43% of the sample firms are in this sector. Firms in the secondary sector including manufacturing consist of about 48% of the sample firms. Chinese firms in the primary and secondary sectors have serious CSR problems of product quality and environmental protection. The CCSRS cover less than 10% firms in the industries such as construction, transportation and services, which are usually very small and below the threshold of 5 million yuan of sales volume that the NSB database maintains.[5] Thus, the sampling of the CCSRS constitutes a reasonable representation of China in terms of geographic, administrative, economic and social indicators (Yao and Zhong, 2013).

Carroll (1999) argues that CSR encompasses the economic, legal, ethical, and discretionary expectations on organizations at a given point in time. The CSR can be broken down into corporate responsibilities for stakeholder groups such as workers, consumers, governments, communities, shareholders and environment (Freeman, 1984). The investment decisions and supplier selection of multinational firms used to be mainly dependent on China's low labour cost and loose environmental regulation. In order to squeeze the production costs, foreign companies indulge Chinese suppliers to violate the CSR norms on labor and environmental standard. As the global CSR campaign rose in the 1990s, foreign companies began to coordinate and regulate the

[2] There are three categories of cities in China: provincial level, prefectural level, and county level. *Shunde* is currently a district in Foshan, but it was an independent county-level city until 2003 (Yao and Zhong, 2013).

[3] SOEs were firms that the state had the controlling shares. Domestic private firms included companies with mixed ownerships but majority private shares as well as purely privately owned firms. Joint ventures were firms that had foreign shares including foreign owned and HMT owned (Hong Kong, Macao and Taiwanese) businesses.

[4] The definitions of these three size categories were the same as those used by the NBS in its routine statistics, which were defined by the State Economic and Trade Commission (SETC, 2003). Following this rule, we define firms hiring less than 500 people as small firms, firms hiring 501 to 2000 people as medium firms, and firms hiring more than 2000 people as large firms in this study.

[5] Labour protection and wage arrears may be important issues in the construction and transportation sectors. Service industry does not have serious issues in environmental protection, product quality and work safety, while the issues of labour protection are likely to be similar in the other sectors. In terms of the focus of this study, the sector biases will not likely affect our results.

CSR performance of Chinese suppliers by applying conduct codes of labor and environmental standards (Harrison and Scorse, 2010). Based on these arguments, we use four questions in the CCSRS to measure corporate responsibility on labor and environmental standards.

CSR on workers include two variables: working overtime (*WRKOT*) and social security coverage (*SSCOV*). We can use two questions in the CCSRS: "How many days does a worker work a week?" and "How many hours does a worker work per day?" to calculate the average weekly working hours. The Chinese Labor Law 1995, the Chinese Labor Contract Law 2008 and the Chinese Labor Contract Law Implementation Regulations 2008 have explicitly stated that "daily working time should not be more than 8 hours, and average weekly working time should not exceed 40 hours." However, workers may voluntarily work longer time to get more money. Hence, we define the variable of *WRKOT* as 1 as the average weekly working days are more than 6 days, or the average daily working time is more than 11 hours, or the average weekly working time is more than 44 hours; as 0 otherwise.[6]

According to the relevant provisions of the Chinese Labor Law 1995, the Unemployment Insurance Regulations 1998, the Work Injury Insurance Regulations 2004 and the Chinese Social Insurance Law 2011, the employers should provide the basic pension, unemployment insurance, medical insurance, injury insurance and maternity insurance. Because the maternity insurance is not available for male workers in China, the CCSRS only reveals the coverage of the first 4 social security insurances ranging from 1 to 5 in ascending order for coverage of 0-20%, 20-40%, 40-60%, 60-80% and 80-100% respectively. We define the social security coverage (*SSCOV*) here using the Cronbach's alpha summation of these four insurance variables, alpha=0.849.[7]

Environmental responsibilities include two variables: green investment (*GI*) and environmental training times (*ETT*). *GI* is measured as the log form of the average investment and operational cost on environmental protection equipment (i.e. waste water, waste gas, waste mass and noise reduction equipment) over the last three years (2003-05). Investment and operational cost on environmental protection are on behalf of companies' efforts of various types of environmental protection, so is suitable for quantifying corporate environmental responsibility. *ETT* indicates the number of times of corporate organizing or participating in environmental training in 2005. The number of environmental training can improve operational efficiency in environmental protection, so *ETT* is also an important manifestation of corporate environmental responsibility.

Core explanatory variables are foreign ownership, exporting status, the value

[6] We also try a regression of weekly working hours using union, 12 city and 7 industry dummies to get the predicted values. And, a relative index of overworking is calculated as the ratio of the observed weekly working hours to the corresponding predicted values. We define an alternative overworking dummy in relative sense as 1 if the relative index is more than 1, otherwise 0. This relative overworking variable is highly correlated with the legal overworking variable presented in this paper (correlation coefficient=0.739, significant at 0.1% level) and would not affect the later regression results qualitatively. Results using this relative overworking variable are available from the authors under quest.

[7] There are about 10% missing values in these four variables, which we regard as the lowest value (0-20%) by assuming the firms with less coverage are more reluctant to answer these questions. The high alpha value suggests our summation is reliable.

chain positions of foreign enterprises and their CSR pressures on domestic enterprise. We have four ownership groups: 1) foreign owned or joint ventures (*FORG*); 2) Hong Kong, Macao and Taiwan owned or joint ventures (*HMT*); 3) state-owned or collective enterprises, restructuring state-owned or collective enterprises (*SOE*); 4) domestic private enterprises or joint-stock companies (*PRI*). Exporting status (*EXP*) is assigned 1 if all or part of their products is for exporting, 0 otherwise.

Moreover, we give value 1 to the variable of foreign owned client (*CFOR*) as long as some foreign or HMT owned enterprises are downstream clients in the local value chain, 0 otherwise. In order to compare the spillover CSR from foreign owned enterprises at different position of the value chain, we also define a variable of foreign owned supplier (*SFOR*), being 1 as some foreign or HMT owned enterprises in China are upstream suppliers in the local value chain, 0 otherwise. The CCSRS also ask two questions on the CSR pressures of labor and environment standards from four kinds of foreign owned clients: small/medium foreign clients in China, multinational clients in China, exporting clients in developed countries and exporting clients in transition countries. The CCSRS reveals the degree of pressure from foreign enterprises ranging from 1 to 4: 1= no foreign clients; 2= no pressure from foreign clients; 3= pressure from minor foreign clients; 4= pressure from major foreign clients. The value chain pressures from foreign enterprises are measured in two Cronbach's alpha summation of these four questions: pressure on labor standard (*LSP*, alpha=0.877) and environmental standard (*ESP*, alpha=0.863). Hence, we can have 4 dummies *LSP1-4* and *ESP1-4* in ascending order to measure the CSR pressure of labor and environmental standards.

In addition, some of the features found in literatures may also affect the CSR performance. We also have control variables as follows:

(1) Union coverage (*UNION*=1 if covered by union; =0 otherwise);

(2) Political identity (*PI*=1 if the owner or board chairman of the enterprise is also a political representative at national / provincial / municipal / district level, or a local government advisor/counselor; =0 otherwise);

(3) Firm size (*FIRMS*=the log form employee number);

(4) Financial performance (*PTPS*=pretax profit/sales);

(5) Education of the management (*EDUM1-4*, group dummies of the proportion of executive managers and board members with college degree or above: 1-4 represent the proportion of 0-20%, 20-40%, 40-60%, and 60%+);

(6) Education dummies of workers (*EDUW1-4,* group dummies of the proportion of workers with junior high school certificate (and above): 1-4 represent the proportion of 0-20%, 20-40%, 40-60%, and 60%+);

(7) Competition degree in the industry (*COMP*=1 if a very intense market; =0 if moderate or low competition);

(8) Product prices (*PP*=1 if the market prices of the main products rise; =0 otherwise);

(9) Product quality (*PQ*=1 if managers believe the products of their company are better than other companies in the same industry; =0 otherwise);

(10) 7 industry dummies (agriculture, mining, manufacturing, utility, water, trade

and finance) and 12 city dummy variables to capture unobserved fixed effects at industry and city levels.

(Table 1 around here)

Table 1 shows the descriptive statistics for each variable. We can find working overtime is widely observed in Chinese firm. More than half industry firms ask workers to work overtime. About 40-60% of workers are covered by four social securities. The average green investment over last three years is only about 70,000 RMB yuan (*GI*=2.01), while the average training times of last year is 1.56. For explanatory variables, the foreign and HMT owned firms are about 20% of the sample, while the state owned firms is about 10%. The domestic private firms are the majority of our sample (70%). 36% domestic suppliers are exporting, but 39% firms have foreign owned clients in China, suggesting domestic suppliers can either export or sell to the foreign owned clients in China. At same time, 40% firms have foreign owned suppliers in China. The foreign owned enterprises in China or developed countries are transferring pressure of labor and environmental standard on domestic suppliers, but the degree is just moderate.

Control variables also show interesting characteristics. 67% firms are covered by the trade union, while 37% of the owners have political identities. The average firm size is about 215 employees, and the average probability is around 3%. 40%-60% of executive managers and board members have college degrees or above. More than 60% workers have junior high school certificate (and above). About 74% managers think the market competition is very intense. Only 24% products have increasing prices, and 67% of managers believe the products of their company are better than other companies in the same industry. Thus, the subjective proxies of competition pressure are very high in Chinese industry firms.

Empirical Specification

This paper tests hypotheses 1-6 as depicted in Figure 3. The first and second hypotheses posit the demonstration effect in which foreign owned and exporting firms can improve the CSR performance of local value chain directly (Table 2, H1-2). The second set of hypotheses 3-5 concerns competition effect of the open economy, such as FDI and export on the enterprise cascade in the local value chain, and pressure from the GVC, which could next improve CSR performance indirectly (Table 3-4, H3-5). In this intermediation and simultaneous equation system, hypothesis 6 decomposes the total effect of open economy on CSR performance (Table 5c) into the direct demonstration effect (Table 5a) and the indirect competition effect through the enterprise cascade in the local value chain and the pressure from the GVC (Table 5b).

(Figure 3 around here)

A proper framework for evaluating a firm's decision on CSR performance in the

context of globalization would take both the direct demonstration effect and indirect competition effect into account. In a reduced form equation, the four measures of CSR performance (*WRKOT*, *SSCOV*, *GI* and *ETT*) are dependent on the measures of open economy including foreign ownership (*FORG* and *HMT*, compared with *SOE* and baseline group *PRI*), exporting status (*EXP*), the value chain positions of foreign enterprises (*CFOR* and *SFOR*), and CSR pressures on domestic enterprise (*LSP* and *ESP*). Other firm-specific characteristics are captured by the vector *Z* of above control variables, and industry and city dummies. The reduced-form CSR performance equation for a firm *i* in industry *j* in city *k* is given as follows to test Hypothesis 1 and 2:

$$(1)\quad CSR_{ijk}=\alpha_1 + \alpha_2 FORG_{ijk} + \alpha_3 HMT_{ijk} + \alpha_4 SOE_{ijk} + \alpha_5 EXP_{ijk} + \alpha_6 CFOR_{ijk} + \alpha_7 SFOR_{ijk} + \alpha_8 LSP_{ijk} + \alpha_9 ESP_{ijk} + \beta Z_{ij} + \xi_j + \xi_k + e_{ijk}$$

In this study, we also test the hypotheses 1-6 by using structural equations derived from the literature in pursuit of our research objective. We firstly estimate the relationship between open economy and GVC. From Hypothesis 3, we posit that the more a firm is involved with open economy, the more likely to be cascaded with foreign owned firms in the local value chain, and the more likely to be transferred the CSR pressure from the GVC.

$$(2.1)\ CFOR_{ijk} =\alpha_1 + \alpha_2 FORG_{ijk} + \alpha_3 HMT_{ijk} + \alpha_4 SOE_{ijk} + \alpha_5 EXP_{ijk} + \beta Z_{ij} + \xi_j + \xi_k + e_{ijk}$$
$$(2.2)\ SFOR_{ijk} =\alpha_1 + \alpha_2 FORG_{ijk} + \alpha_3 HMT_{ijk} + \alpha_4 SOE_{ijk} + \alpha_5 EXP_{ijk} + \beta Z_{ij} + \xi_j + \xi_k + e_{ijk}$$
$$(2.3)\ LSP_{ijk} =\alpha_1 + \alpha_2 FORG_{ijk} + \alpha_3 HMT_{ijk} + \alpha_4 SOE_{ijk} + \alpha_5 EXP_{ijk} + \beta Z_{ij} + \xi_j + \xi_k + e_{ijk}$$
$$(2.4)\ ESP_{ijk} =\alpha_1 + \alpha_2 FORG_{ijk} + \alpha_3 HMT_{ijk} + \alpha_4 SOE_{ijk} + \alpha_5 EXP_{ijk} + \beta Z_{ij} + \xi_j + \xi_k + e_{ijk}$$

The second estimation is the relationship between the enterprise cascade in the local value chain, as well as the pressure from the GVC and the CSR performance. The Hypothesis 4-5 posit that the cascade with foreign owned firms in the local value chain and the pressure from the GVC can improve the CSR performance, that is, an indirect effect of open economy on CSR performance through the GVC:

$$(3)CSR_{ijk}= \alpha_1 +\alpha_8 LSP_{ijk} + \alpha_9 ESP_{ijk} + \alpha_6 CFOR_{ijk} + \alpha_7 SFOR_{ijk} + \beta Z_{ij} + \xi_j + \xi_k + e_{ijk}$$

$$(4)CSR_{ijk}=\alpha_1 + \alpha_2 FORG_{ijk} + \alpha_3 HMT_{ijk} + \alpha_4 SOE_{ijk} + \alpha_5 EXP_{ijk} + \beta Z_{ij} + \xi_j + \xi_k + e_{ijk}$$

Hence the reduced form equation (1) can be decomposed into the direct demonstration effect and indirect competition effect of openness on the domestic CSR performance (see Figure 3). The Hypothesis 6 posits the relationship between open economy and domestic CSR performance, both with and without the intervening variable of value chain. This hypothesis is advanced to provide a further test of the impact of value chain coordination mechanisms on the domestic CSR performance. We test the argument that more involvement with openness leads to increased incidences of CSR, but that this outcome will be influenced by the extensiveness of

value chain coordination mechanisms. We undertook tests of the hypotheses using structural equation model (SEM).

Results

Basic Results In this paper, corporate social responsibility is measured in four variables of working overtime, social security coverage, green investment and environmental training times. According to the characteristics of these four variables, we use Logit regression, ordered Logit regression, Tobit regression and Poisson regression for the respective estimation. Basic results are presented in Table 2. We first examine the impact of foreign owned enterprises in China on CSR performance to test hypothesis 1. The foreign ownership is significantly negatively associated with the working overtime (-0.456), but significantly positively associated social security coverage (0.966). This suggests that foreign ownership can improve the CSR performance of labor standard. However, coefficients of foreign ownership are insignificant for green investment and even significantly negative for environmental training (-0.13). The HMT ownership has no significant effect on working overtime and social security, and significantly decreases the probability of green investment (-0.578) and environmental training (-0.249). Hence, foreign ownership may improve the CSR performance in labour standard, but foreign and HMT ownership obviously decrease the environmental CSR performance. SOE have the similar effect to the foreign and HMT owned enterprises, caring about labor standards rather than environmental standards. Exporting status has no significant effect on any kind of CSR measurement, which also cast doubts on hypothesis 2. These results are consistent with the literatures that open economy does not necessarily improve the CSR performance of domestic firms, especially on the environmental standards.

However, as we check the enterprise cascade and pressure from the GVC, their positive effects on CSR are more prominent than exporting status. Especially, the existence of downstream foreign clients in China can significantly improve the domestic firms' social security coverage (0.38), green investment (0.372) and environmental training times (0.324). Upstream foreign suppliers in China can also improve the domestic firms' social security coverage (0.259), but decrease environmental training times (-0.114). Higher levels of labor standard pressure from the GVC are significantly positively associated with the improvement of social security coverage and environmental training times. Higher levels of environmental standard pressure from the GVC can also increase green investment, but decrease social security coverage. Thus, the enterprise cascade and the pressure from the GVC are highly likely to work as an intervening mechanism for the effects of open economy on the CSR performance, and grasp the indirect effect of the open economy in a reduced form regression. Proper allocation and pressure of GVC could be more important for the domestic CSR performance than the simple foreign ownership and export orientation.

(Table 2 around here)

Control variables are also interesting. Union coverage helps reduce the likelihood of working overtime (-0.592) and increase social security coverage (0.956), but has no significant effect on environmental CSR performance. It suggests the Chinese unions still focus on management issues of workers' welfare (Yao and Zhong, 2013), and has more space to improve the bargaining power on environmental issues. Owners' political identity can be regarded as a proxy of government regulation effect. We find that if the owners got involved with government issues, they would be more likely to increase the environmental training times (0.152). Hence, the pressure of government regulation is mainly on the environmental issues. We use the number of employees to measure firm size, which has significant positive impact on the domestic firms' social security coverage (0.235), green investment (0.681) and environmental training times (0.247). It may be due to adequate resources available for large firms to implement CSR. Lepoutre and Heene (2006) also argue that large companies may have more sophisticated external contingency mechanism to understand and process CSR.

Moreover, the profitability is unrelated with the CSR performance, which is consistent with former classic research on the relationship between CSR and profitability (Aupperle et al., 1985). The higher education levels of the management have positive impact on all four kinds of CSR. Only as more than 60% of workers have junior high school certificate or above, the environmental training times would increase (0.191). Education seems good for managers and workers to understand the meaning of CSR, but the CSR activities are still mainly managers' decision. Some results worth mentioning are that the intense competition seems good for improvement of social security coverage (0.307), green investment (0.503) and environmental trainings (0.216). The increasing demand and prices of main products, as well as higher subjective quality reorganization are good for improvement of CSR. As the market competition become more intense, prices have become more volatile and quality controls have become more stringent, the domestic enterprise need relatively more stable employees and more investment in environmental protection to keep their competitiveness. Therefore, the open economy may increase the market competition, the demand/price and quality control of main products of domestic firms, and then improve their CSR performance indirectly. We have to leave this problem for the future research as it is obviously beyond the scope of this paper.

Structural Results We focus on the relationship between open economy, GVC and CSR, and omit the control variables in the next discussion. The total effect of open economy is decomposed into the direct demonstration effect and indirect competition effect. The test results of hypothesis 3 are presented in Table 3. We find that the foreign owned firms more likely have foreign suppliers (0.123) in Chinese local value chain than other kinds of ownership, suggesting a coordinated embedment of FDI in the local value chain and the localization of global value chain. HMT owned firms less likely have foreign clients (-0.092), consistent with their similar cultural background to local suppliers. It is not surprising that SOEs are less likely to have foreign suppliers (-0.125) and less likely to be transferred labor (-0.248) and

environmental (-0.298) standards pressure from the GVC. Exporting firms are more likely to do business with foreign suppliers (0.138) and clients (0.048) in local value chain, and, more likely to be transferred labor (0.431) and environmental (0.827) standards pressure from the GVC. The exporting firms can coordinate with foreign owned firms in the local value chain and form a part of the global CSR. Thus, hypothesis 3 is basically supported.

(Table 3 around here)

Table 4 tests the hypothesis 4-5. Basically, the cascade with foreign owned enterprises in the local value chain and transfer the pressure from the GVC can improve the CSR performance of domestic firms, supporting Hypothesis 4. We find that the foreign clients in China can improve the social security coverage (0.284), green investment (0.298) and environmental training (0.514). The foreign clients work as the representatives of the consumers and other stakeholders in the local value chain. The closeness of geographic distance improves the monitoring efficiency of the foreign clients. However, the foreign suppliers have no significant effect on domestic firms' CSR performance. We find evidences that support Hypothesis 5 that only the downstream foreign clients have market power to improve the CSR performance. The labour standards pressure from the GVC can improve the social security coverage (0.124), while it is also significantly positive associated with working overtime (0.037). It indicates that the firms working overtime are more concerned by the stakeholders transferring labor standards pressure. The environmental standards pressure from the GVC can improve the green investment (0.116) of domestic firms in China.

(Table 4 around here)

The total effect of open economy on the CSR performance is decomposed into direct and indirect effects in Table 5. Panel 5a is the direct effect of open economy on CSR performance without intervening effects of GVC. The foreign ownership decreases the likelihood of working overtime (-0.103) and increase the likelihood of social security coverage (0.623). The similar effect is found for SOE (-0.245 and 0.909), while the HMT ownership even decreases the green investment (-0.404). Exporting is still insignificant as we find in Table 2.

Combining results of Table 3 and 4, we can figure out the indirect effect of open economy. According to results in Table 4, the association between GVC and CSR is significantly positive, so the signs of indirect effect have the same direction as in Table 3. The indirect effect of foreign ownership is insignificant, because the foreign ownership is only significantly related with more foreign suppliers, and insignificant with other three GVC variables in Table 3. However, the HMT owned enterprises have negative indirect effect on green investment (-0.04) and training (-0.056), as well as SOEs have negative indirect effect on social security coverage (-0.042) and green investment (-0.047) due to their negative association with GVC variables in Table 3. In the same vein, exporting firms have positive indirect effect on green investment

(0.114) and training (0.110) because exporting is significantly positively associated with all GVC variables in Table 3.

(Table 5 around here)

Total effect is presented in the panel 5c by adding the results in the panel 5a and panel 5b. We can analyze the CSR performance under the globalization background. Foreign ownership has good direct effect on labor protection, but gets no much help from the indirect effect on environmental protection under the compliance pattern. The exporting status itself has no significant direct effect on CSR performance. However, the exporting firms have the significantly positive indirect effect on environmental CSR performance due to the compliance of FDI embedment and pressure from the GVC. SOE have good direct effect on labor protection, which overwhelm the negative indirect effect from rejection of the FDI embedment and the pressure from GVC. HMT have negative direct effect on environment protection. And their CSR performance on environmental protection has deteriorated with a non-compliance pattern, as the HMT owned firms reject the FDI embedment and the pressure from GVC. Therefore, the foreign owned firms (-0.103, 0.636) and SOEs (-0.25, 0.867) have good total effect on labor protection, which is basically unrelated with the FDI embedment and pressure from the GVC. The HMT owned firms have bad total effect on environmental protection (-0.444, -0.484) because they have lower environmental standards by themselves and do not comply the FDI embedment and pressure from the GVC. The exporting firms have total good effect on environmental protection (0.235) which is mainly from the compliance of the FDI embedment and pressure from the GVC.

Conclusions

The corporate social responsibility (CSR) has become a worldwide business operating. This paper attempts to examine the impact of foreign investment and export on Chinese CSR in the context of globalization. Using a survey of 1,266 firms in 12 cities in China, this paper investigates the effects of open economy on the CSR of Chinese firms embedded in the global value chain (GVC). We argue that, under a compliance-based paradigm, foreign domestic investment (FDI) and export not necessarily improve the CSR performance of Chinese firms. Hong Kong, Macau and Taiwan (HMT) ownership even has negative impact on green investment and environmental training in Chinese domestic firms. Thus, the foreign or HMT ownership and export orientation cannot be taken for granted as a solution for the improvement of the CSR performance in China.

The FDI embedment in the local value chain makes the local owned enterprise cascaded with foreign owned enterprises and more sensitive to the pressure from the GVC. These become important intervening impacts on Chinese firms' CSR performance. The CSR performance only improves in the domestic firms with foreign clients in the local value chain and under proper pressure through the GVC. There is

no prominent improvement of CSR performance in the domestic firms with foreign suppliers in the local value chain. Regressions using the structural equation models show that the FDI only has significant direct effect on working overtime and the social security coverage, while the export has no significant direct effect on CSR performance. However, export has significant indirect effect on improvement of the green investment and environment training through the FDI embedment in local value chain and pressure from the GVC. These findings are consistent with the compliance-based paradigm in the literatures of CSR in GVC (Locke et al., 2009; Lund-Thomsen and Lindgreen, 2014) and provide a theoretical and empirical background for industrial policy making in China.

However, the compliance-based paradigm focuses on the vertical relations of trading and ownership, which primarily reflects the economic and social preference of stakeholders in developed countries. Although our paper tries to identify the FDI embedment and CSR pressure transfer in local market, the reversal effects of the economic and social preference of stakeholders in China, as well as the outwards FDI and import of the domestic firms from the developed countries, on CSR performance are totally ignored in the compliance-based paradigm (see Figure 1). The vertical compliance-based paradigm need be developed into a horizontal cooperation paradigm to allow the societal embeddedness of GVC participants, as well as their territorial embeddedness in local society (Hess, 2004). Hence, the cooperation-based paradigm should encompass a global production networks approach (Henderson et al., 2002), in which the starting point is the network metaphor with equal power to better capture global economic organizations rather than a chain metaphor with unequal power (Coe et al., 2008).

In practice, lead firms in developed countries cannot govern their value chains completely. Instead, the governance of global production networks is ‘‘spread out,’’ and diverse stakeholders, such as international organizations, local governments, NGOs, trade unions, workers, consumers and communities in both developed and transition economies, help determine the production and the prices. Liu (2009) find that community and NGO forces are important drivers of changes related to enthusiastic social behavior like innovation or greening of the supply chain in China. All relevant stakeholders in the production network should be emphasized equally to understand how such networks are governed, rather than the direct trade and ownership relationship between lead firms in developed countries, first-tier foreign owned suppliers and domestic suppliers (Coe et al., 2004). In the cooperation-based paradigm, effective monitoring of work and environmental conditions cannot be limited to lead firms and foreign owned clients. A wider set of stakeholders is necessary to govern the value chain effectively. Thus, a more sophisticated structural equation model should be developed to capture the new characters in the cooperation paradigm in future research.

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Figure 1 Corporate Social Responsibility in the Global Value Chains, compliance-based paradigm

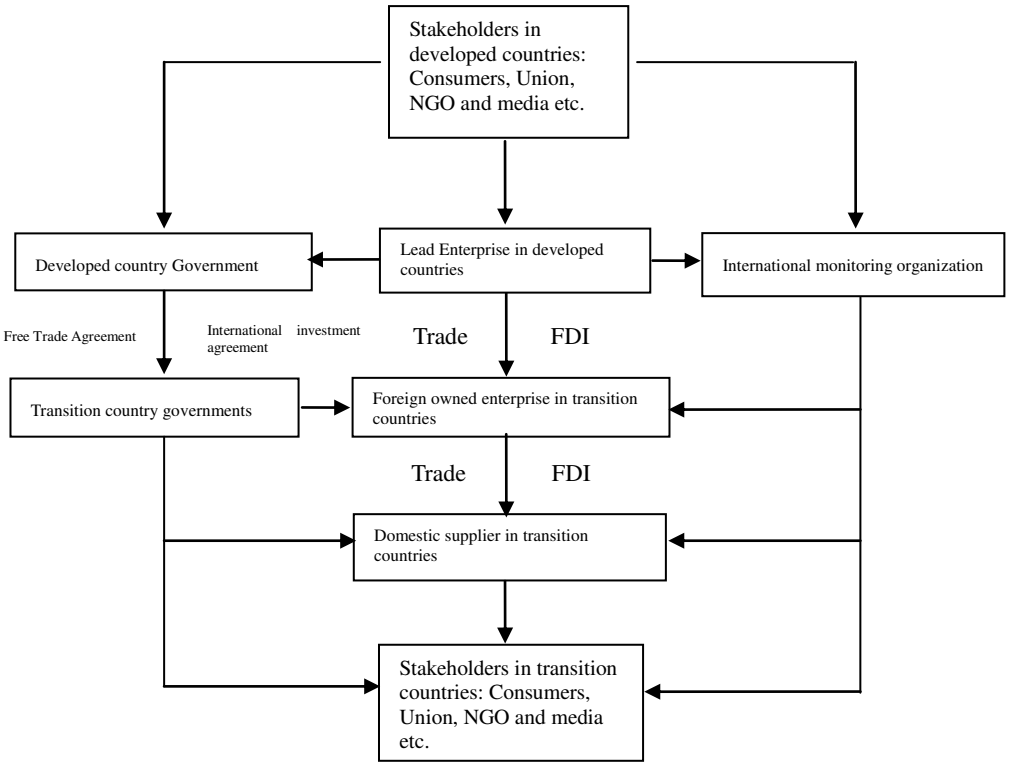

Figure 2 Locations of the sample cities

Figure 3 Research Map: Diagram of the Relations Estimated between Open economy, GVC and CSR performance with references to the Tables in which the results are presented

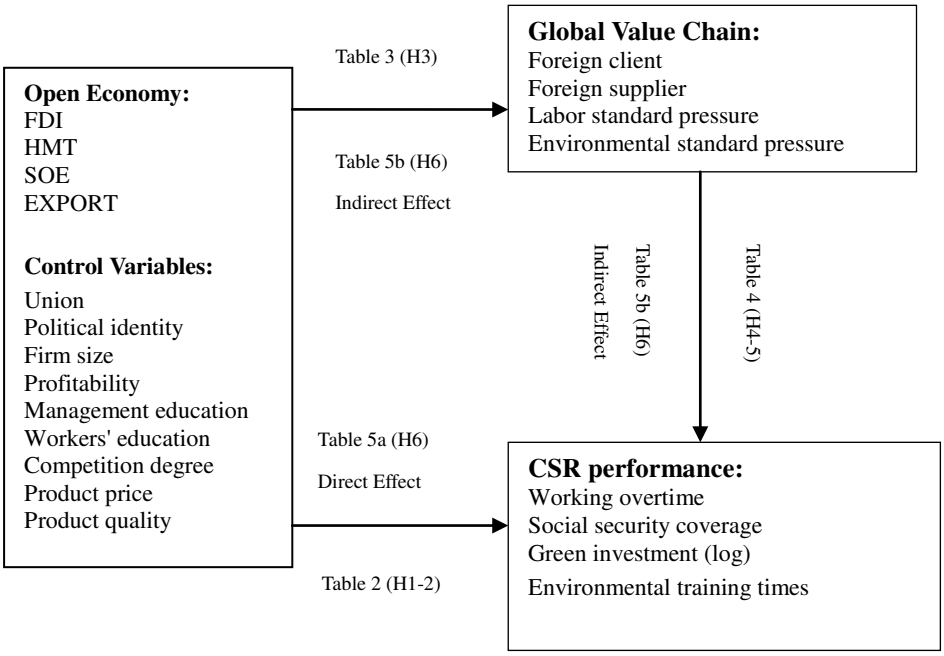

Table 1 Descriptive statistics of variables in the CCSRS, 1266 observations

Variable	Mean	Std. Dev.	Min	Max
working over time	0.51	0.50	0	1
social security coverage	2.96	1.53	1	5
green investment (log)	2.01	1.87	0	8.75
environmental training times	1.56	2.73	0	40
foreign ownership	0.11	0.31	0	1
HMT ownership	0.08	0.28	0	1
state ownership	0.10	0.30	0	1
private ownership	0.71	0.45	0	1
export	0.36	0.48	0	1
foreign client	0.39	0.49	0	1
foreign supplier	0.40	0.49	0	1
labor standard pressure	1.67	0.97	1	4
environmental standard pressure	1.92	1.12	1	4
union	0.67	0.47	0	1
political identity	0.38	0.49	0	1
firm size (log)	5.37	1.24	1.10	11.37
pretax-profit/sale	0.03	0.10	-1.46	0.72
management education	2.32	1.28	1	4
workers' education	3.31	1.00	1	4
competition degree	0.74	0.44	0	1
product price	0.24	0.43	0	1
product quality	0.67	0.47	0	1

Data source: the CCSRS 2006, calculated by authors.

Table 2 Estimated results using equation (1), 1266 observations

Dependent/independent variables	*WRKOT (Logit)*	*SSCOV (Ologit)*	*GI (Tobit)*	*ETT (Poisson)*
Panel a. Open economy and GVC variables				
foreign owned	-0.456**	0.966***	0.088	-0.130*
	(0.229)	(0.195)	(0.209)	(0.079)
HMT owned	-0.247	0.134	-0.578**	-0.249***
	(0.260)	(0.208)	(0.243)	(0.093)
SOE	-1.429***	1.383***	-0.235	-0.155*
	(0.290)	(0.213)	(0.231)	(0.083)
export	0.108	-0.220	0.144	0.010
	(0.166)	(0.135)	(0.153)	(0.057)
foreign client	0.103	0.380***	0.372**	0.324***
	(0.176)	(0.142)	(0.162)	(0.060)
foreign supplier	-0.046	0.259*	0.044	-0.114*
	(0.173)	(0.139)	(0.159)	(0.059)
labor standard pressure	0.154	0.535***	-0.100	0.051
(no)	(0.248)	(0.205)	(0.230)	(0.087)
labor standard pressure	0.475	0.418*	0.088	0.294***
(minor)	(0.293)	(0.237)	(0.272)	(0.097)
labor standard pressure	0.453	0.632**	-0.189	0.032
(major)	(0.353)	(0.275)	(0.321)	(0.113)
environmental standard	0.093	-0.521**	-0.165	-0.043
pressure (no)	(0.249)	(0.204)	(0.229)	(0.088)
environmental standard	-0.080	-0.467*	0.585**	0.032
pressure (minor)	(0.298)	(0.244)	(0.275)	(0.102)
environmental standard	-0.144	-0.403	0.252	-0.024
pressure (major)	(0.311)	(0.249)	(0.284)	(0.103)
Panel b. Control variables				
union	-0.592***	0.956***	0.159	0.083
	(0.152)	(0.125)	(0.142)	(0.056)
political identity	-0.087	0.149	0.074	0.152***
	(0.143)	(0.117)	(0.132)	(0.049)
firm size (log)	-0.073	0.235***	0.681***	0.247***
	(0.064)	(0.053)	(0.058)	(0.020)
pretax-profit/sale	-0.828	0.529	-0.674	0.041
	(0.727)	(0.547)	(0.609)	(0.229)
management education	-0.448**	0.441***	0.486***	0.286***
(20-40%)	(0.191)	(0.159)	(0.180)	(0.071)
management education	-0.202	0.516***	0.516***	0.336***
(40-60%)	(0.207)	(0.163)	(0.190)	(0.071)
management education	-0.857***	1.083***	0.096	0.280***
(60% +)	(0.169)	(0.142)	(0.157)	(0.061)
workers' education	-0.169	0.189	-0.003	0.059

(20-40%)	(0.296)	(0.243)	(0.274)	(0.110)
workers' education	0.358	-0.048	-0.113	0.024
(40-60%)	(0.279)	(0.227)	(0.256)	(0.103)
workers' education	-0.138	0.125	0.086	0.191**
(60% +)	(0.243)	(0.200)	(0.224)	(0.087)
competition degree	-0.225	0.307**	0.503***	0.216***
	(0.155)	(0.124)	(0.145)	(0.058)
product price	-0.111	0.241*	0.414***	0.074
	(0.156)	(0.125)	(0.142)	(0.053)
product quality	-0.364**	0.151	0.451***	0.129**
	(0.148)	(0.119)	(0.137)	(0.054)
industry dummies	yes	yes	yes	yes
city dummies	yes	yes	yes	yes

Note: Standard errors are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels for two-tail tests.

Table 3 relationship between open economy, FDI embedment and pressure of the GVC

Dependent /independent variables	foreign client	foreign supplier	labor standard pressure	environmental standard pressure
foreign	-0.007	0.123***	0.055	0.096
	(0.044)	***(0.044)***	***(0.087)***	***(0.095)***
HMT	-0.095*	0.030	0.015	-0.105
	(0.051)	***(0.050)***	***(0.100)***	***(0.109)***
SOE	-0.069	-0.125***	-0.248***	-0.298***
	(0.048)	***(0.047)***	***(0.094)***	***(0.103)***
export	0.138***	0.048*	0.431***	0.827***
	(0.030)	***(0.030)***	***(0.060)***	***(0.065)***
control variables	yes	yes	yes	yes
industry dummies	yes	yes	yes	yes
city dummies	yes	yes	yes	yes

Note: Standard errors are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels for two-tail tests.

Table 4 relationship between value chain pressure and CSR performance

Dependent/independent variables	*WRKOT*	*SSCOV*	*GI*	*ETT*
foreign client	0.023	0.284***	0.298***	0.514***
	(0.034)	***(0.094)***	***(0.123)***	***(0.198)***
foreign supplier	-0.010	0.127	0.052	-0.222
	(0.033)	***(0.092)***	***(0.121)***	***(0.194)***
labor standard pressure	0.037*	0.124**	-0.060	0.085
	(0.021)	***(0.058)***	***(0.076)***	***(0.122)***
environmental standard pressure	-0.013	-0.082	0.116*	0.016
	(0.019)	***(0.054)***	***(0.071)***	***(0.114)***
control variables	yes	yes	yes	yes
industry dummies	yes	yes	yes	yes
city dummies	yes	yes	yes	yes

Notes: Each cell reports the maximum likelihood coefficient and the estimates of standard errors (in italic). *** and * indicate a p value of $\leqslant$ 0.01, 0.05, 0.10 in a two-tailed test

Table 5 relationship between openness and CSR performance

Panel 5a Direct effect of openness and CSR performance				
Dependent/independent variables	*WRKOT*	*SSCOV*	*GI*	*ETT*
foreign	-0.103***	0.623***	0.092	-0.305
	(0.043)	***(0.120)***	***(0.158)***	***(0.254)***
HMT	-0.052	0.116	-0.404**	-0.428
	(0.050)	***(0.138)***	***(0.182)***	***(0.292)***
SOE	-0.245***	0.909***	-0.082	-0.274
	(0.047)	***(0.130)***	***(0.171)***	***(0.275)***
export	0.019	-0.116	0.122	0.037
	(0.032)	***(0.088)***	***(0.115)***	***(0.186)***
control variables	yes	yes	yes	yes
industry dummies	yes	yes	yes	yes
city dummies	yes	yes	yes	yes
Panel 5b Indirect effect of openness and CSR performance				
Dependent/independent variables	*WRKOT*	*SSCOV*	*GI*	*ETT*
foreign	-0.001	0.013	0.012	-0.025
	(0.006)	***(0.023)***	***(0.024)***	***(0.036)***
HMT	-0.001	-0.013	-0.040*	-0.056*
	(0.006)	***(0.025)***	***(0.026)***	***(0.038)***
SOE	-0.006	-0.042*	-0.047*	-0.033
	(0.006)	***(0.024)***	***(0.026)***	***(0.039)***
export	0.008	0.031	0.114***	0.110*
	(0.011)	***(0.033)***	***(0.042)***	***(0.067)***
control variables	yes	yes	yes	yes
industry dummies	yes	yes	yes	yes
city dummies	yes	yes	yes	yes
Panel 5c Total effect of openness and CSR performance				
Dependent/independent variables	*WRKOT*	*SSCOV*	*GI*	*ETT*
foreign	-0.103***	0.636***	0.104	-0.330
	(0.043)	***(0.121)***	***(0.158)***	***(0.254)***
HMT	-0.052	0.104	-0.444***	-0.484*
	(0.050)	***(0.140)***	***(0.182)***	***(0.293)***
SOE	-0.250***	0.867***	-0.128	-0.307
	(0.047)	***(0.131)***	***(0.171)***	***(0.275)***
export	0.026	-0.085	0.235**	0.147
	(0.030)	***(0.083)***	***(0.109)***	***(0.175)***
control variables	yes	yes	yes	yes
industry dummies	yes	yes	yes	yes
city dummies	yes	yes	yes	yes

Note: Standard errors are reported in parentheses. ***, ** and * denote significance at 1%, 5% and 10% levels for two-tail tests.