

# Corporate Social Responsibility in the Wood Products Industry: US and Chinese Consumers' Perceptions

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## Abstract

This study examined US and Chinese consumers' perceptions of the economic, ethical, legal, and philanthropic responsibilities that wood products companies should be held responsible for. Survey data collected in the United States and China in 2011 were analyzed to determine whether this four-component corporate social responsibility (CSR) model was valid and to explore differences between the two countries. Results suggest that economic, ethical, legal, and philanthropic dimensions fit well a model of CSR. Responsibilities related to sound forest management were embedded in legal and ethical expectations. Wood products consumers from both nations self-reported higher expectations for companies' legal and ethical responsibilities than for economic and philanthropic responsibilities. US respondents' expectations for ethical and philanthropic responsibilities in the wood products industry had positive and significant effects on their stated preferences to purchase wood products. In China, only respondents' expectations for philanthropic responsibilities were found to have a positive and significant impact on stated purchasing preferences. The premise that wood products companies' primary objective is to attain economic profits may not be representative of consumers' expectations. Economic expectations seem axiomatic, and consumers instead deem this and likely other natural resource-based industries should exercise greater legal, ethical, and philanthropic practices.

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The study of corporate social responsibility (CSR) has garnered the attention of researchers and practitioners in recent years. Triggered by rising concerns over the loss of biodiversity, global warming, and climate change issues, particular attention associated with CSR has been placed on natural resource-based industries (Panwar and Hansen 2007). Among these, the wood products industry (composed of both timber harvesting and wood products manufacturing) plays a major role in the sustainable management of global forest ecosystems. Companies in this industry actively seek to balance environmental, social, and economic responsibilities (Vidal and Kozak 2008a). As disclosed in multiple CSR reports, wood products companies engage in socially and environmentally responsible practices including sustainable forest management, recycling, environmental certification, accountability, contribution of charitable donations, and provision of child care for employees, among others (Vidal and Kozak 2008b).

Stakeholders' opinions and perceptions toward CSR practices in the wood products industry have been discussed in previous studies (Panwar and Hansen 2008; Panwar et al. 2010; Wang and Juslin 2011, 2012). Panwar and Hansen (2008) interviewed various stakeholder groups and identified 12 social and environmental issues closely related to the wood products industry (e.g., to provide financial invest-

ments to the community and conduct environmentally friendly purchases). Panwar et al. (2010) reported that consumers' gender, education level, and age may affect views toward the wood products industry's social, environmental, and economic responsibilities after surveying residents of the states of Idaho, Montana, Oregon, and Washington. The literature provides evidence that consumers' product preferences are associated with perceived companies' CSR practices and may punish companies not deemed to be socially responsible (Brown and Dacin 1997, Sen and Bhattacharya 2001, Becker-Olsen and Simmons 2002). In the wood products industry, companies' codes of conduct required for forest certification are regarded as integral components of CSR initiatives (Fischer et al. 2005, Vidal and Kozak 2009). Although consumers' attitudes and willingness to pay premiums for certified wood products

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have been thoroughly studied (e.g., Ozanne and Vlosky 1997, Veisten 2002, Anderson and Hansen 2004, Aguilar and Vlosky 2007), there has not been a direct examination of how consumer's perceptions of the CSRs practiced by the wood products industry influence their purchasing preferences.

This study aimed to evaluate the validity of a four-responsibility (economic, ethical, legal, and philanthropic) CSR model applied to the wood products industry and explore how consumers' corporate responsibility perceptions influence stated wood products purchasing preferences. Empirically, our research focused on examining consumers' perceptions in the United States and China, both of which were selected for their importance in the global wood products market and for comparative purposes. Cross-cultural consumer expectations toward CSRs in the wood products industry is an important issue, because CSR implementation is context specific and may be different across nations (Carroll 1979, Maignan 2001, Rawwas 2001, Maignan and Ralston 2002, Panwar and Hansen 2007) as a result of differences in the cultural environment, stages of economic development, and political systems, among others (Burton et al. 2000). Multinational companies often need to craft CSR management for country-specific conditions in order to design operation and marketing strategies (McWilliams et al. 2006). Panwar and Hansen (2007) examined and compared wood products industry stakeholders' perceptions regarding CSR practices in the United States and India and pointed to certain CSR practices that were specific to and should be addressed by wood product companies in each country. Other cross-country studies related to CSR in the wood products industry are limited to consumers' reactions or willingness to pay for certified wood products (e.g., Veisten 2002, Aguilar and Cai 2010).

Specifically, this study had three objectives: (1) to examine US and Chinese consumers' ability to distinguish between wood products companies' economic, legal, ethical, and philanthropic responsibilities; (2) to explore and compare US and Chinese consumers' expectations toward wood products companies' CSRs; and (3) to establish the relationship between consumers' expectations toward CSR dimensions and their stated purchasing preferences for wood products.

## **Literature Review**

### **CSR dimensions in the wood products industry**

The concepts and definitions of CSR have been widely discussed and debated in the literature. However, there is no commonly accepted definition because of a lack of consensus regarding the dimensions that should be encompassed by CSR (Carroll 1979, Van Marrewijk 2003, Dahlsrud 2008, Turker 2009). Carroll (1991) reviewed the CSR literature and proposed a four-dimensional conceptual framework to describe corporate responsibilities. Carroll's (1991) framework suggests that the CSR concept is composed of economic, legal, ethical, and philanthropic responsibilities (Davis 1960, Friedman 1962, Eells and Walton 1974, Backman 1975, Piacentini et al. 2000, Dahlsrud 2008). Economic responsibility refers to the idea that companies should be profitable; legal responsibility means that companies should operate within the established framework of laws and regulations; ethical responsibility

includes companies' behavior or actions to protect their stakeholders' rights; and philanthropic responsibility encompasses companies' charitable behaviors (Carroll 1991). Carroll and Shabana (2010) further explained the notion of the four-dimensional CSR framework as economic and legal responsibilities being required, ethical responsibilities to be expected, and philanthropic responsibilities as desired.

Empirical studies have validated the four-dimensional framework from the perspective of managers. Aupperle et al. (1985) interviewed corporate chief executive officers from Forbes' 1981 Annual Directory and concluded that CSR has four core components: economic, ethical, philanthropic, and legal responsibilities. Pinkston and Carroll (1996) sampled 591 managers from multinational chemical headquarters in England, France, Germany, Japan, Sweden, Switzerland, and the United States, and their results corroborated the same four CSR dimensions. The literature, to our knowledge, has not validated this CSR framework for the wood products industry using consumer responses nor compared it with other models.

As an alternative to Carroll's four-dimensional CSR framework, others have suggested a triple bottom-line (TBL) model (economic, social, and environmental) to measure sustainability and evaluate corporate responsibilities (Elkington 1997). The triple bottom line (also commonly referred to as profit, people, and planet) makes an explicit association between corporate behavior and environmental impacts. Different from the triple bottom-line model, Carroll's four-dimensional CSR framework might be more meaningful to consumers (Maignan 2001, Panwar et al. 2006). Several studies have reported consumers' awareness of and ability to distinguish between the four responsibilities captured in this CSR framework. Maignan (2001) examined consumers from France, Germany, and the United States regarding their awareness of CSR, finding that consumers from these countries can identify and differentiate companies' practiced economic, legal, ethical, and philanthropic responsibilities. Arli and Lasmono (2010) examined consumers' perceptions of CSR in Indonesia and obtained the same results as Maignan (2001). Similar results were also found by Ramasamy and Yeung (2009). In addition to a limited conceptual discussion of the CSR components, particularly associated with the wood products industry, determining whether consumers distinguish between a three- or a four-dimensional corporate responsibility model is important to guide operational and communication strategies.

### **Country-specific differences in consumers' CSR expectations from the wood products industry**

Country-level differences regarding consumers' CSR expectations have been reported. For example, Singh and del Bosque (2008) surveyed consumers in Spain and the United Kingdom and found that consumers in the former had lower expectations for companies' ethical and environmental activities. Maignan (2001) found that US consumers identified legal and economic responsibilities as the leading obligations companies should have, while consumers in France and Germany expected legal and ethical responsibilities to be the most important corporate practices. Maignan et al. (1999) reported that US consumers expected companies to take more economic responsibilities compared

with French and German consumers, but no differences were detected among US, French, and German consumers' expectations toward legal and ethical responsibilities.

Studies on direct comparisons between US and Chinese consumers' CSR perceptions are limited, and no study has focused on the wood products industry. Burton et al. (2000) surveyed 165 US and 157 Hong Kong business students regarding their opinions about CSR. They found that in both samples CSR was perceived as a four-construct model composed of economic, legal, ethical, and philanthropic responsibilities. They also concluded that the Hong Kong respondents expected companies to take greater economic responsibilities compared with their US counterparts. Chu and Lin (2013) surveyed US and Chinese female consumers, finding that Chinese respondents perceived a higher level of expectations toward CSR (without mentioning the economic, legal, ethical, or philanthropic responsibility) in the cosmetics industry than did the US respondents.

### **Consumer expectations toward CSR dimensions and stated purchasing preferences**

Several studies have indicated that companies' socially responsible practices positively affect consumers' stated purchasing preferences (e.g., McGuire 1963, Brown and Dacin 1997, Bronn and Vroni 2001, Sen and Bhattacharya 2001, Cai and Aguilar 2013a). For instance, Mohr and Webb (2005) found that companies' environmental and philanthropic activities had positive effects on consumers' purchase intent in the United States. Bronn and Vroni (2001) concluded that companies' philanthropic responsibility helped improve their public image and reputation, which may positively attract consumer purchasing preferences.

Other research suggested that consumers' purchasing decisions are affected by their attitudes and perceptions toward CSR (e.g., Dawkins and Lewis 2003, Nan and Heo 2007, Chu and Lin 2013). Podnar and Golob (2007) emphasized that consumers' levels of support to socially responsible companies might be influenced by their expectations of companies' ethical-philanthropic practices but not their legal and economic behavior. Mohr et al. (2001) conducted street face-to-face interviews in a major metropolitan area in the United States, pointing out that consumers' expectations of companies' CSR influenced their purchasing behavior. Hence, we expected an extension of these arguments to apply to the wood products industry and consumer's preferences.

## **Methods**

### **Consumer surveys**

Data were collected using two survey instruments deployed in the United States and China. Questionnaires applied to the two countries were identical except for questions associated with respondents' ethnicity and income. The US questionnaire was developed first and later translated to Chinese. The Chinese questionnaire was translated back to English to ensure consistency. In order to ensure the interpretability of the questionnaires, pretests were conducted by surveying 20 respondents in the two countries in their own languages. A definition of CSR was provided early in the questionnaire to eliminate potential bias caused by knowledge differences. CSR was defined as

“the obligations of businessmen to pursue policies, make decisions, or to follow lines of action which are desirable in terms of the objectives and values of our society” (Bowen 1953, p. 6). The rest of the survey instrument had four sections.

Section one examined consumers' familiarity with and expectations for CSR. Respondents' familiarity was elicited by asking: “Were you aware of CSR prior to this survey?” and “Are you aware of any socially responsible companies in the wood products industry?” To gather consumers' expectations toward wood products industry's CSR, we included 20 statements regarding economic, legal, ethical, and philanthropic practices. CSR practices were obtained from past empirical studies and forest certification standards, selected based on their relevance to the wood products industry. Statements regarding companies' economic and legal responsibilities were adapted from Jin (2006) and Maignan (2001); companies' expected ethical responsibilities were adapted from the Forest Stewardship Council (FSC 1996), Welford (2003), and Panwar and Hansen (2008); and companies' philanthropic responsibilities were adapted from Van Herpen et al. (2003) and Brammer et al. (2007). Consumers were asked to self-report their agreement or disagreement with each statement using a 7-point Likert scale (1 = strongly disagree, 4 = neither agree nor disagree, 7 = strongly agree). A list of all statements with statistical summary information is presented in the “Results and Discussion” section.

In the second section of the questionnaires, consumers' views toward purchasing wood products manufactured by socially responsible companies were gathered. Their opinions and preferences were elicited using three questions “I believe it is important to purchase wood products produced by socially responsible companies,” “I strongly support buying wood products manufactured from socially responsible companies,” and “How likely is it that you will purchase a wood product that is manufactured by a socially responsible company, rather than by a company that is not socially responsible, if all the other product attributes (e.g. price, style) are the same?” A 7-point Likert scale was used to record answers.

Section three collected respondents' past and planned future wood products purchases. Two questions were posed: “Have you ever purchased any wood product (e.g. wooden table, oak board) before?” and “Do you plan to purchase wood products within the next five years?” Respondents' demographic information (annual household income, age, education, and gender) was self-reported in the fourth section.

### **Data collection**

Survey responses were collected in the fall of 2011. An online survey was administered in the United States by Survey Sampling International (SSI)—a sampling and data collection provider. SSI data have been used in several scientific studies to sample the US population (e.g., Thompson et al. 2006, Aguilar and Cai 2010). SSI distributed the questionnaire to a random sample drawn from its online panel containing more than 800,000 people 18 years of age and older (Aguilar and Cai 2010). The online panel is a group of individuals approached through probability sampling methods using random digit dial telephone surveys (Couper 2000). Responses were collected until our targeted number of responses (1,000 observations)



was received. Only one complete survey per participant was allowed.

In China, instead of administering an online survey, a face-to-face survey was conducted. The face-to-face survey method was chosen in China because of concerns regarding systematic sample selection bias and data quality (Xiang 2001). Data collected better match the characteristics of a consumer convenience sample. By 2011, only 38.3 percent of the population in China were internet users, compared with 75.6 percent in the United States (China Internet Network Information Center 2012, US Census Bureau 2013). According to Xiang (2001), online respondents may not be representative of Chinese wood products consumers because on average they consistently have higher annual household incomes and higher education levels. Beijing, Hefei, and Shenyang cities were selected as target sample areas for this project. These three cities were chosen based on their ranks of wood products manufacturing per capita (WPM per capita), which has been used as an index to describe the level of development in the wood products industry (Cai and Aguilar 2013b). WPM per capita for all municipalities and provinces were obtained from the National Bureau of Statistics of China (2008) and were later categorized into three tiers. WPM per capita in Beijing was ranked in the lowest tier across the country, while the other two cities were ranked in the highest tier (Hefei) and the mid-level tier (Shenyang).

Surveys were conducted in furniture stores in the three cities. In order to obtain a more representative sample of Chinese consumers, information regarding furniture stores' average product price levels (i.e., high, medium, and low) in the three cities were reviewed and collected through a local Web search engine. In each city, selected stores were stratified into three groups based on average price level of wood products for sale. One or two stores were randomly selected in each level. Finally, three furniture stores in Beijing (Meilian Tiandi, Ikea, and Easy Home), four in Shenyang (Baili Jiaju, DongMaoKu, Ikea, and JiuLu Furniture Market), and three in Hefei (HongXing Meikai-Long, Qidu Kongjian, and Hongqi Jiancai) were selected. People visiting these stores were invited to participate in this study and were offered a US\$0.80 value gift if they finished the survey because monetary incentives have been found to be helpful in increasing the response rate without losing the quality of responses (James and Bolstein 1990; Willimack et al. 1995; Singer et al. 1999, 2000). If those people who were approached were willing to participate, the objectives of the survey were explained and the questionnaire was administered.

As with any other survey-based consumer study, several challenges point to caution in regard to how well our samples represent country populations, particularly the convenience sample in China. Our methods did not allow for a reliable measurement of nonresponse bias (Hudson et al. 2004). Concerning the online sample of the US population, Couper (2000) mentions that nonresponse bias may occur at different stages, from the initial panel generation procedure to the stage when the survey instrument is sent to the panelists. In the Chinese survey, nonresponse bias may have been caused by either approaching people who had no interest in the questionnaire or were busy shopping in the store. The one approach we took to estimate nonresponse bias was to compare responses from completed and unfinished questionnaires. Comparison

results between finished and unfinished surveys indicated that their responses were statistically insignificant regarding consumers' CSR expectations. Differences between people who were not interested in the survey questions and respondents could not be estimated. A response rate is a common metric used to help determine sample representativeness. The process of online data collection did not permit estimating a response rate in the case of the US sample. Estimating a response rate for the Chinese sample was limited by challenges of accounting for the exact number of people approached to participate in the study. Interviewers were located in two different places inside each furniture store, and several of the approached people who refused to answer our questionnaires might have been asked twice by interviewers, in which case an accurate number of nonparticipants cannot be provided. Thus, adequacy of the US and Chinese samples was determined based on comparison of socioeconomic information to census data. Finally, it is worth mentioning that we relied on self-reported answers and not on actual consumer behavior, which can result in yet another potential source of error.

## Data analysis

Prior to statistical analysis and to better answer our study objectives, we had to deal with the challenge of comparing data from online and face-to-face interviews. To address this issue, we generated two data sets to screen biases caused by different survey methods (Fisher 1993, Leggett et al. 2003, Duffy et al. 2005). The first data set (unmatched) included all survey respondents. In the second data set, respondents were first screened by their stated past and planned future purchasing behavior in order to capture wood products consumers. Only respondents who stated they had purchased wood products before or were planning to purchase wood products in the next 5 years were then matched using propensity score matching (PSM) to generate the second data set.

The PSM method was recommended by Duffy et al. (2005) to eliminate attitudinal differences caused by different survey methods. The PSM may help generate two more comparable samples through controlling demographic information differences between countries. However, estimation differences caused by different survey methods cannot be fully addressed by PSM, which is one limitation of this study. Following Dehejia and Wahba (2002), US and Chinese screened samples were merged, and a logistic regression model was built to calculate the probability for a respondent to randomly take the Chinese or US survey. Respondents from the United States and China were matched by identifying respondents with the smallest probability differences (Dehejia and Wahba 2002).

Cronbach's alpha coefficients (Cronbach 1951) were used to test the internal consistency for collected CSR expectations for each CSR dimension. US and Chinese respondents' perceptions toward each listed CSR practice statement were compared through Student's *t* tests (Hair et al. 2010). Confirmatory factor analysis (CFA) was used to test consumers' ability to distinguish between economic, legal, ethical, and philanthropic responsibilities as factors upon which CSR is rooted. Unlike explanatory factor analysis, CFA is used to test the dimensions that make up an abstract concept (Schwartz and Boehnke 2004). In this specific study, two models were estimated to include four and three component factors as a proxy for Carroll's CSR model and

the TBL, respectively. Both CFA latent construct models were compared based on several indices, including discrepancy  $\chi^2$ , goodness-of-fit index, adjusted goodness-of-fit index, comparative fit index, and root mean square error approximation (Bentler 1989, Hu and Bentler 1999). Multivariate analysis of variance (MANOVA; Hair et al. 2010) was applied to test differences between US and Chinese potential consumers' expectations toward every dimension encompassed by CSR.

A structural equation model (SEM; Anderson and Gerbing 1988) was used to determine the impacts of consumers' CSR expectations on their stated purchasing preferences. Endogenous variables in the model included respondents' likelihood to purchase, level of support to purchase, opinions about the importance of purchasing wood products from socially responsible companies, and consumers' expectations for wood products companies' economic, legal, ethical, and philanthropic responsibilities. Exogenous variables included unobserved latent structures verified by CFA. Goodness of fit of the SEM model was evaluated by the same indices used in CFA. All statistical analyses were conducted using SAS 9.3 (SAS Institute Inc. 2011).

## Results and Discussion

### Sample demographics

We collected 1,120 responses in the United States and 902 in China. Ten questionnaires were not finished in China, which resulted in 892 valid observations for analysis, of which 328 were from Beijing, 219 from Hefei, and 345 from Shenyang. After controlling for respondents who indicated they had purchased wood products before or indicated a willingness to purchase wood products in the next 5 years, 342 respondents were matched in each country using PSM.

In the United States, gender was equally balanced, while in China, a greater share of responses came from female participants (55.67%). In the US sample, a large share of respondents (61.96%) were older than 45 years of age, while a majority of respondents in China (63.35%) were 35 years or younger. In terms of annual household income, more than half (51.89%) of the respondents in the United States had an income of less than \$49,999. According to the US census data, 41.57 percent of the population has an income of less than \$49,999 (US Census Bureau 2012). In China, 43.16 percent of the respondents reported an income of less than \$47,999. Respondents in the United States and China who had a high school degree accounted for 26.65 and 18.67 percent of the sample, some college education for 30.89 and 25.57 percent, a college degree for 24.57 and 42.19 percent, and a graduate degree for 17.07 and 11.88 percent, respectively. The US Census Bureau (2012) reported 29.90 percent of the US population has at least a college degree. Our US sample showed a higher education level (41.64% had at least a college degree) than the census data.

In our samples, 83.48 percent of the respondents in the United States and 83.99 percent of Chinese respondents indicated they had purchased wood products before taking the survey. Furthermore, over half (53.54%) of US respondents compared with about three quarters (73.05%) of the Chinese respondents stated they will purchase wood products within the next 5 years. We expand on comparisons between these two groups as we explain our findings for the unmatched and the PSM-matched data sets.

### CSR familiarity and perceptions

In the United States, 37.39 percent of the respondents reported awareness of CSR before taking the questionnaire compared with 59.89 percent of the respondents in China. Around 14.29 percent of US respondents indicated they have heard about companies that are socially responsible in the wood products industry compared with 25.91 percent in China. A higher percentage of familiarity with and adoption of CSR in the wood products industry in China might be explained by government and nongovernment organizations' wide efforts to increase public environmental awareness.

These results suggest that respondents' reported knowledge about wood products companies with adopting CSR practices was limited. Other regional reports, such as Thompson et al. (2010), found that 38 percent of respondents have heard about forest certification before taking the survey based on consumer data collected at two Home Depot stores in Oregon. Other research elicited familiarity by asking about respondents' understanding of the forest certification concept (e.g., Ozanne and Vlosky 2003) rather than explicit CSR, which limits our ability to compare results. Nevertheless, the common theme from this research and others is a lack of overall knowledge about CSR and its implementation by the wood products industry. For example, the use of ecolabels to recognize the adoption of corporate codes of conduct by forest certification programs has become a ubiquitous practice in the US wood products market—although it remains a small fraction of international wood products trade (D'Angelo 2012). Wide use of ecolabels, but a lack of consumer familiarity with CSR and its adoption by the industry in the United States, points to a disconnect in communication efforts and public awareness. Arguably, this may suggest that although forest certification and use of ecolabels has become widespread in the United States, it has not resulted in as much consumer awareness of its meaning. The development of an ecolabeling system in China is still in early stages (Geng and Doberstein 2008), and improvement of public awareness regarding CSR should be emphasized. Particularly, in addition to certification and accreditation procedures along the supply chain, attention should also be placed on conveying companies' economic, legal, ethical, and philanthropic practices to the general public. Related information communicated through public media and final consumer retailers may improve people's familiarity and understanding of the ecolabeling system's formal adoption of CSRs (Fischer et al. 2005).

Table 1 shows the means of consumers' expectations toward CSR practices in the wood products industry and identifies those with means statistically different between the US and Chinese samples. The means for all 20 CSR statements were above the neutral value of 4.0, indicating that respondents from both the United States and China were in agreement that wood products companies should be held responsible for all CSR practices. Student's *t* test results using data set I (unmatched) showed that, for most of the listed wood products companies' CSR statements, US and Chinese respondents' expectations were different. However, results for PSM matched data set II indicated only seven variables were statistically different at the  $\alpha = 0.001$  level. The internal consistency of each CSR dimension was tested and confirmed based on Cronbach's alpha coefficients being higher than 0.75.

**Table 1.—Means for 20 statements regarding corporate social responsibility practices in the wood products industry as reported by US and Chinese respondents.<sup>a</sup>**

	Data set I (unmatched)			Data set II (matched)		
	United States ( <i>n</i> = 1,120)	China ( <i>n</i> = 892)	<i>P</i>	United States ( <i>n</i> = 342)	China ( <i>n</i> = 342)	<i>P</i>
<b>Economic responsibility</b>						
Maximizing profits	4.82*	4.11*	<0.001	4.81*	4.10*	<0.001
Improving economic performance (e.g., productivity, investment rate of return)	5.22	5.18	0.630	5.24	5.19	0.636
Expanding market share for their own products or services	5.17*	5.32*	<0.001	5.19	5.40	0.045
Establishing long-term financial plans and achieving those goals	5.40	5.44	0.014	5.46	5.57	0.291
Using forest resources efficiently and reducing production costs	5.95	5.60	0.001	5.96	5.58	0.003
<b>Legal responsibility</b>						
Providing safe and reliable wood products and services for consumers	6.14*	6.31*	<0.001	6.18	6.37	0.029
Correctly and honestly advertising and labeling products	6.15*	6.39*	<0.001	6.14	6.37	0.010
Providing and trading wood products sourced from legally logged trees	6.06*	6.17*	<0.001	6.07	6.27	0.030
Paying legally prescribed fees, taxes, and other charges	6.09*	6.30*	<0.001	6.07	6.32	0.008
Honestly and accurately reporting their financial performance	6.16*	6.31*	<0.001	6.14	6.35	0.027
<b>Ethical responsibility</b>						
			<0.001			
Supporting sustainable use of forests	6.15*	6.42*	<0.001	6.12	6.35	0.018
Protecting water, air, and soil resources and conserving biological diversity	6.15*	6.51*	<0.001	6.11*	6.46*	<0.0001
Dealing with customer complaints patiently and reasonably	6.07*	6.40*	<0.001	6.06	6.34	0.001
Respecting human rights	6.13*	6.35*	<0.001	6.12	6.37	0.007
Providing local communities with opportunities for employment, training, and other services	5.91*	6.04*	<0.001	5.89	6.01	0.159
<b>Philanthropic responsibility</b>						
Supporting charities and community projects	5.36*	5.95*	<0.001	5.48*	5.99*	<0.001
Sponsoring local cultural activities (e.g., concerts, sporting events)	4.85*	5.98*	<0.001	4.97*	5.96*	<0.001
Improving education in local communities where they operate (e.g., providing fellowships or scholarships to students in local schools)	5.12*	6.00*	<0.001	5.25*	5.97*	<0.001
Making donations to benefit local groups and those in need	5.07*	6.03*	<0.001	5.23*	6.02*	<0.001
Providing monetary support to environmental groups	4.86*	6.14*	<0.001	5.06*	6.14*	<0.001

<sup>a</sup> All items were measured using a 7-point Likert scale (1 = strongly disagree, 4 = neither agree nor disagree, 7 = strongly agree). \* = statistically different at the  $\alpha = 0.001$  level according to the Student *t* test.

## Confirmatory factor analysis and CSR dimensions in the wood products industry

Table 2 presents the fit indices of the US and China CFA models for both data sets. Acceptable index values were those recommended by Bentler (1989), Hu and Bentler

(1999), and Schreiber et al. (2006). Although the results showed a significant  $\chi^2$  value ( $P < 0.001$ ) suggesting the models may not fit the two data sets well, other indices consistently showed that these models were appropriate. Goodness-of-fit indices for the TBL model are reported in

**Table 2.—Fit indices<sup>a</sup> for confirmatory factor analysis models applied to responses from the US and Chinese respondents.**

	Recommended value <sup>b</sup>	Data set I (unmatched)		Data set II (PSM matched)	
		United States ( <i>n</i> = 1,120)	China ( <i>n</i> = 892)	United States ( <i>n</i> = 342)	China ( <i>n</i> = 342)
Prob > $\chi^2$	$\geq 0.05$	<0.001 [<0.001]	<0.001 [<0.001]	<0.001 [<0.001]	<0.001 [<0.001]
Goodness-of-fit index	$\geq 0.90$	0.92 [0.46]	0.92 [0.57]	0.92 [0.45]	0.91 [0.60]
Adjusted goodness-of-fit index	$\geq 0.80$	0.89 [0.33]	0.89 [0.47]	0.88 [0.32]	0.88 [0.50]
Comparative fit index	$\geq 0.80$	0.97 [0.68]	0.95 [0.70]	0.97 [0.62]	0.95 [0.72]
Root mean square error approximation	$\leq 0.08$	0.07 [0.20]	0.07 [0.16]	0.07 [0.20]	0.07 [0.16]

<sup>a</sup> Fit indices without the square brackets were elicited based on Carroll's four-dimensional corporate social responsibility theory, and indices within the square brackets were elicited based on the triple bottom-line model.

<sup>b</sup> Recommended values suggested by Bentler (1989), Hu and Bentler (1999), and Schreiber et al. (2006).



brackets, which indicate that a three-dimensional model did not fit our samples as well as Carroll's four-dimensional CSR model. This result suggests that respondents distinguished between wood products companies' economic, legal, ethical, and philanthropic responsibilities. Our finding is consistent with Maignan (2001), Ramasamy and Yeung (2009), and Arli and Lasmono (2010) but not with Podnar and Golob (2007), who found that consumers in Slovenia viewed companies' ethical and philanthropic responsibility as being part of the same dimension. Our results suggest that cultural differences in the United States and China did not result in discrepancies in how our participants differentiated the four dimensions captured in Carroll's model.

Reported means for economic, legal, ethical, and philanthropic dimensions are presented in Table 3. In the United States, mean differences between the unmatched and PSM-matched data sets in terms of CSR dimensions were statistically significant. Statistically significant differences between the US unmatched and PSM-matched data sets might be explained by the screening of respondents' past and planned future wood products purchasing behavior and PSM matching with Chinese respondents in the latter. In China, nonstatistically significant differences were observed. In terms of the rankings of these dimensions, results from both the unmatched and PSM-matched data sets showed that both US and Chinese respondents had higher expectations toward legal and ethical responsibilities that wood products companies should pursue compared with economic and philanthropic responsibilities. On average, US respondents ranked philanthropic practices lower than economic practices, while Chinese respondents ranked them inversely. Results from the Chinese sample were consistent with the findings from Podnar and Golob (2007) in Slovenia and the French and German samples examined by Maignan (2001). MANOVA test results indicated that US and Chinese respondents' expectations were different in terms of the four CSR dimensions. Compared with US respondents, Chinese respondents consistently reported higher expectation levels toward all four CSR dimensions.

We found that respondents had the lowest expectations toward economic responsibilities compared with other CSR dimensions. We argue that controversies over the legality of wood procured by the industry, ethical activities, and even exploitation of local communities by sectors related to the wood products industry particularly in tropical regions (Panwar et al. 2006, Wunder 2006, Scricciu 2007) may have resulted in this outcome. Respondents in the United States and China expected companies to exercise legal, ethical, and philanthropic behavior beyond economic gains. In this regard economic gains may be perceived as a given assumption for a company supplying products to the market. Other responsibilities are not only expected but required by consumers.

### Structural equation model

The overall goodness-of-fit indices of the SEMs showed that these fit the data reasonably well. SEM results from the US unmatched and PSM-matched data sets were consistent (Table 4). Results suggest that respondents' expectations toward wood products companies' economic and legal responsibilities had no significant impacts on their stated purchasing preferences for wood products from socially responsible companies ( $P > 0.01$ ), while stated preferences were positively related with expectations for ethical and

**Table 3.—Means for economic, legal, ethical, and philanthropic dimensions in the United States and China.<sup>a</sup>**

	Data set I (unmatched)		Data set II (PSM matched)	
	United States ( <i>n</i> = 1,120) <sup>b</sup>	China ( <i>n</i> = 892)	United States ( <i>n</i> = 342) <sup>b</sup>	China ( <i>n</i> = 342)
Economic	5.16	5.29	5.29	5.37
Legal	5.95	6.23	6.12	6.33
Ethical	5.97	6.36	6.10	6.37
Philanthropic	5.00	5.99	5.13	6.02

<sup>a</sup> All items were measured using a 7-point Likert scale (1 = strongly disagree, 4 = neither agree nor disagree, 7 = strongly agree).

<sup>b</sup> Means for economic, legal, ethical, and philanthropic dimensions were statistically different for US samples between data set I and data set II.

philanthropic responsibilities ( $P < 0.01$ ). The significant impacts of ethical and philanthropic responsibilities were consistent with other industries (Brown and Dacin 1997, Creyer and Ross 1997, Podnar and Golob 2007). The nonsignificant impact of economic and legal responsibilities for the US sample is congruent with the work of Podnar and Golob (2007). Podnar and Golob suggested that consumers' support for purchasing company products is impacted by companies' motivations (whether altruistic or selfish) to conduct certain CSR practices. Economic and legal responsibility might be regarded by consumers as companies' egotistic behavior and thus had no effect on their stated purchasing preferences.

SEM results from the unmatched and matched Chinese data sets were not consistent. The unmatched data set results indicated that Chinese respondents' economic expectations inversely influenced (coefficient equal to  $-0.09$ ) their stated views toward purchasing wood products from socially responsible companies, while ethical and philanthropic responsibilities had positive effects (coefficients of 0.49 and 0.37, respectively). However, SEM results from the PSM-matched data set showed that Chinese respondents' expected philanthropic responsibility from wood products companies positively influenced their purchasing preferences, but expectations for ethical, legal, and economic responsibilities had no significant effect ( $P > 0.01$ ).

The findings of this study may provide some practical suggestions to wood products companies, multinational companies in particular. Our results showed that both the US and Chinese respondents discerned economic, legal, ethical, and philanthropic dimensions of the responsibilities to be exercised by the wood products industry. However, legal and ethical responsibilities were the most salient. The apparent disconnect between lack of awareness of wood products companies' CSR behavior and the importance of legal and ethical corporate practices point to the potential need to better inform consumers about industry practices. In the United States, wood products companies' ethical and philanthropic responsibilities (or philanthropic responsibility in China) could be emphasized as part of a marketing strategy to influence consumer preferences and potentially expand market shares.

### Conclusions

US and Chinese respondents distinguished between wood products companies' economic, legal, ethical, and philanthropic responsibilities. Context-specific differences did not

Table 4.—Results from the structural equation model regarding the impacts of corporate social responsibility expectations on respondents' purchasing preferences in the United States and China.<sup>a</sup>

	Data set I (unmatched)				Data set II (PSM matched)			
	United States ( <i>n</i> = 1,120)		China ( <i>n</i> = 892)		United States ( <i>n</i> = 342)		China ( <i>n</i> = 342)	
	$\beta$	<i>P</i>	$\beta$	<i>P</i>	$\beta$	<i>P</i>	$\beta$	<i>P</i>
Economic	−0.02	0.62	−0.09*	0.06	<−0.01	0.99	0.03	0.73
Legal	−0.11	0.12	0.09	0.28	−0.06	0.50	−0.08	0.58
Ethical	0.42**	<0.01	0.20**	<0.01	0.49**	<0.01	0.14	0.35
Philanthropic	0.37**	<0.01	0.20**	<0.01	0.37**	<0.01	0.37**	<0.01

<sup>a</sup> \* = statistically significant at the  $\alpha = 0.1$  level according to *P*; \*\* = statistically significant at the  $\alpha = 0.01$  level according to *P*.

result in discrepancies in how our participants differentiated the four dimensions captured in Carroll's model. Results of a CFA showed that a four-dimensional CSR model was a better fit for our data than a TBL three-dimensional model. Respondents in both countries expected wood products companies to take higher legal and ethical responsibilities than economic and philanthropic obligations. Chinese respondents' expectations regarding wood products companies' economic responsibilities were ranked the lowest, while their US counterparts ranked philanthropic responsibilities as the least important. These findings lead us to suggest that in the wood products industry, economic expectations may be axiomatic. To the contrary, legal and ethical expectations for this industry expand beyond borders or cultural differences.

In the United States, respondents' expected corporate philanthropic and ethical responsibilities positively influenced their stated preferences toward buying wood products. However, we found that companies' economic and legal responsibilities did not statistically influence consumers' stated purchasing preferences. In China, respondents' expected corporate philanthropic responsibilities positively impacted their stated purchasing preferences among matched potential wood products buyers.

Wood products companies should be aware that CSR practices may not always translate into higher consumer preference, the effects of particular activities may be contingent on cultural or economic conditions. Economic profitability was assumed while ethical behavior by the wood products industry was strongly demanded from consumers in both countries. Differences in the perceived legal and philanthropic responsibilities of the wood products industry were defined by national context. In order to be rewarded by the market (e.g., in the form of greater market shares), wood products companies should effectively communicate to final consumers their higher-than-industry-average corporate legal, ethical, and philanthropic practices. Again, a relatively low level of consumer CSR familiarity indicates that current consumer communications about CSR initiatives are still reticent and may need to be enhanced. Targeting and disclosing wood products companies' CSR practices that meet both consumers' expectations and companies' financial objectives may enhance consumers' perceptions and companies' economic returns.

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