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# Chinese FDI and psychic distance perceptions on regulations in the German renewable energy sector



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## HIGHLIGHTS

- Chinese managers investing in Germany cope with distances on various dimensions
- Decision-making is based on managers' perception of those distances
- This is particularly true for the RE sector and the relative regulation-based dimensions
- "Prior experience" is a moderating variable and impacts managers' perceptions.
- Literature gap: perceptions vary over time and learning effects are detected.

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## ABSTRACT

Countries vary in dimensions such as culture, language, business practices, policy-making, regulations, etc. Research shows that distances between countries concerning these dimensions affect foreign direct investment (FDI) flows. The higher the distances, the higher the difficulties for businesses, as managers' decision-making is based on their perception of those distances.

This paper analyzes the perception of distances between China and Germany by surveying Chinese managers who invested in Germany in the renewable energy (RE) sector, using Child et al.'s (2009) measure of psychic distance (PD) as a guide. The RE sector is young and highly dynamic, and the dimensions of PD are constantly changing. Mismatches in the perception of PD *ex ante* and *ex post* the decision to engage in FDI may lead to possible FDI failure.

We use a five-company multiple case study to analyze if Chinese managers perceive distances in various dimensions, particularly regulation-based, and if there is a mismatch of perceptions between the pre-market and post-market entry period to investigate if managers' perceptions change over time.

Our findings lead to recommendations for practitioners and international business scholars, and policy making in the RE sector, by showing that operationalizing the PD construct should be complemented by dynamic analysis.

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## 1. Introduction

Research in international business (IB) mentions psychic distance (PD) as a major factor impacting outward foreign direct investments (OFDI) and location choices (Beckerman, 1956; Linneemann, 1966; Gruber and Vernon, 1970; Johanson and Wiedersheim-Paul, 1975; Vaccarini, 2015). Vaccarini et al. (2015) show

that European managers' perceptions of psychic distance between their home country and China change over time, i.e. before and after entering the Chinese market. Our paper will follow up on this observation and, in particular, will analyze if PD perceptions of Chinese managers pursuing FDI in the German renewable energy (RE) industry will also change from pre-market entry to post-market entry, especially with respect to regulation-related PD dimensions (i.e. "political system", "legal system", and "regulations"). Industry rules, laws, regulations, policy making, and business practices in this sector are under constant change in such a way that data analysis suffers from bounded rationality (Simon, 1979; Verbeke, 2013) and actual decision making is based on managers' perceptions.

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Many recent IB studies have been conducted on the relationship between PD and FDI (e.g., Child et al., 2002; Brewer, 2007; Child et al., 2009; Hashim, 2012; Puthussery, et al., 2014; Nebus and Chai, 2014; Hertenstein et al., 2015). To the best of our knowledge, however, none of them focuses on Chinese OFDI to Germany (Klossek et al., 2012; Lattemann and Alon, 2015). More specifically, this paper focuses on the RE industry because of the increasing importance of this young and highly dynamic industry (Appolloni et al., 2012, 2014).

Solar energy has drawn much attention within recent years, especially in Germany and China. In 2000, a law in Germany aimed at developing renewable energies boosted activities in solar energy and, as a consequence, Germany registered the world's highest output of solar energy by 2011 (Plasschaert, 2016).

In recent years, the combination of growing environmental awareness in China and the economic recession in Europe has created a climate that is increasingly conducive to Chinese OFDI in the RE industry (Lv and Spigarelli, 2016). China has been devoting more and more attention to environmental issues and pollution reduction (Zhang and Van Den Bulke, 2014; Marconi, 2012) as we can see in the wide and comprehensive “green policy” which has been embedded in the recent Chinese Five Year Plan.

Studies on the interactions between European and Chinese RE markets report that Europe has become an important destination for sales from Chinese global RE firms, with Germany being one of the main markets, and with regulations playing a critical role through subsidies and anti-dumping policies (Curran, 2015; Lv and Spigarelli, 2015, 2016; Curran et al., 2016; Plasschaert, 2016). This is not surprising, as the RE sector has a high level of regulation underlying constant changes. As such, we specifically focus on these dimensions and their dynamics over time.

Our paper analyzes how the dimensions of PD influence Chinese OFDI to Germany in the RE sector. Building on Child et al.'s (2009) 12 dimensions of PD, our study first aims to analyze the importance of these dimensions in firms' internationalization processes, and secondly, to more deeply investigate to what extent managers' perceptions before and after a foreign market entry change over time. In doing so, we look at Chinese managers' perceptions of PD between their home country and Germany at two points in time, i.e. before and after foreign market entry.

The analysis shows that a cluster of three regulation-related dimensions (“political system,” “legal system,” and “regulations”) are most relevant for Chinese FDI to Germany in the RE sector out of the 12 dimensions identified by Child et al. (2009).

The paper makes several contributions to the existing literature. First, we provide a more in-depth analysis on Child et al.'s (2009) 12 PD dimensions and their impact on businesses. Second, by measuring and analyzing the differences between PD perceptions in the pre-market entry and post-market entry stages (Child et al., 2002, 2009), we uncover a new perspective on the role of PD on OFDI from China to Germany with a focus on the RE sector and on regulation-specific dimensions. Third, we conduct a sectorial analysis of Chinese FDI in Europe, consistent with Child et al. (2002), as well as Lv and Spigarelli (2016), who pinpoint the need for conducting industry-level analyses.

This paper proceeds as follows. We review the existing literature, identify theories and present five case studies to derive propositions. The main findings will be discussed and from them we will draw conclusions for practitioners, policy makers, and scholars.

## 2. Background and literature review

Psychology research shows that individuals, such as managers, tend to prefer familiar situations rather than unfamiliar ones

(Powell and Ansic, 1997). IB scholars have conducted studies on the concept of PD, which implicitly captures this insight. This research suggests that perceived differences between the home and host country's characteristics may generate uncertainties among managers and affect their decisions in the internationalization process (Child et al., 2009). Concerning perceptions, social psychology deals with three levels of analysis: individual-, inter-personal- and group-level. In this research, we focus on the individual-level of managers' perceptions of PD. Furthermore, the social psychological perspective enables a comprehensive view on IB phenomena. The individual-level is related to the group-level through the act of categorization (Turner, 1975). Individuals tend to group things together and to form categories in order to facilitate information processing (Wilder, 1978). According to Brewer, “The act of categorizing a person into a social grouping automatically classifies that individual as a member of an ingroup [...] or outgroup [...]” (Brewer, 2003: 5). As groups provide a sense of social identity, individuals tend to enhance the status of social identity and apply it as an important source of self-esteem. Individuals tend to enhance the status of the group to which they belong to increase their self-image (Tajfel and Turner, 1979). Once categories have been formed, the tendency is to exaggerate the extent of differences between members of one category and another, resulting in an increase in perceived homogeneity within categories and distinctiveness (or distance) between categories (Tajfel and Wilkes, 1963). In our research context, the perceived distinctiveness between one's own and another's culture is the concept of “psychic distance” (PD).

Studies on people's perceptions are reflected in IB research and in the operationalization of PD (Stöttinger and Schlegelmilch, 1998). Essentially, “international management is management of distance” (Zaheer, Schomaker and Nachum, 2012: 19); in the remainder of this paper, we will incorporate the research on “perceptions” with the concept of “distance” in the context of Chinese OFDI to Germany in the RE sector.

### 2.1. The concept of distance

The concept of “distance” is a pivotal aspect of IB research. The first form of “distance” analyzed in IB was “geographical distance” and its impact on decision making in firms' internationalization processes (Linnemann, 1966; Leamer, 1974). Later concepts introduced economic (Berry et al., 2010), institutional (Xu and Shenkar, 2002; Salomon and Wu, 2012), cultural (Brouthers, 2002), and other differences (Campbell, Eden and Miller, 2012) to IB researchers.

Initially, PD is defined as a series of factors preventing or disturbing the corporate learning process and the understanding of foreign environments (Nordström and Vahlne, 1994). It is described in the literature as the sum of distance-creating factors, such as cultural, structural, and linguistic differences, minus the sum of distance-bridging factors, such as knowledge or trial and error processes.

Commonalities (signals of similarity) between countries are distance-reducing factors, whereas differences (signals of dissimilarity) are distance-augmenting ones. There is recognized evidence that managers perceive and consider commonalities between their home country and a potential internationalization target country. The higher their preference for selecting a particular target for their firms' first expansion abroad, the earlier they prefer to enter (Williams and Grégoire 2015).

The term “psychic distance” was coined by Beckerman (1956) in his analysis of factors that explain trades and investments between countries. This concept, however, had been a marginal one in IB research until the late 1970s, when the first empirical work on PD with reference to the internationalization process was conducted

(Johanson and Wiedersheim-Paul, 1975; Johanson and Vahlne, 1977, 2009). The concept's history, from the factual perspective of Nordic studies, through the cognitive (Evans et al., 2000) and perceptual (Stöttinger and Schlegelmilch, 2000) approaches, has been well described by Child et al. (2009) and more recently by Williams and Grégoire (2015).

Even though factual “cultural distance” (Kogut and Singh, 1988; Caprar, 2015) has been widely used in IB studies (Sousa and Bradley, 2006), research shows that PD is a better predictor for describing exporting activities than it is for defining cultural distance (Dow, 2000; Shenkar, 2001, 2012). Since cognition plays a significant role in terms of managers' perceptions and understanding, the cognitive dimension is the core element of the PD concept (Evans et al., 2000). Generally speaking, in IB, PD implicitly captures insights from studies conducted in psychology (Powell and Ansic, 1997).

Williams and Grégoire (2015) provide a valuable addition to this discussion. They differentiate between alignable differences (differences which might converge, such as common language or shared values) and non-alignable differences (e.g., non-shared values or principles which cannot be bridged). If managers perceive that differences are alignable, they tend to prefer low-commitment entry modes because they see no necessity for high control. If managers perceive that differences are non-alignable, they prefer high-commitment modes of entry, such as FDI, to have more control over the situation. This implies that non-alignable perceived differences between China and Europe might induce Chinese managers to undertake FDI for entering a market (Williams and Grégoire, 2015).

As core individuals within a company, and as decision makers, managers and their perceptions and skills in facing PD determine the success, the performances, or the failure of the firm's internationalization process (Harzing, 2003; Brewer, 2007; Child et al., 2009; Hashim, 2012).

Child et al. (2002; 2009) define PD as the existing perceived distance between home and host country in terms of the following characteristics: factual (Johanson and Wiedersheim-Paul, 1975; Johanson and Vahlne, 1977, 2009), cognitive (Evans et al., 2000), and perceptual (Stöttinger and Schlegelmilch, 2000). Our analysis follows the approach of Child et al. (2009) by adopting the following 12 sub-dimensions of perceived PD:

## 2.2. Chinese firms investing abroad: home and host country factors

In the context of Chinese firms' international expansion, analyses based on home vs. host country specific factors are particularly helpful. In fact, when looking simultaneously at home and host country factors, a certain idea of distance emerges. Rugman and Chang (2008) argue that emerging market multinational enterprises (MNEs) expand abroad largely on the strength of home country factors, such as access to resources and cheap labor.

In later research, the home country's “pull” and “push” factors are introduced into the discussion (Luo and Wang, 2012; Wei and Alon, 2010). In the case of China, international expansion is pushed by preferential policies and financial support provided by the Chinese government (Peng et al., 2008). Among these push factors, some authors stress the necessity of Chinese companies to overcome domestic institutional voids (Luo and Tung, 2007; Puri, et al., 2015). Pull factors (i.e. host country specific advantages) include the level of economic development (Buckley et al., 2007; Cheng and Ma, 2008; Kolstad and Wiig, 2012; Stoian, 2013), market size, and specific endowments, such as strategic assets, natural resources, or cheap labor (Buckley et al., 2007; Cheung and Qian, 2009; Kolstad and Wiig, 2012). Within host country factors, specific attention has been paid to institutions. Institutional host country specific advantages (CSAs) include elements such as policy

liberalization and openness to inward FDI (Buckley et al., 2007; Lau, 2003; Lecraw, 1977; Wells, 1983; Zhou, 2006).

Lv and Spigarelli (2015, 2016) argue that a comprehensive view of country factors should include measures of distance, culture, language and other non-economic factors such as business practices. They argue that low distance and differences could be considered to be push factors for FDI. But in the case of large differences, culture and language could become a country specific disadvantage, as it might be the case in our selected countries: China and Germany.

As Child et al. (2009) mention, PD should be analyzed by considering its changes over time by taking into account its dynamics (Child et al., 2002). Consistently, Vaccarini et al. (2015) showed that perceptions change over time by describing two different stages: *ex ante* and *ex post* perceptions, meaning that perceptions should be analyzed before actual experience in pre-market entry, and then again after having concrete experiences in the post-market entry period.

Given the described context, we focus on the following core research questions in our paper:

- 1) What is the importance of PD for Chinese managers in the context of RE OFDI to Germany? and:
- 2) To what extent do Chinese managers' PD perceptions of the regulation-related dimensions of the German market change from pre- to post-market entry in the RE industry?

Several issues related to these questions are addressed. First, we consider the extent to which managers are aware of PD. Second, we study whether they distinguish between the different dimensions of the construct with a focus on regulation-related dimensions. Third, we focus on the relevance that managers attribute to different components of PD in terms of their possible impact on conducting business abroad.

By addressing these questions, we contribute to a better understanding of how (Chinese) managers interpret and become aware of the PD constituent dimensions with respect to Germany. They may apply their interpretation to the management of the internationalization process of their firm in two stages: before and after entering the market. In this context, the relevance of the cognitive aspect of PD emerges. Understanding how managers conduct their business at an international level means to focus on the way they perceive the situation in which they work (Child et al., 2009).

## 3. Methodology

We adopt a multiple case study research design based on Eisenhardt (1989; 2009; Jensen and Szulanski, 2007) and Yin's (2003; 2013) methodology. A case study design is the most appropriate methodology because of the explorative nature of our research questions. It also enables us to generate propositions after conducting accurate within and cross-case analyses.

According to the German Federal Foreign Office, there are currently about 900 Chinese companies operating in Germany (German Federal Foreign Office, 2015). Lv and Spigarelli (2015) mapped 135 Chinese firms in RE sectors in Europe, using a dataset from 2004 and 2013, 40% of which are located in Germany. We use a convenience sample consisting of five companies headquartered in China that have recently (within the past 10 years) entered the German RE market through FDI. The Chinese Chamber of Commerce in Berlin, a private consultancy company,<sup>1</sup> and the

<sup>1</sup> The company covers the following areas: Germany, mainland China, Hong Kong and Singapore (<http://www.melchersraffel.com/de/>).

exhibitors' database of the annual international fair on RE held in Munich<sup>2</sup> helped us to identify these companies.

We followed a triangulation approach (Yin, 2003, 2013) by collecting data from interviews and various other resources, such as companies' internet websites and annual reports, as well as other public available information from newspapers and publications, such as existing case studies.

Our data collection took place in the Spring/Summer of 2015 in Germany, based on a questionnaire,<sup>3</sup> and in the Fall/Winter of 2015 by submitting a round of follow-up questions based on the preliminary results. At this later stage we first asked the managers whether they were in the company before setting up investments in Germany. Second, we asked them to emphasize their perceptions on regulation-related PD dimensions since they underwent significant variations over time.

By replying to our research questions, we first articulated the relevance of every PD constituent dimension, building on Child et al.'s (2009) 12-item model. Second, we discovered the extent to which managers' PD perceptions differ between ex ante and ex post market entry. The questionnaire is composed of Likert-scale measures and open ended questions to get a comprehensive overview of the information provided by the respondents. In this way, we combined quantitative and qualitative methods of analyses.

The Likert-scale questions served to ascribe quantitative values to our qualitative data regarding perceptions of differences and their impact along the 12 dimensions. "Perceptions of differences" is defined by the extent to which managers perceive each PD dimension as different between their home and host country. "Perceptions of impact" refers to what extent each PD dimension affects the business with the host country (Table 1).

The questionnaire is structured in five sections as follows (Table 2):

Managers filled out a questionnaire in which they were asked to recollect their perceptions of differences and impact in two points in time: the pre-market entry period (Section 3, Table 2) and the post- entry period (Section 4, Table 2). The questionnaire (Table 2) was answered by e-mail (1 company out of 5), direct contact via phone calls (3 companies), and by meeting the respondent face-to-face (1 company). The answers were written down on the printed hard-copy questionnaires by the interviewer. Subsequently, they were scanned and sent to the respective respondents via e-mail to double check the accuracy of the replies.

For the purpose of our paper, we focus primarily on the first four sections of the questionnaire (Table 2). Section 5, containing the open ended questions, is of secondary importance. In order to analyze the data of the fifth section, we borrowed the critical discourse analysis from sociolinguistics (CDA, Sinclair and Coulthard, 1975; Fairclough, 1993; Van Dijk, 2000) and applied it to the texts of the answers. The purpose of the CDA is to go through the written answers and identify the most recurrent information, topics, and textual expressions (Ahonen et al., 2011). In our case, we aimed to identify which PD dimensions were most relevant to our respondents.

We then proceeded with a "static" and a "dynamic" analysis of our results. The static analysis shows the relevance of the PD dimensions, both in terms of perceived differences and of impact. The analysis of the "dynamics" in PD enables us to detect to what extent perceptions of differences and impact change over time.

Finally, the follow up questions were based on the primary results showing the relevance of the eight dimensions, which

**Table 1**  
Child et al.'s dimensions of PD (Child et al., 2009).

Geographical distance	Culture	Language
Level of education	Level of technological development	Level of economic development
Logistical infrastructure	Political system	Legal system
Regulations	Accepted business practices	Business ethics

**Table 2**  
Sections and content of the questionnaire.

Section 1	General information about respondents
Section 2	Information about the Chinese headquarter, the investment in Germany and the entry mode choice
Section 3	Managers' PD perceptions before entering a market (Child et al.'s, 2009 12-item list)
Section 4	Managers' PD perceptions after entering a market (the 12-item list repeats)
Section 5	Open-ended question regarding the managers' understanding of "culture"

overcame the 3.33 threshold, which we established for the analysis (regulation-related cluster, Table 6, decreasing order): "regulations", "legal system", "political system", and "culture".

#### 4. Data, analyses and propositions

The Chinese companies in our sample entered Germany between 2008 and 2014 (Table 3). Our respondents are all Chinese managers. They come from different regions in China and cover the following positions: manager's assistant, general manager, director of global sales, marketing manager, and general manager. Three out of five have neither previous work nor investment experience, nor have studied abroad (cf. Table 7).

##### 4.1. Within-case analysis

This section provides the description of the five companies (Table 3) followed by an in-depth analysis.

###### 4.1.1. Case description

*Sunda Renewable Energy GmbH*: The headquarters of the company, under the name of China National Huachen Energy Holdings Group Co. Ltd., is located in Beijing and established its wholly owned subsidiary in Hamburg in 2012. It is a service and distribution company in RE, specifically solar photovoltaic and solar thermal energy. The main reasons for choosing Germany are the following: access to local markets, availability and acquisition of key technologies and brands, and finally, incentives and supportive policies. Existing contacts and political factors were the main motives of the firm entry mode choice. The manager neither had any previous work experience in Germany nor had he studied or invested abroad.

*Risen Energy GmbH*: Risen Energy Co., Ltd., headquartered in Ningbo, settled its wholly owned subsidiary in Nuremberg in 2011. Risen Energy GmbH operates in the RE business with the service and distribution of solar technology. Political and economic factors were the main entry mode determinants, while access to local markets, incentives, and supportive policies were the most relevant motives for choosing Germany. The interviewed manager in charge had not previously worked in Germany or studied abroad. This was his first experience with investments abroad.

*SF Suntech Deutschland GmbH*: Wuxi Suntech Power Co., Ltd. is headquartered in Wuxi and entered the German market in 2008 by establishing its wholly owned subsidiary in Frankfurt/Main. RE,

<sup>2</sup> Intersolar Europe international fair, Munich, June 2015.

<sup>3</sup> Questionnaire available here: <https://docs.google.com/forms/d/1LCXe5edMbskrRrlylFslGyi7M9PrGpNfHptlVgUkdZg/viewform?c=0&w=1>.

**Table 3**  
Company profiles.

	Investment in Germany	Sunda renewable energy GmbH	Risen energy GmbH	SF Suntech Deutschland GmbH	Sumec Europe GmbH	CEM Instruments (Germany) GmbH
<b>German location</b>	Hamburg	Nürnberg	Frankfurt am Main	Willich	Bremen	Bremen
<b>Chinese headquarter</b>	China National Huachen Energy Holdings Group Co., Ltd. Beijing	Risen Energy Co., Ltd. Ningbo	Wuxi Suntech Power Co., Ltd. Wuxi	Phono Solar Technology Co., Ltd. Nanjing	CEM Instruments Headquarter Shenzhen Everbest Machinery Industry Co., Ltd. Shenzhen	CEM Instruments Headquarter Shenzhen Everbest Machinery Industry Co., Ltd. Shenzhen
<b>Year of establishment in Germany</b>	2012	2011	2008	2008	2005	2014
<b>Respondents' position and nationality</b>	General Manager, Chinese	Management Assistant and Admin, Chinese	Director of Global Sales, Chinese	Marketing Manager, Chinese	General Manager, Chinese	General Manager, Chinese
<b>FDI entry mode</b>	Wholly owned subsidiary	Wholly owned subsidiary	Wholly owned subsidiary	Wholly owned subsidiary	Wholly owned subsidiary	Wholly owned subsidiary
<b>Turnover in China (USD)</b>	3,000,000	50,000,000	22,000,000	28,000,000	55,000	55,000
<b>Core business</b>	RE. Service and distribution.	RE. Service and distribution.	RE. Service and distribution.	RE. Electric power infrastructure, R&D and Marketing services.	RE. Electric power infrastructure, Green building, Efficient processing, optimized design, sustainable materials, monitoring systems, Marketing services.	RE. Electric power infrastructure, Green building, Efficient processing, optimized design, sustainable materials, monitoring systems, Marketing services.

in the form of photovoltaic panels, plus their service and distribution, are the key areas of the company. Germany was chosen mainly for access to local markets and the presence of a local business partner. The manager in charge had neither previously worked in Germany, nor studied abroad; however, he was already experienced with foreign investments.

*Sumec Europe GmbH*: Phono Solar Technology Co., Ltd. is based in Nanjing and established its wholly owned subsidiary in Willich in 2005. They were attracted by legal factors and easy access to the local market, as well as by the presence of local business partners and existing connections. The core business of the company in Germany is RE - solar products and solutions, research and development, and marketing services. The manager neither had previous work experience in Germany, nor had studied abroad. This was also his first foreign investment.

*CEM Instruments (Germany) GmbH*: CEM Instrument Headquarter Shenzhen Everbest Machinery Industry Co., Ltd. is located in Shenzhen and invested in Bremen, Germany because of existing local business partners, key technologies, relevant brands, and logistical reasons. The parent company is a manufacturer of measuring instruments and technologies. Economic reasons were the most important motives for choosing a wholly owned subsidiary entry mode. The manager had worked and studied in Germany before the company's investment, but he did not have any previous experience with investments abroad.

#### 4.1.2. Measuring the change of perceptions over time

We conducted (1) a static analysis by focusing on two points in time, the pre- and post-market entry; and (2) an analysis of the dynamics in order to reveal the changes in perceptions before and after entering the market. The results of both analyses are shown in Tables 4, 5.

We came up with the following rubric to interpret the data:

- 1) In the static analysis, the dimension is considered *relevant* if the corresponding Likert-scale value (ranging from strongly agree (5) to not agree at all (1)) equals or overcomes 3.33 points, since this value is slightly above the mid-point of the Likert scale (1, 2, 3, 4, 5).
- 2) In the dynamic analysis, a change equal to or higher than 0.33 points is considered as *relevant*. In this case, we chose a value representing 10% of our cut-off point from criterion 1 (3.33 points).

The chosen approach is simple and straightforward. Establishing a criterion is crucial for proceeding with a clear interpretation of the data.

The following table provides a summary of the answers on the research questions for each of the five firms. In the tables, *difference* stands for perceptions of differences between home and host country along each PD dimension, while *impact* refers to the extent to which managers perceive that each dimension affects their business with the host country. The bold numbers represent the values overcoming or equal to the threshold (3.33 in the static analysis and 0.33 in the dynamic analysis).

#### 4.2. Cross-case analysis

The results of the static and the dynamic analyses of PD perceptions are shown in Table 5 (differences between home and host country and impact on the business in the host country along each dimension).

The data in Table 5 show that Chinese managers mostly perceive *differences* in regulation-related cluster dimensions, i.e. "regulations" (4.60), "political system", and "legal system" (4.20 each) as well as "language" (4.20) before entering Germany,

**Table 4**  
Companies' PD perceptions.

Companies (represented by our managers)	Difference			Impact		
	Static analysis		Dynamic analysis	Static analysis		Dynamic analysis
	Pre-entry	Post-entry	Changes (%)	Pre-entry	Post-entry	Changes (%)
Sunda Renewable Energy GmbH	4	4.08	+ 0.08 (+2%)	4	4.08	+ 0.08 (+2%)
Risen Energy GmbH	3.08	2.5	-0.58 (-18.83%)	4.16	3.83	-0.33 (-7.93%)
SF Suntech Deutschland GmbH	3.33	2.41	-0.92 (-27.63%)	2.91	2	-0.91 (-31.27%)
Sumec Europe GmbH	4.25	4.08	-0.17 (-4%)	4.25	4.25	0
CEM Instruments (Germany) GmbH	3.83	3.83	0	3.41	3.41	0

**Table 5**  
PD perceptions (pre- and post-entry static and dynamic analyses; variation between pre- and post-entry).

PD dimensions	Difference			Impact		
	Static analysis		Dynamic analysis	Static analysis		Dynamic analysis
	Pre-entry	Post-entry	Variation (%)	Pre-entry	Post-entry	Variation (%)
Geographical distance	3.60	4.40	+0.80 (+22.2%)	3	3.60	+0.60 (+20%)
Culture	4	4.42	+0.42 (+10.50%)	3.83	3.80	0.03 (+0.78%)
Language	4.20	4.20	0	3.33	3.80	+0.47 (+14.11%)
Level of education	2.80	2.80	0	2.50	2.24	-0.26 (-10.40%)
Level of technological development	3.20	3	-0.20 (-6.25%)	3.33	2.80	-0.53 (-15.91%)
Level of economic development	3.40	2.60	-0.80 (-23.52%)	3.16	3	-0.16 (-5.06%)
Logistical infrastructure	2.60	3.20	+0.6 (+23.07%)	2.66	3.60	+0.94 (+35.33%)
Political system	4.20	4.60	+0.40 (+9.52%)	3.50	4.20	+0.70 (+20%)
Legal system	4.20	4.40	+0.20 (+4.76%)	3.66	4	+0.34 (+9.28%)
Regulations	4.60	4.60	0	3.83	4.20	+0.37 (+9.66%)
Accepted business practices	3.80	3.60	-0.20 (-5.26%)	3	3.60	+0.60 (+20%)
Business ethics	3.80	3.40	-0.40 (-10.52%)	3	3.20	+0.20 (+6.66%)
<b>Total Average</b>	<b>3.70</b>	<b>3.75</b>	<b>+0.5 (+13.51%)</b>	<b>3.23</b>	<b>3.50</b>	<b>+0.27 (+8.35%)</b>

followed by the differences in “culture” (4.00), “accepted business practices,” “business ethics,” (both 3.80) and “geographical distance” (3.60).

Unlike our research, Child et al. (2009) did not differentiate between pre- and post-entry perceptions. Our findings show that after entering the market, perceptions along the regulation-related PD dimensions do not change significantly in comparison with the period before market entry.

With respect to the impact on the business in Germany, “culture” and “regulations” (both 3.83), and “legal system” (3.66) are among the most significant PD dimensions for our Chinese managers before entering the German market. Managers may become more aware of the actual importance for business of these dimensions in post-market entry, after having their first experiences in the new environment. Publicly available information helps managers to assess the differences between countries on dimensions such as culture, language, and legal and political systems without having concrete experiences (Child et al., 2009). Still, the latest and most-up-to-date information about business regulations and practices may be hard to gather before engaging with the host country.

The results from the dynamic analysis (Table 5) show to what extent perceptions of the PD dimensions change before and after entering the market. For instance, the perceived difference of “geographical distance” is raised by 22.2% after market entry, showing that Chinese managers realize the difference between China and Germany only after establishing a business in Germany.

Once in Germany, “culture” (+10.50%) and “political system” (+9.52%) are perceived as more relevant dimensions for doing businesses than previously expected. This means that some dimensions' impact on business before entering the market are

perceived differently; however, PD and its impact on business does not change over time along specific dimensions, such as “level of education” and “regulations.”

Perceived differences in “business ethics” even decrease after entering the German market (-10.52%). The perceived impact of “business ethics” on businesses does not change significantly after market entry. Some other dimensions do not undergo any significant changes either, and managers seem to be aware of their perceptions of the impact on certain dimensions such as “culture,” “level of education,” “level of economic development,” and “business ethics” (Table 5).

According to these results, Chinese managers report higher PD perceptions in terms of differences between China and Germany, rather than perceptions of impact on their businesses. The analysis on the dynamics shows that, before entering the market, Chinese managers perceive larger differences along certain dimensions (e.g., differences: “accepted business practices”, 3.80) and lower differences over others (e.g., differences: “political system” and “legal system”, both 4.20). Ex ante perceptions do not match ex post perceptions (e.g., differences: “logistical infrastructure” -23.07%; impact: “accepted business practices”, +20%). They realize their relevance on their business only in the post-market entry period and thus adjust their perceptions to the new foreign environment.

As Table 6 shows, Chinese managers rated the differences of eight out of 12 dimensions as relevant (above the threshold 3.33). They further perceive that these dimensions have an impact on business (Table 6).

Qualitative data regarding the follow up questions on “regulations” confirm high PD perceptions along this dimension cluster. In the current scenario, two main events play a determining role on these changes in perceptions. First, the financial crisis of 2008–

**Table 6**

Most relevant PD dimensions in terms of perceived differences by Chinese managers between China and Germany and the perceived impact on the businesses (average values along the 12 dimensions on the basis of the static analysis – decreasing order).

PD dimensions	Difference			Impact			Total
	Pre-entry	Post-entry	Average	Pre-entry	Post-entry	Average	Average (differences & impact)
Regulations	4.60	4.60	4.60	3.83	4.20	4	<b>4.30</b>
Legal system	4.20	4.40	4.30	3.66	4	3.83	<b>4.06</b>
Political system	4.20	4.60	4.40	3.50	4.20	3.85	<b>4.12</b>
Culture	4	4.20	4.10	3.83	3.80	3.81	<b>3.95</b>
Language	4	4.20	4.10	3.33	3.80	3.56	<b>3.83</b>
Geographical distance	3.60	4.40	4	3	3.60	3.30	<b>3.65</b>
Accepted business practices	3.80	3.60	3.70	3	3.60	3.30	<b>3.50</b>
Business ethics	3.80	3.40	3.60	3	3.20	3.10	<b>3.35</b>
Level of technological development	3.20	3	3.10	3.33	2.80	3.06	3.08
Level of economic development	3.40	2.60	3	3.16	3	3.08	3.04
Logistical infrastructure	2.60	3.20	2.90	2.66	3.60	3.13	3.01
Level of education	2.80	2.80	2.80	2.50	2.40	2.45	2.62
<b>Total Average</b>	<b>3.68</b>	<b>3.75</b>	<b>3.71</b>	<b>3.23</b>	<b>3.51</b>	<b>3.37</b>	<b>3.54</b>

2009 resulted in a decrease of consumption incentives due to budget cuts. Second, antidumping policies have imposed entry barriers for Chinese firms as a consequence of trade disputes between China and the EU. According to our interviewees: “Germany is also an important market of solar panels. In order to guarantee a competitive market, the EU imposed antidumping measures on imports from China. There is a minimum import price agreement which was supposed to expire on December 2015. Then the EU has extended this deadline for one year.” As far as the regulation-related cluster dimensions are concerned, “antidumping is not only an economic issue but also a policy issue to keep the balance between China and Europe relationships.”

Table 7 shows that three out of five Chinese managers neither had previous work or study experiences in Germany, nor had experiences with FDI before their investment in Germany.

#### 4.3. Propositions

Following Yin (2013) and Eisenhardt (1989; 2009), we can derive propositions out of these case studies (Jensen and Szulanski, 2007).

Referring to the main findings of this multiple case study, we drew up the following propositions:

Proposition 1:

- a) Chinese managers perceive (and are aware of) differences between China and Germany on the regulation-related cluster

dimensions, i.e. “regulations,” “legal system,” and “political system.” They are aware of their impact on business within the host country. “Culture,” “language,” “geographical distance,” and “accepted business practices” are perceived by Chinese managers as less significant.

- b) Managers’ PD perceptions of differences between the “political systems” of the home and host countries are higher after market entry in comparison to pre-market perceptions. Such perceptions increase over time. Managers’ perceptions of the impact of differences between the political systems on the actual business increase significantly from pre- to post-market entry. As such, managers change their minds about the differences of the political systems, and they think that this has a relevant impact on their businesses.
- c) Managers’ PD perceptions of differences between the “legal systems” of the home and host countries are higher ex ante than ex post market entry; however, perceptions of the impact of differences between legal systems on businesses do not change significantly over time.
- d) Managers perceive high differences between “regulations” of the home and the host countries. Perceptions of the impact of regulations on businesses are slightly lower. In both cases - differences and impact - there are minor changes over time from before entering the market in comparison to the period after market. In terms of differences, there is no change, while there is a slight variation over time in terms of impact of regulations on the business.

**Table 7**

Chinese managers’ experiences (regulation-cluster dimensions: “regulations”, “political system”, “legal system”).

Manager/company	Experience	PD perceptions of differences		Total of the average values	PD perceptions of impact		Total of the average values
		Pre-entry	Post-entry		Pre-entry	Post-entry	
SF Suntech Deutschland GmbH	– Yes (investments in countries other than Germany)	4	3.33	3.66	2.33	1.33	1.83
CEM Instruments (Germany) GmbH	– Yes (study abroad in a country other than Germany) – Yes (work and study in Germany)	4.66	5	4.83	4.66	4.66	4.66
<b>Total average</b>				<b>4.24</b>			3.24
Sunda renewable energy GmbH	No experience	4	5	4.50	5	5	5
Risen Energy GmbH		4	4.66	4.33	3	4.66	3.83
Sumec Europe GmbH		5	5	5	5	5	5
<b>Total average</b>				<b>4.61</b>			<b>4.61</b>

### Proposition 2:

- a) *The changes in Chinese managers' PD perceptions between China and Germany from pre- to post-market entry are moderated by work, study, and investment experiences in the host country or abroad.*
- b) *Along the regulation-related cluster dimensions - "regulations," "political system," and "legal system" - Chinese managers with no international experience perceive high impact and high differences, while Chinese managers with experience perceive impact and differences as relatively low.*

## 5. Discussion

Chinese managers are expected to perceive PD between China and Germany, since the two countries do indeed differ objectively along the 12 analyzed PD dimensions. Building on [Child et al.'s \(2002, 2009\)](#) specific items/dimensions, we analyzed their relevance in the context of Chinese OFDI to Germany in the RE sector. Furthermore, following up [Vaccarini et al.'s \(2015\)](#) findings, we consider that perceptions of PD might change between the pre- and post-market entry.

We conducted a "static" and "dynamic" analysis of PD dimensions, referring to two particular points of time, i.e. pre-entry and post-entry. We found that the regulation-related cluster dimensions, and "culture," "language," "geographical distance," and "accepted business practices" are perceived as significantly distant by Chinese managers.

[Child et al. \(2002\)](#) indicated that "culture" is the most relevant element in creating distance and the most important factor impacting business when they studied the internationalization of Hong Kong firms. [Child et al. \(2009\)](#) also found that "culture" is the most important dimension, in terms of distance perceptions, followed by "level of economic development," "level of education," and "level of technological development." Our study confirms the relevance of "culture": however, this is followed by "language," "geographical distance," and "accepted business practices." Chinese managers perceive that the main gaps between China and Germany are related to the differences in regulations, political systems, legal systems, culture, language, geographical distance, and business practices. They also perceive that these dimensions affect their operational activities and their businesses within Germany.

Our results further show that some PD dimensions that were scored quite high by Chinese managers in relation to perceived differences between Germany and China were not perceived to have a correspondent high impact on their businesses ([Table 6](#)). This is consistent with [Child et al.'s \(2009\)](#) study. For example, according to their findings, PD perceptions of "culture" did not correspond to the perceived impact that culture has on the business. [Table 6](#) shows the importance of PD in terms of perceived differences between China and Germany (3.71), rather than PD's perceived impact on the business with Germany (3.37). Our results confirm the relevance of the PD dimensions proposed by [Child et al. \(2009\)](#) for the average values related to the perceptions of differences, since they overcome our pre-defined threshold of 3.33 points (on the 5-point Likert scale).

Our results show that the proposed operationalization of PD can be considered to be a valuable framework to conduct analyses within IB regarding PD, both in terms of the perceived differences between home and host country, as well as between the perceived impact on business with the host country. The overall results confirm proposition 1 regarding the relevance of PD.

In [Child et al.'s \(2009\)](#) study, conducted on British companies exporting to Brazil, they argue that information about regulations and business practices may not be obtained in advance, before

gathering actual experience in the host country. Our findings show the peculiar case of "regulation-related cluster dimensions": Chinese managers in the RE sector perceive high differences in regulation-related dimensions between China and Germany. They seem to have higher concerns about regulations after gaining knowledge of the market, and also after they gather real experience in the post-market entry phase. In this case, experience seems to play an important role in moderating the perceived impact regulations have on businesses. Managers seem to realize their increased perceptions of impact of the "political system" on their businesses after entering the market (+20%).

Before entering the market, PD perceptions of "geographical distance," "culture," "logistical infrastructure," "political system," and "legal system" were underestimated when compared to the perceptions of the same factor after entering the market. For instance, perceptions of differences related to "geographical distance" and "logistical infrastructure" increased by 22.2% and 23.07%, respectively. On the contrary, perceptions of differences along "level of economic development" and "business ethics" decreased by 23.07% and 10.52% from pre- to post-entry, respectively. "Accepted business practices" was perceived to affect the business in the host country only after managers had experience in the market (increasing variation, 20%).

[Child et al. \(2002\)](#) argue that previous experience in a given international location is a strategic bridging factor. Conversely, [Williams and Grégoire \(2015\)](#) focus on pre-entry market information in terms of "prior knowledge" and its moderating role regarding the perceptions and considerations of differences.

In our paper, we follow [Child et al.'s \(2002\)](#) considerations regarding managers' previous experiences and their moderating role on PD perceptions. According to our findings ([Table 7](#)), managers who neither had previous work or study experience, nor had dealt with prior investments abroad had higher perceptions of differences (4.61) than experienced managers (4.24) along the regulation-related cluster. With respect to this, our results are consistent with propositions 2a and 2b. In other words, the less experience, the higher the perceptions of differences, as well as the perceived impact on business in general.

## 6. Conclusions and policy implications

### 6.1. Conclusions

China and Germany are different in many aspects, such as culture, language, business ethics, policy making, and regulations. The logical consequence is that the differences between these two countries draw managers' attention, especially with respect to the multi-dimensional PD construct. These differences affect managers' decisions in terms of FDI decisions, in particular in the RE sector, which has country-specific regulations and is highly affected by constantly changing policies.

The purpose of our paper was to examine Chinese managers' perceptions of PD in the RE sector between their home country and Germany by distinguishing into types of perceptions: along each PD dimension we detected 1) the perceptions of difference between the two countries, and 2) the impact that each dimension has on business with the host country.<sup>4</sup> Because the RE sector is highly influenced by changing regulations, we focused on a cluster of dimensions; more specifically, on regulation-related PD dimensions, i.e. "regulations," "political system," and "legal system." Furthermore, we surveyed Chinese managers' changes in PD

<sup>4</sup> Complementary information on this research can be found in [Vaccarini et al. \(2016\)](#).



perceptions before entering the German market for the first time through FDI, and after entering the market. This enabled us to identify whether *ex-ante* perceptions by Chinese managers match their *ex-post* perceptions (Vaccarini et al., 2016).

The main limitations of this study are as follows. First, the study is industry specific and focuses on the RE sector. Second, it is country specific and focuses on Chinese OFDI to Germany. Third, our analysis aimed to identify the most relevant constructs and their relationships in the specified research setting. Thus, we cannot derive a generalization in a statistical sense (Yin, 2013). Lastly, the interviews were carried out at the top management level without the involvement of other stakeholders.

## 6.2. Implications

Our research results are highly relevant for practitioners, policy makers, and scholars:

### 6.2.1. Implication for practitioners (managers and firms)

We identified an *ex ante* and *ex post* market entry mismatch of perceptions by Chinese managers regarding the impact of differences between various PD dimensions (such as culture, policy making, regulations). Further studies show that this applies also to European executives doing business in China (Lv and Spigarelli, 2015). We also found that perceptions of internationally inexperienced managers, related to the differences among their home and the host country and their impact on business, are higher than the perceptions of experienced managers. As such, managers' perceptions become different in the post-entry situation over time and by experience, and; thus, learning curves can be observed. We found in our analysis, however, that such a mismatch of perceptions applies not only to inexperienced managers, but also to experienced managers. Therefore, extensive executive trainings to inform managers of differences between countries and the impact on businesses in the host country seem to be necessary to avoid failures in FDI. Nevertheless, our data show that managers are not quite well enough prepared for their undertakings in a foreign country. This seems to be especially true for FDI in the RE sector because of constantly changing rules and regulations in this relatively young industry.

Further research may take into account whether the results emerging from this study show that this is a general issue of FDI or a particular pattern related to FDI from emerging markets to developed countries. Future studies may investigate if managers' perceptions and their effects are industry or pair-country specific by applying Child et al.'s (2009) model, as well as both "static" and "dynamic" analyses, to other pair-countries and sectors. For example, replicating this study by investigating Chinese OFDI and another European country in the RE sector could be a useful follow-up.

### 6.2.2. Implications for policy makers

Our findings are also highly relevant for policy makers, particularly those in the RE sector. As rules and regulations in the relatively new RE sector constantly change, differences in policy making, legal systems, and regulations between the countries result. Changes in German legislation in 2000 (aimed at supporting the solar energy sector), and the EU antidumping policies are good examples (Plasschaert, 2016). What emerges from this study is that managers seem not to be aware of how their perceptions along regulation-related dimensions affect their businesses.

Industry-related host country institutions may consider taking more explicit actions to explain foreign investors their industry-specific policies and regulations, as well as their impact on business success. Recently, the European Commission has been investigating dumping and found evidence of price dumping. In

2013, a preliminary anti-dumping levy of 12% was introduced. Over the past decades, anti-dumping and anti-subsidy investigations by the European Commission gave rise to subsequent levies on imports, "which are meant to correct infringements of fair trade norms and practices, as framed and supervised by the WTO" (Plasschaert, 2016: 17). Blonigen and Prusa (2015) state that the EU was the world's largest user of anti-dumping measures (297 cases). One reason, which ignited the reaction of the European Commission, may lie in the over-production of solar panels in China, which induced domestic producers to redirect their sales to export markets at dumped prices (Plasschaert, 2016). While the impact on the environmental policy of the EU's anti-dumping policy in the RE industry has already raised concerns (Kuvolesi, 2014), our investigation suggests that these anti-dumping policy changes contribute to the already existent mismatch between *ex ante* and *ex post* entry perceptions. These changes affect FDI decision-making by Chinese investors.

### 6.2.3. Implications for scholars

Our findings build on Child et al.'s (2009) studies on PD and affirm the relevance of the 12 dimensions of the construct. Eight of these dimensions are (most) significant, and among them are regulation-related dimensions. Managers' perceptions of impact along the "political system" increase significantly after market-entry. This means that managers may underestimate its relevance in the pre-market entry period. They seem to realize after market-entry that the regulation-related dimensions have a higher impact on their businesses than previously estimated, before they entered the market. As such, future studies should analyze the dynamics of PD perceptions over time and differentiate between two periods of time: 1) pre-market and 2) post-market entry, in addition to the operationalization strategies that have been applied by IB scholars thus far. Further research may consider investigating a broader sample of firms, countries, and sectors by applying – or extending – both "static" and "dynamic" analyses.

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