



Paper to be presented at the  
DRUID Society Conference 2014, CBS, Copenhagen, June 16-18

## **The Cultural Dimension of Openness: Insights from Star-Awarded Chefs across Europe**

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### **Abstract**

Recent research has highlighted the importance of openness in the innovation process. This study connects the notion of inbound and outbound openness with Hofstede's seminal work on national culture differences to investigate to what extent openness is culturally determined. Based on a sample of 486 chefs, nominated by the Michelin guide 2012 across Europe, we find that inbound and outbound openness are positively impacted by a high level of power distance and negatively impacted by a high degree of uncertainty avoidance, respectively. Moreover, long-term orientation strongly influences inbound openness. Our results contribute to research in two ways: First, we draw attention to the still scarcely researched individual level of openness; and second, we provide evidence for widely un-researched cultural dimension of openness.

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## **Abstract**

Recent research has highlighted the importance of openness in the innovation process. This study connects the notion of inbound and outbound openness with Hofstede's seminal work on national culture differences to investigate to what extent openness is culturally determined. Based on a sample of 486 chefs, nominated by the Michelin guide 2012 across Europe, we find that inbound and outbound openness are positively impacted by a high level of power distance and negatively impacted by a high degree of uncertainty avoidance, respectively. Moreover, long-term orientation strongly influences inbound openness. Our results contribute to research in two ways: First, we draw attention to the still scarcely researched individual level of openness; and second, we provide evidence for widely un-researched cultural dimension of openness.

**Keywords:** openness, cultural dimension, star-awarded chefs

## Introduction

Open innovation has renewed our attention on the interaction with external partners in the innovation process, among others, lead-users, user-innovators, customers, suppliers, venture capitalists or competitors (Chesbrough, 2003, 2011; Cohen & Levinthal, 1990; Dahlander & Gann, 2012; Lichtenthaler, 2011). Previous research thereby improved our understanding in how openness contributes to corporate innovativeness, and in consequence increasing growth and profitability (e.g. Chesbrough, 2007; Dittrich & Duysters, 2007; Reichwald & Piller, 2009).

Chesbrough & Crowther (2006) and subsequent studies differentiate between in- and outbound activities. Inbound innovation refers to all activities towards incorporating external sources into the own innovation process, whereas outbound innovation relates to the way in which internal sources are revealed or commercialized vis-à-vis external actors (cf. Dahlander & Gann, 2010, for an overview). Summarizing previous literature, findings suggest that firms should be neither too open, as information might leak to competitors (Laursen & Salter, 2006), or too closed, as this might limit innovativeness (Dahlander & Gann, 2010).

In the attempt to identify the optimal level of openness previous work has included various internal and external characteristics, including company size, organizational culture, strategic orientation, market turbulence, competitive intensity and intellectual property protection (c.f. Huizingh, 2011, for an literature review). In contrast, research has not taken into account how cultural differences may determine the readiness for openness. Greve et al. (2009) are amongst the few who suggest from a theoretical

perspective that the national culture influences the tendency to adopt and implementation inbound openness (in their case: absorptive capacity).

Building upon this framework, our guiding research question is therefore how cultural factors influence the readiness for both inbound and outbound openness? To answer this research question empirically we apply Hofstede's seminal work of national culture to the haute cuisine industry. Hofstede (1980) distinguishes five different dimensions, including power distance, individualism, masculinity, uncertainty avoidance and long-term orientation, which determine the mental structure of individuals within a given national culture. Based on a sample of 486 chefs across Europe, nominated by the Michelin guide 2012, we examine how differences in national cultural values determine the readiness of openness. The haute cuisine industry is an appropriate research area since chefs act as both key sources and drivers of the culinary innovation process (Braun et al. 2013; Fauchart & von Hippel, 2008).

The paper proceeds as follows: Section 2 lays the theoretical foundations outlining the concept of openness and national culture as major constructs for the development of our hypotheses. Section 3 describes the data and methodology, including the dependent and independent variables. In section 4, we present our results. The paper concludes with a discussion and highlights implications as well as avenues for future research in section 5.

## **Theoretical Background**

### ***Openness***

The concept of openness has (re-) experienced enormous scientific attention in the past ten years (Huizingh, 2011; Lichtenthaler, 2011). Research was mainly triggered by Chesbrough's seminal work on open innovation that established an umbrella for already existing approaches (van de Vrande et al. 2009). In its core, open innovation reflects on the two questions (1) with whom and (2) how firms should interact with regards to external knowledge sources (Chesbrough, 2003, 2006).

The underlying assumption is that the purposeful opening up of companies' boundaries and the tactical interaction with the environment in the innovation process increases the innovative potential of enterprises. Proponents of the open innovation approach regard the shift from "closed" to (more) "open" innovation processes as the only way to grow and become more competitive as firm (e.g. Huston & Sakkab, 2006; Dittrich & Duysters, 2007; Müller-Seitz & Reger, 2009).

Although academic research has dealt intensively with the subject of open innovation for ten years, there is a comparatively small variance in definitions of the term. In general, definitions make use of the terminology introduced by Chesbrough (2003), which was subsequently slightly modified, according to which OI is a paradigm "that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology" (Chesbrough, 2003: xx). Later, he specifies OI as "the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively" (Chesbrough, 2006: 1).

Previous research has improved our understanding in the characteristics determining both the readiness and effectiveness of openness. However, the results are neither systematic nor comprehensive (c.f. Huizingh, 2011, for an overview).

More recently, Rass et al. (2012) show with regards to internal context factors that social capital has an important impact on relationship between openness and firm performance. In the same vein, Hung & Cou (2013) find a moderating effect of internal R&D and environmental turbulence. In addition, Pedrosa et al. (2013) identify a set of managers' characteristics that improve the firm's readiness for openness.

With regards to external context factors Van de Vrande et al. (2009) find minor differences between industries in adopting open innovation practices. In addition, Poot et al. (2009) show that the general trend towards openness is driven by shocks within the industries, and that the timing and intensity of these shocks vary between industries. Beyond the industry-perspective, Gassmann et al. (2010) argue that corporate openness may depend on factors such as globalization and technology intensity.

The question how national culture shapes the readiness for openness as additional context factor is widely un-researched. On a micro-level Spithoven (2013) shows that firms in countries (in his case: Belgium, Germany and Spain) differ in open innovation practices and outcome, and on a macro-level de Jong et al. (2006) research the impact of national culture on the openness of countries with regards to international trade and finance. Amongst the few who have dealt with the question how national culture determines corporate openness are Greve et al. (2009) who developing a conceptual framework by applying absorptive capacity with Hofstede's dimensions.

## ***National Culture***

Hofstede (1980, 2001) was amongst the first researchers who introduced the notion of “national culture” and defined it as “the collective programming of the mind that distinguishes the member of one group or category of people from another” (Hofstede, 2001: 9). Based on a survey with 120,000 IBM employees in 67 countries Hofstede developed four dimensions (a fifth dimension was subsequently introduced) to measure cultural differences between countries. These are power distance, individuality, masculinity, uncertainty avoidance and long-term orientation.

Despite of its critical evaluation (e.g. Venaik & Brewer, 2013), Hofstede’s concept is widely used in various research contexts, including consumer behavior (Singh, 2006; Yoon, 2009), organizational behavior (Li & Harrison, 2008), entrepreneurship (Rauch et al. 2013; Schlaegel et al. 2013) and innovation (Hongyi, 2009; Semenov, 2004). For our purpose and in line with de Jong et al. (2006: 117) the dimensions serve as “cultural proxies (...) for cross-county comparison”. In the following all dimension are briefly described based on Hofstede’s classification (2001):

The first dimension – power distance – refers to the extent to which societies accept that power is distributed unequally. In societies that rank high on power distance, people believe that inequality is unavoidable. In contrast people in low power distance cultures believe that social inequality should be diminished.

The second dimension is individualism versus collectivism. People differ in their consciousness ranging from an “I” to a “we” approach. In collectivist societies the group plays an important role, whereas individualistic societies the individual and his or her immediate peer is taken care for.

The third dimension differs masculinity versus femininity and deals with the emphasis on quality of life and success. Societies with a high level of masculinity stress competition. Status symbols play an important role. In contrast, people in feminine societies stress solidarity and equality.

The fourth dimension is termed uncertainty avoidance and refers to the extent to which people feel threatened by uncertainty. People in societies with a high level of uncertainty avoidance avoid risks and changes, whereas people with a low level of uncertainty avoidance are more willing to take risk and perceive changes as interesting.

The fifth dimension is long- versus short-term orientation and refers to the people's planning horizon. Long-term oriented societies perceive the future and values such persistence and capacity for adaptation as important. In contrast, short-term oriented societies value the past and the present. They perceive steadiness, respect for tradition and reciprocation as important.

### ***Hypotheses***

Due to the limited insight into the relationship between national culture and openness, this study applies a competing hypothesis approach comparing two plausible alternative hypotheses (Armstrong et al., 2001). This approach is also suitable in cases where contradictory opinions impede an explicit hypotheses generation. Thereby, it enhances the objectivity and validity of the research approach (Armstrong et al., 2001). In doing so, we distinguish inbound and outbound openness. This leads us to ten competing hypotheses:

H1a: A high (low) degree of power distance has a positive (negative) impact on inbound openness.

H1b: A high (low) degree of power distance has a positive (negative) impact on outbound openness.

H2a: A high (low) degree of individualism has a positive (negative) impact on inbound openness.

H2b: A high (low) degree of individualism has a positive (negative) impact on outbound openness.

H3a: A high (low) degree of masculinity has a positive (negative) impact on inbound openness.

H3b: A high (low) degree of masculinity has a positive (negative) impact on outbound openness.

H4a: A high (low) degree of uncertainty avoidance has a positive (negative) impact on inbound openness.

H4b: A high (low) degree of uncertainty avoidance has a positive (negative) impact on outbound openness.

H5a: A high (low) degree of long-term orientation has a positive (negative) impact on inbound openness.

H5b: A high (low) degree of long-term orientation has a positive (negative) impact on outbound openness.

## Data and Methodology

### *Sample*

Our analysis employs the data on the haute cuisine chefs from the several European countries collected via survey in 2012. To identify the haute cuisine chefs, we selected in the first run 2,337 restaurants listed in the 2012 Michelin guide and/or rewarded with a Bib Gourmand status.<sup>1</sup> The Michelin guide is considered a benchmark for restaurants and a sign of the excellent culinary performance of the chefs (Fauchart & von Hippel, 2008; Ottenbacher & Harrington, 2008). It is published once a year for various countries worldwide. The scale ranges from one to three stars. The nomination with a Bib Gourmand status is also prestigious, but reflects less than one star. Though these awards are given to the restaurants and not to individuals, in the line with the previous literature, we presume that the chefs are the key drivers of culinary innovations and figureheads for the awarded restaurants (Fauchart & von Hippel, 2008; Svejenova et al., 2007). Since some chefs ran more than one awarded restaurant and some restaurants had gone out of business since the nomination, a total of 2,178 chefs were surveyed in their first language via e-mail or per mail/fax in the case the e-mail address was not available. In the period between June and September 2012, 533 chefs responded to the survey, the response rate was thus approximately 25 percent. After removing observations including missing values as well as those from the countries with a very low number of cases, the final sample contains 486 haut cuisine chefs from eight different countries: Germany (169 chefs), Italy (83),

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<sup>1</sup> From the sixteen European countries—Austria, Belgium, Denmark, Finland, France, Germany, Great Britain, Ireland, Italy, Lichtenstein, Luxembourg, Netherlands, Norway, Spain, Sweden and Switzerland—we selected the total of 2,337 restaurants: 1,481 restaurants are listed in the Michelin guide 2012 with one star, 242 with two stars, 58 with three stars, and 556 are restaurants rewarded with Bib Gourmand.

France (79), Spain (49), Switzerland (49), Belgium (27), United Kingdom (19), and the Netherlands (11) (see Table 1).

[Table 1 near here]

### ***Dependent Variables***

Using this survey data, our goal is to explore to what extent the inbound and outbound openness are culturally embedded. In line with the study by Laursen & Salter (2006), we distinguish between breadth and depth of the openness for new ideas, so that we end up with four dependent variables: (1) *inbound openness: breadth*, (2) *inbound openness: depth*, (3) *outbound openness: breadth*, and (4) *outbound openness: depth*.

The variable *inbound openness: breadth* is measured by the number of the external knowledge sources or information for innovations used by the chefs. The following nine sources were included in the questionnaire: (a) other top restaurants, (b) exchange with manufacturers and suppliers, (c) conversations with guests in the restaurant, (d) new technological trends (e.g., equipment), (e) reading cookbooks, (f) seasonally and/or regionally offered foods, (g) exchange with the kitchen staff, (h) exchange with the service staff, and (i) other. Consequently, *inbound openness: breadth* has any values between 1 and 9; the mean value is 8 sources (see Table 2). The depth of external knowledge search is defined as the extent to which chefs draw intensively from the just mentioned sources. Thus, *inbound openness: depth* is measured by the number of sources that scored at least 4 on a five-point scale, rating the importance of each source from 1="not at all important" to 5="very important".

It takes values from 0 to 9; on average, the surveyed chefs intensively employ 5 different source of external knowledge when innovating.

In the similar way, the variables breadth and depth of outbound openness are created. Here, we take the following four channels of sharing and/or transferring knowledge to other actors into consideration: (a) cookbooks, (b) cooking courses, (c) appearances on the radio and/or TV, and (d) other. Consequently, the dependent variable *outbound openness: breadth* is measured by the number of channels used for sharing knowledge by the chef; it has values between 0 and 4, the mean value is approximately three channels. The variable *outbound openness: depth* should measure to what extent the chefs intensively use various channels of knowledge dissemination. This measure represents the number of knowledge sharing channels that scored at least 4 on a five-point scale, rating the importance of each channel from 1="not at all important" to 5="very important". It takes values from 0 to 4; on average, the chefs from the underlying sample intensively use about two channels for sharing their know-how.

We conceived all four dependent variables as ordered and, thus, estimate our models using ordered logit regression (Greene, 2003).

### ***Independent Variables***

The independent variables included in our model should capture the influence of the culture on inbound and outbound openness. To this end, we match our micro-data with the country-level scores of the five cultural dimensions defined by Hofstede (1980) – (1) *power distance*, (2) *individualism*, (3) *masculinity*, (4) *uncertainty avoidance*, and (5) *long term orientation*.

## **Control Variables**

In our models, we include the following control measures that were reported in the questionnaire: a dummy variable for being a woman, number of Michelin stars ranging from 0 to 3, the tenure measured as the number of years of experience gained by the chef in working in haute cuisine, the size of the restaurant measured by the number of employees and the time to renewal of the product (i.e., the menu) as a proxy for innovative capabilities of the chef. Furthermore, we control for the competition intensity and the market size at the country level. Here, we employ the number of Michelin stars awarded in 2012 to the chefs of the respective country as a proxy for competition intensity. As a proxy for the market size, we use the country-level turnover in the restaurants sector in 2011 published by EUROSTAT.<sup>2</sup>

[Table 2 near here]

## **Results**

The estimation results from ordered logit regression models depicted above are presented in Table 3 and Table 4. Table 3 includes the ordered log-odds (logit) coefficients and the corresponding robust standard errors. These coefficients show the expected change of the respective dependent variable level in the ordered log-odds scale for a one unit increase in the predictor while the other variables in the model are held constant. That is, e.g., a one point increase in the cultural dimension power distance results in a 0.16689 unit increase in the ordered log-odds of being in the higher category of the inbound openness depth at the 10 percent significance level.

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<sup>2</sup> Here, we consider the 56.1 sector of the NACE Rev. 2 classification—i.e., the sector of restaurants and mobile food service activities. NACE refers to the European Classification of Economic Activities.

Further, Table 4 presents the estimation results from the same models but as ordered odds ratios which are easier to interpret, including the corresponding robust standard errors.<sup>3</sup> Using the ordered odds ratios, we are comparing the chefs who are in groups greater than  $k$  versus those who are in groups less than or equal to  $k$ , where  $k$  is the level of the response variable. The interpretation would be that, for a one unit change in the respective independent variable, the odds for cases in a group that is greater than  $k$  versus less than or equal to  $k$  are the odds times larger.

The findings show that the *power distance* is positively related to the breadth both of inbound and outbound openness at the five percent significance level; however, in the case of the depth of inbound and/or outbound openness, the positive relationship is significant at the ten percent level only. Indeed, for one point increase in power distance, the odds of the highest level of breadth of inbound (outbound) openness versus the combined categories being lower than the highest one, are 1.364 (1.228) times greater, given the other variables are held constant in the model. Moreover, the variable *long term orientation* is positively associated with the breadth (depth) of inbound openness at the five (ten) percent significance level. The odds of the highest level of inbound openness breadth (depth) compared to combined other categories of this dependent variable are 1.355 (1.230) times greater for one point increase in long term orientation.

Nevertheless, the cultural dimension *individualism* exerts a significantly negative impact on the breath of inbound openness at the five percent level. For one point increase of individualism, the odds of the highest level of this dependent versus the

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<sup>3</sup> Note that, for the sake of brevity, we show here the findings with respect to the cultural dimensions only.

combined being lower than the highest one, are 0.851 times lower, given all other variables included in the model are held constant. In addition, the results reveal that *uncertainty avoidance* is negatively related to the breadth of inbound (outbound) openness at one (ten) percent significance level. In fact, the odds of the highest level of inbound (outbound) openness breadth versus the combined categories being lower than the highest one are 0.810 (0.887) times lower for one point increase in uncertainty avoidance.

Finally, the cultural dimension *masculinity* appears to exert no significant influence on any of the dependent variables.

[Table 3 and Table 4 near here]

## **Discussion and Conclusions**

The aim of this paper was to shed light on a still under-researched question, i.e. how cultural factors influence the readiness for both inbound and outbound openness? In the attempt to answer this question we applied Hofstede's seminal work of national culture to the haute cuisine industry. Based on a sample of 486 chefs across Europe, nominated by the Michelin guide 2012, we examined how differences in national cultural values determine the readiness of openness.

Our results suggest that power distance plays an important role for both, inbound as well as outbound openness. Based on Hofstede's (2001) definition a high level of power distance refers to which the chefs accept that power – or in our case knowledge – is distributed unequally. Therefore, chefs accept these variations in expertise and willingly integrate external sources into their innovation process. In the

same vein, chefs are willing to share their expertise with regards to outbound openness. This interpretation is valid for both depth and breadth.

Referring to individualism our findings suggest a strong negative impact of a high level of individualism and inbound openness. Our interpretation is that chefs in a highly individualistic society strongly rely on their own knowledge and expertise. Hence they do not integrate external sources in their innovation process.

In the case of uncertainty avoidance we find a negative effect on both outbound and inbound openness. Uncertainty avoidance can be interpreted as the degree someone is willing to take risk. Chefs in societies with a high level of uncertainty avoidance are reluctant to share their expertise due to the fear of unintended knowledge spillovers. Moreover, the integration of knowledge is also associated with risk, e.g. to choose the wrong sources, which again prevents chefs to integrate external knowledge.

With regards to long-term orientation we find a positive impact on inbound openness. Societies with a high level of long-term orientation are interested in constantly improve their capabilities, e.g. by a network of external sources. In other words: inbound openness is a means to build up expertise and know-how.

As any research the present study has limitations. One limitation concerns the sample with regards to the concentration on European countries and the focus on the haute cuisine industry. Future research should broaden the geographical and industry-related spectrum. Moreover, the study is based on Hofstede's aggregated national culture results. Future research should evaluate cultural differences based on a more individual assessment.



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## Tables

**Table 1 Country distribution and cultural dimensions**

Country	No of obs.	in %	Power distance	Individualism	Masculinity	Uncertainty avoidance	Long term orientation
Germany	169	34.8	35	67	66	65	31
Belgium	27	5.6	65	75	54	94	38
France	79	16.3	68	71	43	86	39
UK	19	3.9	35	89	66	35	25
Italy	83	17.1	50	76	70	75	34
Netherlands	11	2.3	38	80	14	53	44
Switzerland	49	10.1	34	68	70	58	40
Spain	49	10.1	57	51	42	86	19
<i>Total</i>	<i>486</i>	<i>100.0</i>					

**Table 2 Descriptive statistics**

	Mean	SD	Min	Max
Inbound openness: Breadth	8.16	1.31	1	9
Inbound openness: Depth	5.06	1.97	0	9
Outbound openness: Breadth	3.12	1.07	0	4
Outbound openness: Depth	2.06	1.11	0	4
Woman (d)	0.06	0.24	0	1
No of Michelin Stars	1.13	0.69	0	3
Tenure	14.40	10.04	0	44
No of employees	13.91	10.71	2	82
Innovative capacity	6.96	5.02	1	24
Competition	328	194	118	729
Market size	215211	118030	8185	319302

Notes: SD refers to standard deviation. No of observations is 486.

**Table 3 Results from the estimation ordered logit models—coefficients and the corresponding robust standard errors in the parentheses**

	Inbound Openess: Breadth	Inbound Openess: Depth	Outbound Openess: Breadth	Outbound Openess: Depth
<i>Cultural dimensions:</i>				
Power distance	0.31072*** (0.099)	0.16689* (0.094)	0.20505** (0.099)	0.15103* (0.088)
Individualism	-0.16147** (0.072)	-0.08518 (0.068)	-0.07288 (0.073)	-0.07322 (0.066)
Masculinity	-0.01977 (0.013)	-0.00981 (0.010)	0.00843 (0.011)	0.00172 (0.008)
Uncertainty avoidance	-0.21108*** (0.067)	-0.09409 (0.064)	-0.11979* (0.069)	-0.09373 (0.063)
Long term orientation	0.30398** (0.120)	0.20716* (0.112)	0.13147 (0.118)	0.12698 (0.100)
<i>Control variables:</i>				
Woman (d)	-0.07014 (0.375)	-0.27829 (0.331)	-0.11189 (0.358)	-0.5023 (0.363)
No of Michelin Stars	-0.42700*** (0.158)	-0.28225** (0.126)	0.09542 (0.144)	0.11853 (0.138)
Tenure	-0.01938** (0.009)	-0.01470* (0.008)	0.00885 (0.010)	0.01047 (0.009)
No of employees	0.01307 (0.009)	0.02333*** (0.008)	0.01634* (0.010)	0.02207** (0.009)
Innovative capacity	-0.00889 (0.021)	-0.01957 (0.021)	-0.02128 (0.020)	-0.00452 (0.019)
Competition	-0.00632*** (0.002)	-0.00419** (0.002)	-0.00307* (0.002)	-0.00315** (0.001)
Market size	0.00002*** (0.000)	0.00001* (0.000)	0.00001 (0.000)	0.00001 (0.000)
_cut1	-6.94778***	-3.02293*	-2.54404	-2.39752
_cut2	-6.02129***	-1.38593	-0.30237	0.09985
_cut3	-5.04323***	-0.24	0.94937	1.39852
_cut4	-4.19738**	0.86385	1.97883	2.66312
_cut5	-3.61735**	1.67661		
_cut6	-2.73496	2.52182		
_cut7	-1.58082	3.31926**		
_cut8		4.22970**		
_cut9		5.03904***		
No of obs.	486	486	486	486
Log likelihood	-594.3	-994.0	-583.0	-695.5
Chi <sup>2</sup>	39.2***	26.9***	44.1***	32.2***

Notes: (d) denotes dummy variables. \* p<0.10, \*\* p<0.05, and \*\*\* p<0.01.

**Table 4 Results from the estimation ordered logit models—ordered odds ratios and the corresponding robust standard errors in the parentheses**

	Inbound Openess: Breadth	Inbound Openess: Depth	Outbound Openess: Breadth	Outbound Openess: Depth
Power distance	1.364*** (0.135)	1.182* (0.111)	1.228** (0.122)	1.163* (0.103)
Individualism	0.851** (0.061)	0.918 (0.063)	0.930 (0.068)	0.929 (0.061)
Masculinity	0.98 (0.013)	0.99 (0.010)	1.008 (0.011)	1.002 (0.008)
Uncertainty avoidance	0.810*** (0.054)	0.910 (0.058)	0.887* (0.061)	0.911 (0.057)
Long term orientation	1.355** (0.163)	1.230* (0.138)	1.140 (0.135)	1.135 (0.114)

Notes: The models presented here include the same set of control variables as the models shown in Table 3. \* p<0.10, \*\* p<0.05, and \*\*\* p<0.01.