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Cross-cultural Differences in Compensation Level and Inequality across Occupations: A Set-theoretic Analysis

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Abstract

Compensation level and compensation inequality, as central aspects of modern organizations, are vital for organization studies. Previous research has investigated various aspects of compensation systems, but few studies have taken a cross-cultural perspective. I address this need for cross-cultural research by studying compensation and culture utilizing a configurational approach, investigating combinations of cultural and macro-environmental attributes associated with differences in compensation level and compensation inequality. I apply fuzzy set Qualitative Comparative Analysis (fsQCA) to analyze country-level data encompassing four occupational groups (cleaners, secretaries, mid-level managers, and senior managers) from 44 countries. Findings show configurations of cultural dimensions, development, and welfare state that are sufficient for high compensation level and compensation inequality among these four occupations. Implications for future cross-cultural research on compensation are discussed.

Keywords

compensation, culture, Hofstede, inequality, fuzzy set Qualitative Comparative Analysis (QCA)

Compensation and compensation inequality, as central aspects of modern organizations, are vital for organization studies. Given in exchange for continued participation in and contribution to the organization, compensation has been argued to be an organization's major means of control and constitutes the basis of the calculative involvement of individuals (Etzioni 1961; March and Simon 1958). Furthermore, organizations involve the distribution of power, prestige, privileges, and resources among individuals and occupational groups (Bendix 1956; Brown 1977; Tannenbaum et al. 1974); monetary resources such as income are the most tangible dimension of organizational and social inequality (Lenski 1966; Mahoney 1979).

A wealth of research has investigated aspects of compensation systems (Gerhart and Rynes 2003; Werner and Ward 2004) and potential sources of income inequality (Nielsen 1994; Nielsen and Alderson 1995). However, little research has taken a cross-cultural perspective, which asserts

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that compensation systems are cultural artifacts that are built upon and therefore symbolic of cultural assumptions and dominant values (Gelfand et al. 2007; Harris and Park 2008; Schneider 1988). Studies in this vein have highlighted a potential multitude of relationships among compensation, dimensions of culture and the national institutional environment (Chiang 2005; Tosi and Greckhamer 2004). Evidence of such interdependencies has amplified a need for more holistic empirical evaluations of cultures (Shenkar 2001; Tsui et al. 2007) that are consistent with definitions of culture as a complex whole composed of a set of interrelated cultural dimensions (Kluckhohn and Strodtbeck 1961; Lytle et al. 1995).

This study explores relations between configurations of cultural and macro-environmental attributes and compensation level and compensation inequality utilizing Hofstede's (1980a, 2001) dimensions of national culture. Responding to calls for holistic approaches to relationships between culture and organizational phenomena, and consistent with Hofstede's theoretical framework, I analyze cultural dimensions as interdependent parts of 'mental programs' (Hofstede 1980a) or value configurations. I apply the configurational approach fuzzy set Qualitative Comparative Analysis (fsQCA) (Ragin 2000, 2008) to analyze country-level data encompassing four occupational groups (cleaners, secretaries, mid-level managers, and senior managers) from 44 countries. Below, I discuss the study's theoretical grounding and methodology, followed by a presentation of its results and their implications.

Theory and Research on Compensation and Culture

Compensation generally 'refers to all forms of financial returns and tangible services and benefits employees receive as part of an employment relationship' (Milkovich and Newman 2008: 9). Compensation is critical for organizations because it constitutes the basis of the calculative involvement of individuals (Etzioni 1961; March and Simon 1958); is a key determinant of attracting job applicants evaluating employment opportunities and of employees' job satisfaction (Gerhart and Rynes 2003; Ronan and Organt 1973; Rynes and Gerhart 2000); and is a key mechanism for organizations to influence members' behavior to integrate and direct the efforts of individuals and sub-units toward achieving their objectives (Balkin and Gomez-Mejia 1990; Lawler 1990). Two key compensation decisions facing organizations are setting compensation levels for different occupations and deciding on the magnitude of pay differentials across job categories throughout the organizational hierarchy (Gerhart and Rynes 2003; Gomez-Mejia and Balkin 1992).

While research has explored various aspects of compensation systems for executives and other employees alike (for reviews, see Devers et al. 2007; Dulebohn and Werling 2007; Tosi et al. 2000; Werner and Ward 2004), studies investigating the impact of culture on compensation have remained scarce. Starting from the premise that national culture shapes institutions and organizational structures and practices, a cultural perspective holds that compensation systems and practices are vital cultural artifacts that are built upon and therefore symbolic of cultural assumptions and dominant values (Harris 2008; Laurent 1986; Schneider 1988; Schneider and Barsoux 1997). Indeed, cultures differ in their dominant reward systems (Gelfand et al. 2007). The very argument that compensation is the basis for calculative involvement and continued participation on the part of individuals (March and Simon 1958) is culturally bound by an instrumental view of organizations and presumes that employees act as *economic men* (Hofstede 2001; Laurent 1986). Culture may also shape perceptions of the meaning and importance of money (Harris and Park 2008; Tang et al. 2002; Zelizer 1994), the principal form of reward in organizations (Pfeffer 1997).

Culture

Culture has been variously defined in the literature (Gelfand et al. 2007; Kroeber and Kluckhohn 1952; Triandis 1995). One widely accepted definition refers to culture as the patterns of thinking, emotions, and behavior in a society that reflect traditional ideas and values and are manifested in symbols, artifacts, and other demonstrations of behavior that are transmitted through socialization processes (Kluckhohn and Strodtbeck 1961). These 'mental programs' (Hofstede 1980a) are historically shaped by such factors as a people's history, geography, climate, and resources (Hofstede 1980a; Triandis 2004; Van de Vliert 2008). Cultural differences have been studied primarily by synthesizing dominant value orientations into models of culture (Hofstede 2001; House et al. 2004; Kluckhohn and Strodtbeck 1961), capturing values that shape the cultural cognitive maps of individuals as well as social systems and institutions (Ferraro 1998; Shaw 1990). Hofstede's (1980a, 1991, 2001) model of culture has been utilized most widely in cross-cultural research (Earley 2006), including research on compensation.

Hofstede identified five (originally, and more widely-used, four) work-related value dimensions that differentiate national cultures: (1) *Individualism-collectivism* reflects the degree to which members of a society value independence versus group membership; (2) *Power Distance* refers to the extent to which citizens readily accept unequal distribution of power and authority; (3) *Uncertainty Avoidance* differentiates societies on the degree to which they feel threatened by and try to avoid uncertainty and instability; (4) *Masculinity-femininity* refers to the relative dominance of values associated with stereotypes of masculinity (aggressiveness, achievement and acquisition of material wealth) versus those associated with stereotypes of femininity (compassion empathy, and emotional openness); (5) *Long- versus Short-term Orientation of Thought* distinguishes the extent to which members of a society foster virtues oriented towards future rewards versus fostering virtues related to the past and present.

Compensation Level and Culture

Membership in utilitarian organizations is an exchange of values; employees provide labor power and receive a certain amount of compensation (primarily, among other outcomes) (Barber and Bretz 2000; Etzioni 1961). A rich research tradition has focused on the determinants of the magnitude of this compensation level, investigating general environmental determinants rooted in the business and industry environment; various job and group characteristics and change of jobs; firm-level determinants including unionization and specific firm practices; and a range of individual characteristics including gender and race as well as aspects of individual behaviors and experiences (for a review, see Werner and Ward 2004).

Although cultural determinants of cross-national differences in compensation level have received comparatively scant attention, theory holds that cross-national differences in compensation level should be related to culture (Gomez-Mejia and Welbourne 1991; Harris and Park 2008; Hofstede 2001). To give a few examples, in highly individualistic countries individual achievement is to be rewarded and high compensation level is a desired sign of success, while in highly collectivist countries a person's needs rather than performance should shape compensation; in high power distance countries higher compensation should be desirable as visible reward projecting power; and highly masculine countries tend to have more sex-differentiated occupational and compensation structures, which may shape individual occupations' compensation. More fundamentally, core elements of compensation such as performance appraisal are culturally bound (Schneider 1988; Schneider and Barsoux 1997). Performance appraisal implies that what is being achieved matters and can be

measured objectively; the assumption of rewarding individual performance does not hold in cultures applying the collective understanding of sharing as in a family to organizations.

Several studies have linked national culture and compensation. Pennings (1993) concluded that differences in the efficacy and perceptions of reward systems, including compensation levels, can be partially attributed to cultural differences. Townsend et al. (1990) found that membership in one of five culture clusters derived from Ronen and Shenkar (1985) had significant effects on compensation level and other pay dimensions. Schuler and Rogovsky (1998) related Hofstede's dimensions to compensation outcomes – pay based on status and individual performance, ownership plans, and social benefits – and found each culture dimension was correlated with one or more compensation outcomes. Similarly, Tosi and Greckhamer (2004) studied the effect of these cultural dimensions on CEO compensation and found that CEO total compensation and the ratio of variable to total pay were related to power distance and individualism and that total pay was related to uncertainty avoidance. Chiang (2005) studied reward preferences among employees in the banking industry in four countries and concluded that cultural differences offer insights into reward preferences, although contextual factors such as economic conditions also shape these preferences.

Studies such as Chiang's (2005) suggest that even though culture is a vital aspect of nations, other national-level factors that are interrelated with culture also should impact cross-national differences in compensation. To begin with, compensation level should be shaped by a country's level of development including its wealth, degree of industrialization, as well as demographic and educational development (Abowd and Bognanno 1995; Nafziger 2006; Sweetland 1996). Compensation level should further be shaped by welfare state institutions, which fundamentally shape modern societies and their social institutions including a society's labor market, class structure, systems of distribution and redistribution, normative structures, and gender relations (Esping-Anderson 1990; Kolberg 1992; Moller et al. 2003). Welfare states' effects on labor markets tend to decommodify labor, and economic relations underlying compensation are restructured towards the collective fulfillment of needs rather than the logic of private capital accumulation (Esping-Anderson 1992; Western 1989). Hence, the strength of welfare state institutions should impact compensation level for some or all occupational groups.

Compensation Inequality and Culture

Compensation inequality is a second core compensation dimension for organization theory (Mahoney 1979; Moore 1962). Inequality is ubiquitous in modern societies (Harris 1977; Lenski 1966; Rousseau 1990[1754]) and monetary income constitutes inequality's most tangible dimension (Nielsen and Alderson 1995). Compensation hierarchy is a basic design feature of organizations in all societies where wages are paid and the stratification of occupations and their compensation are bound up with the structure and stratification of societies (Brown 1977; Tannenbaum and Rozgony 1986; Weber 1964). Explaining the intent of hierarchical compensation differentials has challenged organization theory (Mahoney 1989); competing explanations utilized economic theories of supply and demand of scarce skills (Gerhart and Rynes 2003) or sociological theories of power and social norms (Moore 1962; Simon 1957).

Organization studies have not dealt extensively with cross-cultural differences in compensation inequality among occupational groups. However, cultural values pertaining to social inequality and to general human inequality in different areas including prestige, wealth, and power have been captured by Hofstede's model as power distance. For example, in high power distance countries hierarchy reflects existential inequality between 'higher-ups' and 'lower-downs' and should result in greater compensation differences between occupations spread across organizations' hierarchical

layers (Gomez-Mejia and Welbourne 1991; Hofstede 1991). Indeed, research found the ratio of the 20% highest to lowest household incomes (Hofstede 2001) and the ratio of pay inequality between CEOs and manufacturing workers (Tosi and Greckhamer 2004) were positively related to power distance.

Relatedly, high masculinity encompasses a tendency towards higher achievement motivation, defining achievement in terms of recognition and wealth. Highly masculine cultures admire the aggressive pursuit and acquisition of material possessions and additional income, while feminine cultures tend to emphasize working conditions, job satisfaction, and employee participation (Gomez-Mejia and Welbourne 1991; Hofstede 1980a). Attributing different worth to holding superior versus inferior positions, these value differences should lead to differences in the magnitude of hierarchical income inequality. Also, individualism-collectivism could shape compensation inequality, because collectivist cultures should emphasize internal equity and personal needs (for example, taking into account an individual's number of dependents) rather than rewarding individual accomplishments and success of climbing an organization's hierarchy.

Additionally, research has linked cross-national differences in income inequality to economic development, including national wealth and three developmental processes (Alderson and Nielsen 1999; Kuznets 1955; Nielsen 1994; Nielsen and Alderson 1995). First, development shifts labor from lower-income agricultural to higher-income industry and service sectors; higher employment in agriculture inflates the bottom of the income distribution and provides a reservoir of labor, further depressing lower-level wages. Second, development causes a demographic transition in which temporary rapid population growth produces a large cohort of young workers that should increase income inequality by inflating the bottom of the income distribution and by depressing lower incomes by contributing to excess labor supply. Third, development of human capital through the spread of education in a developing population is argued to reduce inequality by increasing competition among more qualified personnel and thus a decline in their income.

Compensation inequality should also be shaped by welfare state institutions. The welfare state is both a mechanism that intervenes in the structure of inequality and a system of stratification in itself (Esping-Anderson 1990). It is comprised of transfer and tax policies that aim to partially equalize the distribution of economic welfare in society (Kolberg 1992). Thus, a defining characteristic of welfare states is the extent to which they (re)distribute income (Moller et al. 2003), which should reduce compensation inequality among occupational groups.

A Set-Theoretic Configurational Approach to Compensation and Culture

Compensation research has been dominated by general linear approaches, despite theories of nonlinear relationships between compensation determinants and outcomes (Werner and Ward 2004). Similarly, cross-cultural research has been dominated by trait approaches assuming independence of cultural dimensions and linear and additive relationships between cultural and organizational variables (Shenkar 2001; Tsui et al. 2007), while underlying theories have reflected the idea of culture as an 'integrated, complex set of interrelated and potentially interactive patterns characteristic of a group of people' (Lytle et al. 1995: 170). Empirical results have contradicted the existence of linear relationships between cultural dimensions and organizational outcomes (Kirkman et al. 2006), and reviewing limitations of trait approaches, Tsui et al. (2007) called for configurational approaches for cross-cultural research.

Furthermore, the cultural perspective holds that cultural values are ultimate determinants of human organization and behavior that also shape material and structural conditions such as

economic development and societal institutions (Schneider and Barsoux 1997). Theory and research have highlighted interdependencies among dimensions of culture and development (Franke et al. 1991; Hofstede 2001). Relatedly, the evolution of welfare states has been linked to cultural values (Hofstede 1991, 1998). For example, the masculinity-femininity dimension captures values of solidarity with society's weak versus reward for its strong, and uncertainty avoidance shapes health care system preferences. These relations between culture and institutions have challenged research focusing on estimating their respective individual effects due to methodological limitations; configurational approaches are suitable for studying aspects of culture and institutions as configurations.

A set-theoretic configurational approach is not concerned with isolating independent effects of cultural and macro-environmental variables, but with examining their combined causal effects on compensation level and inequality. For example, a national culture may combine high power distance, and thus the acceptance of greater inequality, with low masculinity, stressing equality, solidarity and quality of work life; these attributes in turn may be combined with high individualism, which associates personal success with high financial status (Hofstede 1980a). The causal effects of this combination of values might differ between highly developed and not highly developed countries. Moreover, it may exist only in countries with strong welfare state institutions, thus not allowing for inferences regarding its effects in countries lacking those.

I address the need for configurational approaches to studying compensation and culture by investigating set-theoretic combinations of cultural and macro-environmental attributes leading to differences in compensation level and compensation inequality. I explore the relationship between configurations of nations' cultural dimensions, economic development, and welfare state status, and compensation level and inequality, focusing on two research questions:

Research question 1: What configurations of culture and selected macro-environmental attributes are necessary and/or sufficient for high compensation level for different occupational groups cross-nationally?

Research question 2: What configurations of culture and selected macro-environmental attributes are necessary and/or sufficient for high compensation inequality among different occupational groups cross-nationally?

Method and Data

In this section I describe the set-theoretic configurational approach fuzzy set Qualitative Comparative Analysis (fsQCA) (Ragin 2000, 2008) utilized in this study; detailed presentations of set-theoretic analysis including its Boolean algebra foundations are provided by Ragin (1987, 2000, 2008) and related introductions for organization studies (Fiss 2007; Greckhamer et al. 2008; Kogut et al. 2004). FsQCA has several strengths for studying cross-cultural differences in compensation level and compensation inequality. First, it is compatible with theories of culture as configurations of patterns in value orientations (Kluckhohn and Strodtbeck 1961; Lytle et al. 1995). Emphasizing that aspects of cases should be examined as packages and that a single difference between cases may constitute a difference in kind, fsQCA enables holistic comparisons of countries as configurations of cultural and other attributes to unveil patterns of similarities and differences among them (Ragin 1987, 2000). Second, QCA has been developed for rigorous analyses in settings with relatively small samples (Ragin 2000). The number of nations and available data on culture limit sample sizes in cross-cultural studies, making QCA particularly valuable. Third, in set-theoretic analyses causal[1] explanations become *multiply conjunctural* (Becker 1992); conjunctural because causes operate in

combinations rather than independent from each other, and multiple (or equifinal) because several combinations may produce the same outcome. This enables holistic analyses of cultural dimensions as interdependent elements of mental programs. Finally, concepts describing ideal typical cases are often vague (Verkuilen 2005), such as those of cultural dimensions describing 'only the extremes; most countries fall somewhere in between' (Hofstede 1980b: 45). This quality can be captured through partial membership in fuzzy sets representing cultural dimensions.

Data

Compensation is multidimensional (March and Simon 1958; Milkovich and Newman 2008); its various elements are likely to be shaped by cultural and other attributes of a national context (Chiang 2005; Schneider and Barsoux 1997). In this study I focus on direct monetary compensation – the principal reward in organizations (Pfeffer 1997) – and compensation inequality among occupational groups. The country-level dataset includes 44 countries (reported in Table 2), representing all five continents and both developing and developed countries.

Compensation. Compensation data were obtained from the World Economic Forum's Executive Opinion Survey 1999 (Warner 1999). This source included country-level data derived from approximately 4000 companies across 59 countries, with at least 50 respondents per country, about half of them from the manufacturing sector (Porter and Christensen 1999). It provides the typical take-home pay of selected occupational groups in 1999; it does not include non-wage payments such as in-kind benefits or stock options nor compensation of CEOs. The job classes were defined such that they would be comparable across countries (Warner 1999). I corroborated the validity of this data by correlating it with data on similar occupational groups from an independent source (see Appendix A). The final sample of this study included 44 of the 59 countries; one country was dropped because of missing compensation data for managerial jobs and 14 countries were not included because they were not part of Hofstede's study (2001).

It is recommended to utilize purchasing power parity (ppp) for cross-national comparisons to adjust for differences in price levels between economies (World Bank 2008). Thus, to adjust compensation data for differences in purchasing power – the value of goods and services employees can buy with their compensation in their country – I adjusted compensation data for ppp by multiplying them with the ppp-factor used by the United Nations in 1999 to express nominal GDP per capita in purchasing power parity (United Nations Statistics Division 2009).

National culture. National culture is operationalized by Hofstede's (2001) value scores for the four dimensions of power distance, uncertainty avoidance, individualism-collectivism, and masculinity-femininity. For the present study I utilized the original model with four dimensions because data for the fifth dimension are available for only a small number of countries; also, the fifth dimension (long-term versus short-term patterns of thought) has been argued to measure the same underlying cultural values as individualism-collectivism (Yeh and Lawrence 1995).

Economic development. I integrated four dimensions and measures of development used in recent literature (Moller et al. 2003; Nielsen 1994): (1) wealth, measured as GDP per capita (ppp); (2) degree of industrial development and reliance on agricultural economic activities associated with lower productivity and wages, measured by the proportion of a country's labor force employed in agriculture; (3) demographic development, indicated by the size of its youth population and measured as percentage of the population below age 15; (4) the development of human capital through the spread of education, measured by net secondary education enrollment ratio (i.e. the percentage of pupils in the age group for secondary education actually enrolled in secondary education). Data on GDP per capita-ppp, the percentages of labor force employed in agriculture and of population below age 15 for 1999, were taken from the CIA World Fact Book (CIA 1999).

Data for net secondary school enrollment were retrieved from the World Bank's educational statistics database (2009), supplemented with data for Singapore and India from country profiles of the World Resources Institute (2009).

Welfare state. A study of take-home compensation does not take into account the impact of public services on in-kind and other income and thus does not capture the full extent of income (re)distribution through welfare state institutions (Brady 2005); nevertheless, an emphasis on a population's welfare should impact compensation level and compensation inequality. I capture the strength of a nation's welfare institutions through its emphasis on public health spending, measured by the percentage of total health expenditures covered by government expenditure. This crucial aspect of welfare states distinguishes more encompassing welfare states from more liberal and minimalist variants of welfare provision (Brady 2005; Conley and Springer 2001). Data were retrieved from the World Health Association (WHO), complemented by additional sources for Taiwan (Library of Congress 2005) and Hong Kong (Liu and Yue 1998).

Fuzzy Set Calibration

In fsQCA cases are assigned degrees of membership in sets representing outcomes and causal conditions through a process of calibration (Ragin 2000, 2008). Calibration ties attributes of cases to substantive theoretical concepts by infusing fuzzy sets with thresholds of membership based upon empirical and theoretical knowledge; this is not merely a rescaling of quantitative variables. I limit this study to outcomes of high compensation level and high compensation inequality; because set-theoretic analysis does not assume linearity and is thus asymmetric (Ragin 2008), causes for low compensation level and low compensation inequality should not be assumed to be the inverse thereof but rather should be studied separately, if of interest.

For compensation data (ppp), I calibrated the sets of countries with (1) highly paid office cleaners (in short, cleaners), (2) highly paid mid-level secretaries (in short, secretaries), (3) highly paid mid-level managers, and (4) highly paid senior managers. For compensation inequality, I calibrated sets based on compensation ratios (e.g. ratio senior manager/cleaner compensation): the sets of countries with high compensation inequality between (1) senior managers and cleaners, (2) senior managers and secretaries, (3) mid-level managers and cleaners, (4) mid-level managers and secretaries, (5) senior managers and mid-level managers, (6) secretaries and cleaners. I constructed (7) a higher-order set of overall compensation inequality from inequality sets 1–6 through Ragin's (2000) *compensation method* to represent average membership in these sets. The compensation method allows strengths and weaknesses of cases to compensate for each other in the higher-order set by averaging membership in lower-level sets.

For the culture dimensions, I calibrated sets of countries with (1) high individualism (non-membership signifies not-individualistic rather than collectivist cultures); (2) high power distance; (3) high uncertainty avoidance; and (4) high masculinity (non-membership signifies not-masculine rather than feminine cultures). For economic development, I followed Ragin (2000) to construct a higher-order fuzzy set; this enabled the inclusion of various facets of economic development without greatly increasing the property space analyzed. First, I calibrated membership in four sets of development: sets of (1) wealthy countries; (2) developed countries with low reliance on employment in agriculture; (3) developed countries with low ratio of youth population; (4) developed countries with high dispersion of education. Second, I again applied the compensation method (Ragin 2000) to obtain membership in the higher-order set of highly developed nations. Finally, I calibrated the set of countries with strong welfare state institutions.

I calibrated fuzzy sets by applying the *direct method* (Ragin 2008). Thus, for every fuzzy set I specified three qualitative breakpoints that structure it based upon theoretical and empirical

knowledge: breakpoints for full membership (1), full non-membership (0), and the cross-over point of membership (0.5). These three benchmarks were used to transform the original interval-scale values to fuzzy membership scores. Fuzzy set calibration needs to be transparent to ensure rigor of the study and enable its replication and evaluation (Ragin 2000, 2008); I describe my calibration and setting of break-points in Appendix B and report break-points in Table 1.

Analysis Procedures

Set-theoretic analyses apply Boolean algebra and operations, as opposed to linear algebra underlying conventional statistical analyses (Ragin 1987, 2000). I utilized fsQCA 2.2 (Ragin et al. 2006)

Table 1. Break-points for Calibrating Fuzzy Sets

Set	Lower limit	Cross-over	Upper limit
Set of countries with highly Individualistic cultures	25	55	85
Set of countries with high Power Distance cultures	25	55	85
Set of countries with high Uncertainty Avoidance cultures	25	55	90
Set of countries with highly Masculine cultures	20	55	80
Set of wealthy countries (GDP per capita in USD, ppp)	4000	10000	21000
Set of countries with high spread of education (% of net secondary school enrollment)	60%	75%	90%
Set of countries with small youth population (% of population < 15 years of age)	30%	25%	20%
Set of countries with small proportion of workforce in agriculture (% of workforce employed in agriculture)	25%	15%	5%
Set of countries with strong welfare state (government proportion of health care costs)	45%	65%	80%
Set of countries with high cleaner compensation (in USD, ppp) [a]	2600	7400	15500
Set of countries with high secretary compensation (in USD, ppp)	7700	16600	27900
Set of countries with high mid-level manager compensation (in USD, ppp)	15400	37600	62600
Set of countries with high senior manager compensation (in USD, ppp)	46100	67900	125300
Set of high pay-inequality ratio 1 (senior managers to cleaners)	4.5	8	25
Set of high pay-inequality ratio 2 (senior managers to secretaries)	2.5	4.5	8
Set of high pay-inequality ratio 3 (mid-level managers to cleaners)	2.5	4.5	12
Set of high pay-inequality ratio 4 (mid-level managers to secretaries)	1.6	2.2	4
Set of high pay-inequality ratio 5 (senior managers to mid-level managers)	1.5	1.9	2.5
Set of high pay-inequality ratio 6 (secretaries to cleaners)	1.5	2	3.5

[a] = A conversion factor can be used to estimate recent equivalents of US Dollar amounts. For example, USD 1.000 in 1999 equal USD 1.292 in 2008, adjusted for inflation (Sahr, 2009).

for all analyses, applying the truth table algorithm (Ragin 2008; Rihoux and Ragin 2009). To attribute cases to configurations, this algorithm defines their membership in sets constituting a property space or truth table. Set-theoretic analyses of this property space then seek to identify the common configurations of causal attributes that are *necessary* and/or *sufficient* for the occurrence of an outcome (Ragin 2000, 2008). An attribute (combination) is defined as necessary if it must be present for a certain outcome to occur; it is defined as sufficient if by itself it can produce a certain outcome. Empirical support for necessity of a causal combination R is provided if it can be shown that set membership in the outcome Y is consistently less than or equal to membership in the causal combination R ($Y_i \leq R_i$). The converse, i.e. that membership in the outcome is consistently more than or equal to membership in the combination, supports arguments of sufficiency ($R_i \leq Y_i$).

Fuzzy set analysis distinguishes *complex*, *intermediate*, and *parsimonious* solutions (Ragin 2008; Rihoux and Ragin 2009). Complex solutions do not integrate simplifying assumptions based on non-existing configurations, leading to needlessly complex solutions; parsimonious solutions include all counterfactuals, irrespective of their plausibility; intermediate solutions use existing knowledge to distinguish *easy* and *difficult* counterfactuals and integrate those counterfactual cases consistent with existing knowledge (i.e. easy counterfactuals).

Set-theoretic consistency and coverage. Measures of consistency and coverage aid the interpretation of results (Ragin 2008). Consistency measures the degree to which cases sharing a given condition agree in displaying an outcome, indicating how closely a subset relation is approximated. Cases with strong membership in a configuration are the most relevant consistent and inconsistent cases. Consistency should be as close to 1 as possible to enable inferences that a subset relationship exists, indicating that all cases (when = 1) sharing a condition also share the outcome. Following recommendations (Ragin 2006, 2008), I set a consistency benchmark of 0.90 for necessary and sufficient conditions.

Adequate consistency is a precondition for evaluating set-theoretic coverage, which gauges a result's empirical importance to achieving the outcome. Overall coverage of a combination that may overlap with other combinations is its *raw coverage*; coverage uniquely due to a combination is its *unique coverage* (the difference between raw and unique coverage is due to overlap between combinations); the combined coverage of all combinations leading to the outcome is the *solution coverage*. If multiple combinations are sufficient for an outcome, raw and unique coverage provide assessments of their relative empirical importance.

Results

Property Space: Limited Diversity and Boundary Conditions

The property space or truth table represents all logically possible combinations of included attributes and is the key tool of set-theoretic analysis (Ragin 1987, 2008). It describes cases' (limited) diversity; limited diversity refers to situations where not all theoretically possible configurations exist in empirical reality due to 'attributes' tendency to fall into coherent patterns' (Meyer et al. 1993: 1176). In Table 2 I report the truth table, representing row by row the 64 corners of the fuzzy set vector space (2^6 logically possible combinations with six conditions), sorted by case frequency and including number and names of cases with strong membership in each configuration. While each case has a degree of membership in a given corner of this space, it can have strong membership in only one corner; strong membership is determined by assigning 1 to fuzzy membership values > 0.5, and 0 to those < 0.5.

The property space, with its emphasis on limited diversity, offers several insights. First, it unpacks the population of countries into distinct configurations (Ragin 2000), including those not present in the data. For example, the configuration occurring most frequently in the sample represents countries whose cultures combine high uncertainty avoidance and high power distance with

Table 2. Property Space and Distribution of Cases

Conf. #	Individualism	Power Distance	Uncert. Avoidance	Masculinity	Development	Welfare State	# of Cases	Cases with strong membership
1	0	1	1	0	0	0	6	Brazil, Chile, El Salvador, Peru, Thailand, Turkey
2	1	0	0	0	1	1	4	Canada, Denmark, Norway, Sweden
3	1	0	0	1	1	1	4	Australia, Ireland, New Zealand, UK
4	1	0	1	1	1	1	3	Austria, Germany, Italy
5	0	1	1	0	1	1	3	Portugal, Spain, Taiwan
6	0	1	0	1	0	0	2	India, Philippines
7	1	0	1	0	0	0	2	Egypt, Jordan
8	0	1	1	1	0	0	2	Mexico, Venezuela
9	1	1	1	0	1	1	2	Belgium, France
10	1	0	0	0	0	0	1	Indonesia
11	1	0	0	1	0	0	1	South Africa
12	0	1	0	0	0	0	1	Malaysia
13	0	0	1	1	0	0	1	Argentina
14	0	0	1	0	0	1	1	Costa Rica
15	0	1	1	1	0	1	1	Colombia
16	1	0	0	0	1	0	1	Netherlands
17	1	0	0	1	1	0	1	USA
18	0	1	0	0	1	0	1	Singapore
19	0	1	0	1	1	0	1	Hong Kong
20	1	0	1	0	1	0	1	South Korea
21	1	0	1	1	1	0	1	Switzerland
22	0	1	1	1	1	0	1	Greece
23	0	0	1	0	1	1	1	Israel
24	0	0	1	1	1	1	1	Japan
25	1	0	1	0	1	1	1	Finland
26	0	0	0	0	0	0	0	
27	0	0	0	1	0	0	0	
28	1	1	0	0	0	0	0	
29	1	1	0	1	0	0	0	
30	0	0	1	0	0	0	0	
31	1	0	1	1	0	0	0	
32	1	1	1	0	0	0	0	
33	1	1	1	1	0	0	0	
34	0	0	0	0	0	1	0	
35	0	0	0	1	0	1	0	

(Continued)

Table 2. (Continued)

Conf. #	Individualism	Power Distance	Uncert. Avoidance	Masculinity	Development	Welfare State	# of Cases	Cases with strong membership
36	1	0	0	0	0	1	0	
37	1	0	0	1	0	1	0	
38	0	1	0	0	0	1	0	
39	0	1	0	1	0	1	0	
40	1	1	0	0	0	1	0	
41	1	1	0	1	0	1	0	
42	0	0	1	1	0	1	0	
43	1	0	1	0	0	1	0	
44	1	0	1	1	0	1	0	
45	0	1	1	0	0	1	0	
46	1	1	1	0	0	1	0	
47	1	1	1	1	0	1	0	
48	0	0	0	0	1	0	0	
49	0	0	0	1	1	0	0	
50	1	1	0	0	1	0	0	
51	1	1	0	1	1	0	0	
52	0	0	1	0	1	0	0	
53	0	0	1	1	1	0	0	
54	0	1	1	0	1	0	0	
55	1	1	1	0	1	0	0	
56	1	1	1	1	1	0	0	
57	0	0	0	0	1	1	0	
58	0	0	0	1	1	1	0	
59	0	1	0	0	1	1	0	
60	0	1	0	1	1	1	0	
61	1	1	0	0	1	1	0	
62	1	1	0	1	1	1	0	
63	0	1	1	1	1	1	0	
64	1	1	1	1	1	1	0	

Chi-square statistic = 127.64, significant at $p < .01$

a lack of individualism and of masculinity, and that lack both development and a strong welfare state. Brazil, Chile, El Salvador, Peru, Thailand and Turkey share this configuration. The second configuration represents nations combining cultural values of high individualism and lack of masculinity, of uncertainty avoidance, and of power distance, and are highly developed with a strong welfare state; it is shared by Canada, Denmark, Norway and Sweden.

Second, limited diversity is important because arguments of causation – in the absence of simplifying assumptions – should be restricted to configurations that are actually represented by cases with strong membership in the data (Ragin 2008). Table 2 shows that 25 of the 64 logically possible configurations are represented by strong members in the data. This distribution of cases is not random ($\chi^2 = 127.6$, significant at $p < .01$), suggesting that the patterns of membership in configurations are evidence of a socially constructed order (Ragin 1987). Table 3 summarizes (through Boolean minimization) the 39 logically possible configurations lacking strong cases into 11 configurations and thus establishes the substantive boundaries of all following analyses.

Table 3. Logically Possible Configurations Lacking Strong Cases in Study Sample

Conditions	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
Individualism	●	⊖		●		⊖	⊖			●	
Power Distance	●	⊖	●		●	⊖	⊖	●	⊖		●
Uncertainty Avoidance		⊖	⊖							●	●
Masculinity					●	⊖		⊖	●	●	⊖
Development				⊖	●		●	⊖	⊖	⊖	●
Welfare State	⊖		●	●	●	⊖	⊖	●	●		⊖
Consistency	1	1	1	1	1	1	1	1	1	1	1
Raw coverage	0.21	0.21	0.21	0.21	0.1	0.1	0.1	0.1	0.1	0.1	0.05
Unique coverage	0.15	0.1	0.08	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.025
Solution consistency						1					
Solution coverage						1					

Legend
● = Causal condition present
⊖ = Causal condition absent

For example, the first configuration, combining high individualism and high power distance with lack of strong welfare state, captures eight empirically non-existing configurations (raw coverage of .21 = 8/39), uniquely representing six of them (unique coverage of .15 = 6/39). This implies that because no country in the sample strongly represents this configuration of attributes, one cannot draw grounded inferences regarding its sufficiency for membership in the set of countries with high compensation level or inequality. It is a unique feature of QCA to highlight these areas of missing evidence. In doing so, it enables thought experiments regarding potential outcomes in these non-existent configurations, opens up venues for theory development and for research to potentially identify cases representing missing configurations.

Conditions for High Compensation Level

In Table 4, I report results of fuzzy set analyses for the four occupations' compensation levels. In Tables 4 and 5, I present combinations of intermediate and parsimonious solutions; I discuss the counterfactuals integrated into intermediate solutions in Appendix C. Utilizing the notation system from Ragin and Fiss (2008), each column represents a configuration of conditions linked to the respective outcome and full circles (●) indicate presence of a condition, while barred circles (⊖) indicate a condition's absence. Moreover, *core* and *complementary* conditions are distinguished by symbols' size: larger circles indicate *core conditions* – conditions that are part of both parsimonious and intermediate solutions – and smaller circles indicate *complementary conditions* that only occur in intermediate solutions. Each panel represents the alternative causal combinations or *recipes* for the outcome (Ragin 2008), consecutively numbered S1, S2, etc. While in these panels I have sorted combinations by unique coverage, an assessment of both raw and unique coverage provides the solutions' relative empirical weight.

Necessity analyses found one usually necessary condition, for high cleaner compensation level: high development (consistency = .9). Sufficiency analyses found no individual attribute sufficient for high compensation levels. Overall, the results demonstrate equifinality: between four and six consistent configurations were linked to high compensation level outcomes. Solution coverage of

sufficient combinations varied from .43 to .80 (see Table 4), which means that configurations of included attributes captured between 43% and 80% of set membership in compensation level outcomes. At the same time, the results show that solution coverage declines from the lowest (cleaner, solution coverage = .80) to the highest (senior manager, solution coverage = .43) occupational levels included. Thus, for senior managers a substantively larger share of cross-national differences in compensation level is not accounted for by combinations of these attributes, particularly as compared to cleaners.

Table 4. Sufficiency Analyses Results for Compensation Level (ppp) Outcomes

	Panel A: High Cleaner Compensation						Panel B: High Secretary Compensation				
Conditions	S1	S2	S3	S4	S5	S6	S1	S2	S3	S4	S5
Individualism	•		ɵ	Θ			•			Θ	ɵ
Power Distance	Θ		•	Θ	Θ	Θ	Θ	ɵ		Θ	•
Uncertainty Avoidance		●		•	•	•		•	•	•	Θ
Masculinity		ɵ	●	•	•		Θ		ɵ	●	●
Development	●	●	●		●	●	●	●	●		●
Welfare state		•	ɵ	Θ		•		●	●	ɵ	ɵ
Consistency	0.97	0.97	0.91	0.92	0.94	0.99	0.94	0.95	0.93	0.93	0.96
Raw coverage	0.6	0.34	0.16	0.18	0.32	0.36	0.4	0.36	0.33	0.19	0.12
Unique coverage	0.26	0.06	0.04	0.03	0	0	0.15	0.07	0.05	0.05	0.03
Solution consistency				0.93					0.9		
Solution coverage				0.8					0.65		

	Panel C: High Mid-level Manager Compensation						Panel D: High Senior Manager Compensation			
Conditions	S1	S2	S3	S4	S5	S6	S1	S2	S3	S4
Individualism	•		ɵ	ɵ	ɵ	●	●	ɵ	ɵ	•
Power Distance	ɵ	Θ	•	Θ	•		Θ	•	●	ɵ
Uncertainty Avoidance	Θ	•	Θ	●	•	•	●	Θ	•	Θ
Masculinity				●	●	ɵ	Θ		●	
Development	●	●	●			•	•	●		●
Welfare state		●	ɵ	ɵ	●	●	●	Θ	●	Θ
Consistency	0.88	0.9	0.89	0.94	0.99	0.96	0.94	0.88	0.91	0.95
Raw coverage	0.34	0.32	0.14	0.18	0.16	0.25	0.23	0.15	0.16	0.18
Unique coverage	0.16	0.07	0.05	0.04	0.03	0.03	0.09	0.06	0.06	0.05
Solution consistency				0.86					0.9	
Solution coverage				0.65					0.43	

Legend
● = Core causal condition present
Θ = Core causal condition absent
• = Complementary causal condition present
ɵ = Complementary causal condition absent

High cleaner compensation level (Table 4, Panel A). Sufficiency analysis found six consistent paths to membership in the set of countries with highly compensated cleaners. The empirically dominant configuration (S1, raw coverage = .6, unique coverage = .26) to high compensation for this occupational group combines core conditions lack of power distance and high development and complementary condition high individualism (as a reminder, core conditions occur in both intermediate and parsimonious solutions, while complementary conditions only occur in intermediate solutions). The second configuration (S2) combines core conditions high uncertainty avoidance and high development with complementary conditions lack of masculinity and strong welfare state. S5 and S6 – combining core conditions lack of power distance and high development (the same core conditions as in S1) and complementary conditions high uncertainty avoidance and either high masculinity (S5) or strong welfare state (S6) – illustrate sufficient solutions with fair raw coverage although lacking unique coverage, which indicates that the coverage of these configurations overlaps with that of others. High development is usually necessary and a core ingredient of all but one path to high compensation of cleaners, while both presence and absence of strong welfare state occur as complementary or core conditions in combinations linked to this outcome.

High secretary compensation level (Table 4, Panel B). Sufficiency analysis found five consistent configurations leading to membership in the set of countries with highly compensated secretaries; the solution coverage of 0.65 is smaller than that found for cleaners. The configuration with highest raw and unique coverage (.4 and .15, respectively) sufficient for high compensation of this job (S1) resembles configuration S1 for cleaners – combining core conditions lack of power distance and high development and complementary condition high individualism – plus the core condition lack of masculinity. Conditions S2 and S3 are marked by core conditions high development and strong welfare state, supplemented by complementary conditions uncertainty avoidance and either lack of power distance or lack of masculinity, respectively. Comparing configurations S1 with configurations S4 and S5 also shows that both high masculinity and lack of masculinity are core ingredients of configurations associated with high compensation for secretaries. Also, high development is core condition in all but one (S4) path to high compensation of this occupation.

High mid-level manager compensation level (Table 4, Panel C). Six configurations were found sufficient for membership in the set of countries with high compensation level for mid-level managers (solution coverage = .65). The first configuration (S1, raw/unique coverage = .34/.16) of this solution is marked by core conditions lack of uncertainty avoidance and high development, and supplemented by complementary conditions lack of power distance and high individualism. Configuration S2 combines lack of power distance with high development and strong welfare state as core conditions, supplemented by high uncertainty avoidance. Overall, either the presence or absence of high uncertainty avoidance – depending on configural context provided by other attributes – occur as core or complementary condition in each configuration associated with high mid-level manager compensation. Also, except for S4, all solutions contain high development or strong welfare state as core ingredients (S2 combining both).

High senior manager compensation level (Table 4, Panel D). Sufficiency analysis found four consistent paths with relatively similar raw and unique coverages for high senior manager compensation, thus revealing no empirically dominant path for this outcome. The solution coverage is comparatively low (= .43). The configuration with highest raw and unique coverage (S1) is a complex path combining five core conditions – high individualism, high uncertainty avoidance, and strong welfare state, combined with lack of power distance and of masculinity – and the complementary condition high development. While results for all occupational groups show multiple conjunctive causality, only for senior managers do configurations leading to high compensation contain both high power distance and lack of power distance as respective core and complementary conditions. The results also show that either the presence or absence of strong welfare state is a

core ingredient of each path to highly compensated senior managers. Overall, the results suggest that causality underlying senior manager compensation is substantively more complex than that at lower organizational levels; I will discuss this finding in the discussion section.

Conditions for High Compensation Inequality

Necessity analyses found no necessary conditions for any compensation inequality outcome; I present results of sufficiency analyses for compensation inequalities in Table 5. The results again demonstrate equifinality: between three and six consistent configurations were linked to each compensation inequality outcome, with solution coverages ranging from .53 to .73. Inequality between senior and mid-level managers had the lowest solution coverage (= .53), suggesting that

Table 5. Sufficiency Analyses Results for Compensation Inequality Outcomes

	Panel A: Inequality Ratio 1 Senior Managers to Cleaners					Panel B: Inequality Ratio 2 Senior Managers to Secretaries				
Conditions	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
Individualism	⊖	⊖	●	⊖	●	⊖	⊖	•	⊖	⊖
Power Distance	●	●	⊖	●	⊖	●	●	⊖	●	
Uncertainty Avoidance		Θ		•	⊖		Θ	Θ	•	●
Masculinity			⊖	•					•	•
Development	Θ		Θ	Θ	Θ	Θ		Θ	Θ	Θ
Welfare state	⊖	⊖	⊖		⊖	⊖	⊖	⊖		⊖
Consistency	0.94	0.91	0.93	0.93	1	0.94	0.85	0.95	0.96	0.94
Raw coverage	0.51	0.3	0.22	0.28	0.18	0.53	0.29	0.17	0.3	0.3
Unique coverage	0.16	0.07	0.04	0.03	0.02	0.16	0.07	0.06	0.03	0.02
Solution consistency			0.92					0.91		
Solution coverage			0.73					0.72		

	Panel C: Inequality Ratio 3 Mid-level Managers to Cleaners				Panel D: Inequality Ratio 4 Mid-level Managers to Secretaries				
Conditions	S1	S2	S3	S4	S1	S2	S3	S4	S5
Individualism	⊖	•	⊖	⊖	Θ	⊖	•	Θ	Θ
Power Distance	●	⊖	●	●		●	⊖	⊖	•
Uncertainty Avoidance		Θ	Θ	•	•	Θ	⊖	•	•
Masculinity				•			●	⊖	•
Development	Θ	Θ		Θ	Θ		Θ	Θ	Θ
Welfare state	⊖	⊖	⊖		⊖	⊖	⊖		
Consistency	0.93	1	0.93	0.93	0.93	0.85	0.99	0.89	0.96
Raw coverage	0.52	0.18	0.31	0.29	0.47	0.28	0.15	0.28	0.29
Unique coverage	0.15	0.09	0.07	0.03	0.14	0.14	0.05	0.04	0.02
Solution consistency			0.92				0.9		
Solution coverage			0.71				0.73		

(Continued)

Table 5. (Continued)

	Panel E: Inequality Ratio 5 Secretaries to Cleaners						Panel F: Inequality Ratio 6 Senior Managers to Mid-level Managers		
Conditions	S1	S2	S3	S4	S5	S6	S1	S2	S3
Individualism	⊖	⊖	•	⊖	•	⊖	●	⊖	⊖
Power Distance	•	●	⊖	●	⊖		⊖	●	●
Uncertainty Avoidance		Θ		•	⊖	•			Θ
Masculinity			⊖	•		•	Θ	●	
Development	Θ		Θ	Θ	Θ	Θ	Θ	Θ	
Welfare state	Θ	⊖	Θ		Θ	Θ	⊖	Θ	⊖
Consistency	0.92	0.95	0.94	0.92	0.98	0.91	0.92	0.93	0.85
Raw coverage	0.5	0.31	0.22	0.28	0.17	0.28	0.22	0.32	0.29
Unique coverage	0.14	0.07	0.04	0.03	0.02	0.01	0.11	0.11	0.1
Solution consistency				0.92				0.88	
Solution coverage				0.73				0.53	

	Panel G: Inequality Ratio 7 Higher-order Set Average Compensation Inequality					
Conditions	S1	S2	S3	S4	S5	S6
Individualism	⊖	⊖	⊖	•	•	⊖
Power Distance	•	●	●	⊖	⊖	
Uncertainty Avoidance		Θ	•		⊖	•
Masculinity			•	⊖		•
Development	Θ		Θ	Θ	Θ	Θ
Welfare state	Θ	⊖		Θ	Θ	Θ
Consistency	0.97	0.94	0.97	0.93	1	0.96
Raw coverage	0.51	0.3	0.29	0.21	0.17	0.29
Unique coverage	0.15	0.07	0.03	0.02	0.02	0.01
Solution consistency				0.94		
Solution coverage				0.73		

Legend
● = Core causal condition present
Θ = Core causal condition absent
• = Complementary causal condition present
⊖ = Complementary causal condition absent

attributes not included in this study as well as idiosyncratic factors are relatively more important for compensation inequality among managerial levels. Below, I discuss inequality between managerial and lower-level occupations, inequality among lower-level occupations, and inequality among managerial ranks.

High inequality between managerial and lower-level occupations (Table 5, Panels A-D). Analyses of inequality between managerial (senior and mid-level managers) and lower-level (cleaners and secretaries) occupations illustrate that for each of the four dyads, between four and

five configurations are linked to the respective inequality outcome that in combination account for 71%–73% of membership in the outcome (solution coverage = .71–.73). In addition to some idiosyncratic combinations leading to each of these inequality outcomes (especially compensation inequality between mid-level managers and secretaries), there is considerable overlap, particularly in empirically important paths to inequality.

A vital configuration with relatively high raw and unique coverages shared by these outcomes combines high power distance and lack of development as core conditions, combined with complementary conditions lack of individualism and of strong welfare state (S1 in Panels A, B, and C). Another shared configuration with relatively high raw and unique coverage combines core conditions high power distance and lack of uncertainty avoidance and complementary conditions lack of individualism and of strong welfare state (S2 in Panels A, B, and D and S3 in Panel C). These two salient paths to high compensation inequality between managers and lower-level occupations share the core condition high power distance and complementary conditions lack of individualism and of strong welfare state, combining these with either lack of development or lack of uncertainty avoidance as second core condition.

A third common configuration, with lower unique coverage (= .03–.04) combines core conditions high power distance and lack of development and complementary conditions high uncertainty avoidance, high masculinity, and lack of individualism (S4 in Panels A, B, and C; S5 in Panel D also combines these attributes but with lack of individualism as core condition rather than high power distance). Taken together, these three common paths to compensation inequality between managerial and lower-level occupations share power distance as core condition and lack of individualism as complementary condition.

The five paths to inequality between mid-level managers and secretaries (Panel D) (solution coverage = .73) are relatively more idiosyncratic. Indeed, the only configuration overlapping in both core and complementary conditions with other outcomes of compensation inequality between managerial and lower-level occupations is S2 discussed above. Perhaps this lack of overlap is due to the fact that mid-level managers and secretaries are the hierarchically closest occupations from the managerial and lower-level occupations.

High inequality among lower-level occupations (Table 5, Panel E). Six configurations were linked to high compensation inequality between cleaners and secretaries (solution coverage = .73), revealing several overlaps with those linked to inequality between managerial and lower-level occupations. Configuration S1 combines the same attributes as does a vital configuration for inequality outcomes between managerial and lower-level occupations (S1 in Panels A, B, and C), but here lack of strong welfare state replaces high power distance as one of the core conditions. S2 is again the combination of core conditions high power distance and lack of uncertainty avoidance with complementary conditions lack of individualism and of strong welfare state (equals S2 in Panels A, B, D, and S3 in Panel C). S4 represents another similarity in the results (it equals S4 in Panels A, B, and C). Overall, lack of development and lack of strong welfare state are vital core conditions, complemented by cultural attributes as complementary conditions, even though high power distance appears as core condition in two configurations (S2 and S4) and lack of uncertainty avoidance in one (S2).

High inequality among managerial occupations (Table 5, Panel F). Sufficiency analysis for this outcome revealed three configurations with relatively equal raw and unique coverage and the lowest solution coverage (= .53) among inequality outcomes. Configuration S1 combines core conditions high individualism, lack of masculinity, and lack of development with complementary conditions lack of power distance and lack of strong welfare state. Configuration S2 combines core conditions high power distance, high masculinity, lack of development and lack of strong welfare

state, and the complementary condition lack of individualism. The final configuration (S3) combines core conditions high power distance and lack of uncertainty avoidance with complementary conditions lack of individualism and lack of strong welfare state (and equals S2 in Panels A, B, D, and E and S3 in Panel C). Overall, lower solution coverage and relatively balanced coverages among alternative paths suggest that causality underlying compensation inequality at managerial ranks is relatively more complex than those underlying the other compensation inequalities analyzed, an issue I will further discuss below.

High overall compensation inequality (Table 5, Panel G). As a reminder, this higher-order set has been constructed from dyadic compensation inequality sets to represent overall compensation inequality. Sufficiency analysis linked six configurations to this inequality outcome (solution coverage = .73). S1 combines core conditions lack of development and lack of strong welfare state with complementary conditions high power distance and lack of individualism. Thus it combines the same attributes as S1 in Panels A, B, and C, but with different core versus complementary conditions (and equal to S1 in Panel E). Taken together, this evidence suggests that a combination of high power distance, lack of individualism, lack of development and lack of strong welfare state is a vital path to high compensation inequality across occupations.

The second configuration (S2) is consistently linked to every compensation inequality outcome (S2 in Panels A, B, D and E and S3 in Panels C and F). It combines core conditions high power distance and lack of uncertainty avoidance and complementary conditions lack of individualism and lack of strong welfare state. To illustrate how these results can be linked back to the property space, an examination of Table 2 shows four configurations (#s 6, 12, 18, and 19) are subsets of configuration S2, thus representing cases with strong membership in this combination. Countries with strong membership in this combination thus include the Asian countries India, Malaysia, Philippines, Singapore, and Hong Kong; Hong Kong and Singapore represent the corners of the vector space that are uniquely covered by S2. These results and the cases with strong membership identified can provide the basis for in-depth analyses to further interpret the results on the case level, as will be discussed below.

Also the third path (S3) – combining core conditions high power distance and lack of development with complementary conditions lack of individualism, high uncertainty avoidance, and high masculinity – is linked to multiple dyadic inequality outcomes (S4 in Panels A, B, C and E; S5 in Panel D represents a combination of these same ingredients with different core conditions). The remaining paths (S4–S6) combine lack of development and lack of strong welfare state as core conditions, supplemented by various combinations of cultural attributes as complementary conditions. These paths occur, with varying core versus complementary conditions, in one or more of the individual compensation inequality outcomes.

In sum, configurations S1–S3 for this higher-order set capture key recurring paths to high compensation inequality, with S2 occurring as path to compensation inequality for each dyadic inequality outcome. Furthermore, S1 and S2 (without regard to core versus complementary conditions) combine high power distance, lack of individualism, lack of strong welfare state, and *either* lack of development *or* lack of uncertainty avoidance.

Discussion

Compensation level and compensation inequality are central aspects of modern organizations. The ambition of this study has been to explore the causal complexity underlying compensation outcomes cross-culturally by investigating two research questions of how configurations of cultural and macro-environmental attributes combine to shape compensation level and inequality, thereby

also contributing to filling the need for configurational approaches to cross-cultural research (Tsui et al. 2007). In doing so, I explored causes for high compensation level for four occupational groups and high compensation inequality among these.

Only one condition was found necessary for high compensation level of cleaners (research question 1), while no single attribute was found necessary for any high compensation inequality outcome (research question 2). Several alternative configurations of attributes were found sufficient for each compensation level (research question 1) and compensation inequality outcome (research question 2); these alternative paths also include opposite effects of attributes depending upon the configural context provided by other attributes, illustrating complex causality (Ragin 1987) underlying cross-national differences in compensation outcomes.

These results complement and advance previous research on independent effects of cultural dimensions on compensation outcomes. For example, Tosi and Greckhamer (2004) found CEO total pay to be positively related with power distance and individualism. This study's findings for senior-managers' compensation contextualize these relations between compensation and individualism. Two configurations linked to high senior manager compensation include high individualism as either core or complementary condition, whereas two other paths include lack of individualism as complementary condition. These configurations indicate the configural contexts in which high individualism or lack of individualism contribute to high compensation, rather than estimating its average net effect, thus complementing the previous findings. The results similarly contextualize the findings regarding power distance. Likewise, results for compensation inequality contextualize previous findings, for instance that the ratio of the 20% highest to lowest household incomes (Hofstede 2001) as well as the ratio of pay inequality between CEOs and manufacturing workers (Tosi and Greckhamer 2004) were positively related to power distance. The study shows that paths for high compensation inequality between occupational groups frequently include high power distance as core condition and sometimes as complementary condition; however, for each outcome results also include configurations including lack of power distance as complementary (though never as core) condition. Moreover, some configurations lead to high inequality irrespective of membership in the set of countries with high power distance. These results not only qualify and contextualize previous research findings, but they also pinpoint the configural nature of causal conditions linked to compensation level and inequality.

The results of this exploratory study provide several insights for organization studies; among them, three are particularly important. First, the findings show that configurations of culture, national development, and welfare state shape compensation for different occupations differently, accounting less fully for cross-national differences in compensation level of the highest managerial level than of the other occupational groups. This is consistent with arguments that processes governing earning attainment vary among occupations (Brown 1977; Stolzenberg 1975). For example, results for cleaners show both higher solution coverage than results for other occupational groups and an empirically dominant configuration. In comparison, results for senior managers show both lower solution coverage and empirically relatively more equally important configurations, none dominant. The latter findings point towards higher causal complexity and suggest that cultural, economic, or institutional attributes not included in the study or idiosyncratic and random factors are relatively more prevalent in determining compensation level for senior managers.

Second, results for compensation inequalities between managerial occupations and lower-level occupations, within managerial occupations, and within lower-level occupations, point to key shared configurations of cultural and macro-environmental attributes alongside some idiosyncratic paths. Organizational hierarchy connotes differences in the worth of positions independent of their other characteristics (Mahoney 1979) and income distribution across occupations corresponds to

socio-occupational stratification (Brown 1977; Lecaillon et al. 1984). While previous research on cross-national income inequality has focused on general income inequality measured by Gini coefficients or by income distributions' top and bottom deciles or quintiles (Nielsen 1994; Nielsen and Alderson 1995; Wallerstein 1999), this study has explored inequalities among dyads of occupations. It has identified several shared paths to inequality. The findings suggest that understanding how cultural and macro-environmental attributes combine to shape overall compensation inequality and also compensation inequality between specific occupations may both be important elements in explaining income differentials cross-culturally.

Third, results showed that configurations of cultural and macro-environmental attributes included in the study accounted more fully for cross-national differences in high compensation inequality between managerial and lower-level occupations than among managerial levels. Combined with the finding that these attributes also accounted more fully for cross-national differences in compensation level of lower-level than of higher-level occupations, this suggests greater complexity underlying managerial compensation. Put differently, differentiation of compensation among managerial occupations appears accounted for to a relatively large extent by attributes not included in this study and/or by idiosyncratic and random forces.

Implications for Organization Studies and Future Research Directions

This study has been a first step in exploring the complex causality underlying compensation outcomes for multiple occupational groups. The insights discussed above have important implications for organization studies and point the way to several promising directions for future research. The first direction for future research builds on the finding of differential impact of configurations of culture, national development, and welfare state leading to high compensation levels across occupations; this suggests that more studies investigating compensation of various occupational groups cross-culturally should be conducted. It also suggests that previous occupation-specific studies on compensation should not be generalized to other occupations. Moreover, the finding that configurations of cultural dimensions, development, and welfare state account less fully for cross-national differences in compensation level of senior managers than those of lower-level occupations implies that future research on managerial compensation should identify various other attributes and explore their combinations with cultural dimensions. Several research venues in this direction appear promising.

For example, research on managerial compensation has investigated how executive pay level and structure is related to facets of corporate governance systems in a respective country (Alcouffe and Alcouffe 2000; Conyon et al. 2000; Conyon and Schwalbach 2000). The separation of ownership and control and the division of labor among levels of management are core problems of control addressed through corporate governance (Fligstein and Freeland 1995); hence aspects of corporate governance may be particularly important for managerial compensation, even though theories of corporate governance are culture-bound and corporate governance systems are shaped by and interrelated with cultural values (Bird and Wiersema 1996; Licht et al. 2005; Pennings 1993). Future research could integrate cultural and corporate governance attributes to explore how combinations of these shape managerial compensation, concurrently exploring configurations among culture and corporate governance.

Future research could also consider that managerial compensation may vary across firms and industries (Milkovich and Newman 2008). Indeed, previous theory and research has identified organizational size as the most important determinant of executive compensation (Simon 1957; Tosi et al. 2000). However, firm and industry structures differ across countries (Fligstein

and Freeland 1995; Orru et al. 1997); configurational research could explore whether firm- and industry-level attributes such as size help to better understand cross-national differences in managerial compensation.

To give another example, future research could consider gender composition of different occupations, as gender distinctions are profound aspects of social structures, organizational processes, and compensation systems (Benschop and Dooreward 1998; Blau and Ferber 1986; Van de Vliert and Van der Vegt 2004). Women as a group generally earn less than men in the industrialized world, although the magnitude of this gender gap varies across countries (Blau and Ferber 1986; Rosenfeld and Kalleberg 1991), as do patterns of occupational segregation by gender (Charles 1992; Estevez-Abe 2006). Moreover, in countries with a larger proportion of working women, employees are underpaid relative to their country's wealth (Van de Vliert and Van der Vegt 2004). Thus, differences in proportion of working women and in gender composition of occupations across countries may impact compensation level of occupations (and compensation inequality among them), while occupations' gender composition itself is likely to be related to a country's culture, national development, and strength of welfare institutions.

A second direction of research builds on findings of both shared configurations and idiosyncratic paths to compensation inequalities within and between managerial and lower-level jobs. Future research could integrate a focus on social stratification of occupations and their respective social classes (Beck 1991) to investigate how and why configurations of cultural and institutional attributes are associated with compensation inequality among certain occupational groups. Recent research has suggested that acceptance of inequality at various stages of the income distribution, for example inequality at the bottom versus at the top, may vary cross-nationally (Osberg and Smeeding 2006). Distinguishing inequality distribution and its acceptance at different levels of social stratification may in turn enable refined conceptualizations of cultural values and thus facilitate understanding of how culture impacts compensation inequalities at various ranges of the spectrum of income distribution. This would help us understand the wide ranges of compensation differentials between occupational groups, an enduring challenge for organization theory (Mahoney 1989).

Furthermore, configurations leading to compensation inequalities among occupations could also be further explored by drawing from labor relations and sociology. For example, an expansion of democracies and increased political participation of the lower strata of society was found to decrease inequality (Simpson 1990), as did collective determination of wages compared to decentralized wage-setting in industrialized societies (Wallerstein 1999). The very developments of democracy and labor relations are shaped by dominant cultural values; for example, individualism is linked historically and geographically with political democracy and unions fulfill different functions in high versus low power distance countries and tend to enjoy greater coordination and centralization in pay bargaining as well as increased collective bargaining coverage in countries high on uncertainty avoidance (Black 1999, 2005; Hofstede 2001). Future configurational approaches could explore how configurations of cultural values and nations' labor relations and political regimes shape compensation to understand how high compensation inequality among different occupations may come about.

A third promising direction for future research is to explore configurations of culture with other attributes to further our understanding of compensation differentiation among managerial ranks, based on the finding that the included configurations accounted relatively less fully for compensation inequality among managerial levels than between other levels. To begin with, the impact of corporate governance and firm size on managerial compensation should also be considered as potentially underlying compensation inequality among managerial ranks, and between managerial and lower-level occupational groups. Corporate governance represents a framework for the

division of wealth and power in corporations (Licht et al. 2005), and aspects of governance systems such as concentration and structure of ownership may shape the nature and degree of compensation differentials among managerial ranks. Also, although organizational size is an important determinant for executive and senior management compensation (Tosi et al. 2000), compensation at lower levels including lowest managerial positions should be shaped more by economic competition than by size (Mahoney 1979; Simon 1957). Considering cross-national differences in firm and industry structures, size may shape compensation differentiation at managerial ranks. Finally, further cultural and organizational factors that we currently understand poorly and that will require further developments in the literature on executive compensation may also shape managerial compensation (Tosi et al. 2000) and thus hierarchical differentiation among managerial ranks; future research should aim at identifying such factors.

Also, previous research has found that managers from different national cultures vary in their basic conception of management (Laurent 1983, 1986). Arguing that management lacks a theoretical framework for differentiating different levels of management, including top-, middle-, and operating-level management, Wooldridge et al (2008) recommended systematically building a priori classifications of mid-level managers into generic subtypes such as boundary spanners. Perhaps developing such a framework for differentiating levels and kinds of managers and applying it in a cross-national context would enable further insights into compensation inequality among managerial ranks. Combined with inquiries into further potential explanations for compensation inequality among levels of management cross-nationally, such a venture may inform our understanding of the rewards for and value of management across countries.

Finally, the findings of this study can form the basis and analytic structure for future in-depth, case-oriented comparative analyses (Ragin 1987, 2000) to further our understanding of how and why combinations of cultural and other attributes shape compensation across occupational groups. For example, I have demonstrated above how to link the results back to cases that are strong representatives of a combination associated with high average compensation inequality. Cases strongly representing manifestations of certain configurations could become the population for in-depth country-level analyses of processes and manifestations of compensation level and compensation inequality. Such research may also help to identify attributes that have not yet been considered in research on cross-national compensation issues.

Limitations

Two caveats of this study should be pointed out. First, while Hofstede's model of culture has been prominent and widely used in the tradition of conceptualizing culture as multitude of dimensions (Earley 2006), it has been subject to an ongoing debate. Points of debate included data collection methods and sites, the data's age, the specific number of cultural dimensions, and the concept of *national* culture as homogenous construct (Earley 2006; Hofstede 2002; Kirkman et al. 2006; McSweeney 2002, 2009; Smith 2002; Triandis 1995, 2004). Even though, replication studies supported Hofstede's model of culture and the relative stability of its cultural values over time (for reviews, see Hofstede 2001; Søndergaard 1994). Considering this evidence, I agree with Williamson (2002) that pending development of further models of national culture, Hofstede's approach provides a valuable framework for cross-cultural research.

Second, compensation typically combines multiple financial (e.g. basic compensation, long-term incentives, variable bonuses, and perquisites) and non-financial inducements (March and Simon 1958; Milkovich and Newman 2008). The overall compensation package as collection of inducements can be expected to be shaped by the attributes of this study; for example, culture shapes

preferences for different kinds of rewards (Chiang 2005; Schneider 1988; Schneider and Barsoux 1997). Hence, this study of take-home compensation constitutes a significant yet limited contribution; future research with access to multifaceted compensation data could explore how cultural configurations shape configurations of compensation packages holistically.

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Note

1 As is the case with general linear analyses, set-theoretic analyses can only demonstrate association but never causation (Mahoney, 2004); causal relationships of necessity and sufficiency have to be established by theory, and empirical evidence of subset relationships can be used to construct evidence in support of these relations.

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Appendix A: Corroborating Validity of Compensation Data

To corroborate the validity of the compensation data, I correlated it with data from similar occupational groups from an independent source (Towers Perrin 1999), which provides compensation data from 24 nations in the present sample on the average total compensation levels for four job categories (CEO, HR-director, accountant, and manufacturing employee) in industrial companies with approximate annual sales of $250–$500 million. I correlated take-home pay of senior managers, mid-level managers, mid-level secretaries, and office cleaners from the World Economic Forum (Warner 1999) data with base pay of CEOs, HR-directors, accountants, and manufacturing employees from the Towers Perrin (1999) data, respectively.

Correlations of these two independent data sources ($n = 24$) showed high and statistically significant correlations between (1) senior manager take-home pay and Towers Perrin's CEO base pay ($r = .78$, $p < .01$); (2) mid-level manager take-home pay and Towers Perrin's HR-director base pay ($r = .66$, $p < .01$); (3) mid-level secretary take-home pay and Towers Perrin's accountant base pay ($r = .79$, $p < .01$); (4) cleaner take-home compensation and Towers Perrin's manufacturing employee base pay ($r = .95$, $p < .01$).

Appendix B: Description of Fuzzy Set Calibration

Compensation outcomes. Lacking established knowledge of what constitutes highly paid occupational groups and high compensation differentials universally, I considered being highly compensated a relative quality and anchored break-points in the data for all countries available in the compensation data source as a cross-national reference point (including a number of Eastern European, Asian, and African countries that were not included in the actual study). For each outcome I considered the five countries with the highest (lowest) value fully in (fully out) of the set, assuming that these were clearly relatively highly (lowly) paid/had a high (low) compensation

ratio. Thus I chose the rounded values of the nation ranking fifth highest (lowest) in the distribution as breakpoint for full (non) membership, and the medians as cross-over points.

Cultural attributes. Hofstede's cultural value scores were already calculated as indices, giving all included countries index values ranging from approximately 0 to 100. I selected the three break-points needed for the direct method fuzzy calibration based upon a review of Hofstede's work (Hofstede 1980a, 1980b, 2001) and his descriptions of strong, medium, and weak representatives of dimensions of culture. In addition to index values and country rankings, my setting of break-points was informed by Hofstede's descriptive labels (e.g. *very high*, *very low*, *fairly high*) he used for examples of nations.

Economic development. This was a higher-level set composed of lower-level sets, and the break-points were set for the lower-level sets prior to creating the composite. First, for the set of wealthy countries, I set break-points similar to previous literature (e.g. Ragin 2000). Second, building on arguments that highly industrialized countries employ less than 5–10% of their labor force in agriculture (Nafziger 2006), for the set of developed countries with low reliance on employment in agriculture I set break-points for full membership as 5% of the labor force working in agriculture, 25% for full non-membership, and 15% as cross-over point. Third, for the set of developed countries with low proportion of youth population, developed countries with nearly stationary or slow growth populations have a population of age below 15 years near to or smaller than 20%, while in less developed ones youth population accounts for 40% and more of the population (Nafziger 2006). Thus, I chose 20, 25, and 30% of population younger than 15 years for full membership, cross-over point, and full non-membership, respectively. Fourth, for the set of developed countries with high spread of education, I oriented my break-points on observations that less developed countries typically have secondary school enrollment rates below 50% and countries of medium development have a secondary school enrollment of around 70% (Nafziger 2006). I set break-points of membership in this set as 90% for full membership, less than 60% for full non-membership, and 75% as cross-over point.

Welfare state. To set break-points for the set of countries with strong welfare state institutions, I was guided by Brady's (2005) arguments that in the most expansive welfare states more than 75% of health care expenses are covered by the government, while governments in countries with minimalist welfare cover less than 50% of these expenses. I set as break-point for full membership 80% and as break-point for full non-membership 45%, providing for a nuanced differentiation of set membership of states with extensive (and minimal) welfare. As cross-over point, I set 65%, implying that states covering about two-thirds of health care costs are slightly more in than out of this set.

Because cases can have strong membership in only one fuzzy set, membership scores of 0.50 should be avoided (Ragin 2008). To address this issue, I added a .001 constant to all calibrated fuzzy set values prior to analyzing necessity and sufficiency (see also Fiss in press).

Appendix C: Intermediate Solutions and Easy Counterfactuals

Here I document the well established insights that are integrated into the intermediate solutions as easy counterfactuals. First, in the analysis of sufficient conditions for all compensation level outcomes, I have integrated presence of high economic development as easy counterfactual. It should contribute to high compensation levels, because national wealth represents the average income of a population and increasing industrialization and education should generally increase income levels (Gordon 1987; Moller et al. 2003; Nafziger 2006; Sweetland 1996). Second, in the analysis of sufficient conditions for all compensation inequality outcomes, I have included absence of high

development and absence of strong welfare state as easy counterfactuals. This was based on the theory and empirical knowledge that increasing development should reduce income inequality in contemporary states (Kuznets 1955; Lenski 1966; Nielsen 1994; Nielsen and Alderson 1995) and the literature establishing both that a welfare state aims at equalizing the distribution of economic welfare in a population and that increasing welfare state expenditures should reduce income inequality (Brady 2005; Kolberg 1992; Moller et al. 2003). Because of a comparative void of theoretical and empirical knowledge regarding the relationship between cultural attributes and compensation outcomes, I did not include any easy counterfactuals including cultural attributes into the intermediate solution.