Organization Decision-Making and the Market Environment: Examining Contingency in Organizational Behavior

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ABSTRACT

Uncertainty in an organization's environment can have profound implications for its internal structure and decision-making processes. Most sociological research looking at this phenomenon has focused on using self-reported measures—like member perceptions—when looking at environmental uncertainty. Analysis of the market, however, has often relied on independent, seemingly "objective" measures. This reliance on impersonal measures of uncertainty leaves many questions about the relationship between the market and the organization unanswered. Sociologists especially should be skeptical of research that does not include member perceptions because it erroneously decouples the organization from the individuals embedded within it. This paper aims at correcting this in the literature by showing that perceptions of the market affect decision-making structures within organizations irrespective of other constraints. Controlling for a host of individual, organizational, and external factors, I find that higher levels of perceived market competitiveness are associated with a decentralized decision-making authority within the organization.

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Historically, many of the main paradigms within organizational sociology have been interested in how the external environment affects organization-level strategy and structure (e.g., Lawrence and Lorsch 1967; Pfeffer and Salancik 1978; Hannan and Freeman 1989; Scott 2001). In contemporary organizational sociology, institutional and other field-level theories of organizational behavior have become increasingly ubiquitous and have largely replaced the other paradigms in the literature. More often than not, however, institutionalism overlooks how successful organizations must act to adapt to their immediate environment focusing instead on the conforming pressure of institutional norms and concern for legitimacy (DiMaggio and Powell 1983), regardless of its effect on organizational efficiency (Meyer and Rowan 1973). There is little doubt that institutional logics have an impact on organizational behavior, though the local environment is equally important yet often ignored by recent scholarship.

One early paradigm, contingency theory, can speak to the direct link between the organization and its environment, which institutionalism too frequently overlooks. These two paradigms arose in direct opposition to each other, with institutionalism focusing on the implicit rules and institutional logics of the field and contingency theory focusing on understanding how organizations create "fit" with their environment. Contingency theory suggests that a better way to view organizational behavior is by considering how the local environment constrains and patterns behavior as organizations try to adapt to its demands. Still, while much of the research in contemporary organizational sociology concerns itself with these types of relationships, there is a noticeable lack of recent empirical research connecting some *specific* organization-level outcomes with *specific* environmental pressures.

Existing in the literature, moreover, is a noticeable disconnect between researchers who study *environmental uncertainty* using subjective measures (e.g., individual's perceptions of uncertainty) and those researchers interested in *market uncertainty* who rely on arguably more objective measures like concentration ratios, degree of import penetration, or trade liberalization. For sociologists accustomed to conceptualizing uncertainty as perception, not having an empirical parallel for measuring markets should be troubling. Decoupling the organization's behavior from the actions of people embedded within it too frequently ignores the realities of organizational life. Additionally, not unlike the more general conceptualization of "the environment," when an organization acts in response to a change in its *market* those actions too have lasting implications for the organization's structure and strategic choices. By asking how the market—or more accurately, the market as organization members perceive it—affects where in the organization decision-making happens, scholars can develop more accurate theories about organizational behavior and collective action. Measuring competitiveness of the market using organization members' perceptions is important but largely ignored in the contemporary literature on market uncertainty.

This paper aims at making two contributions to this literature. First, this paper addresses the issue of connecting specific features of the environment with structural changes at the organizational level. Specifically, in this paper I examine one outcome—organization decision-making—and one particular environmental pressure—market competition. Second, I measure competitiveness of the market using organization members' perceptions, an important but largely ignored factor in the contemporary literature on market uncertainty. To do this, I use the 1997 National Organizations Survey and explore how contingency theory can be applied to the environmental uncertainty and market competitiveness literatures to better understand how

perceptions of market competitiveness impact organizational structures. The importance of testing our theoretical assumptions with empirical data in this way cannot be overstated. Research that does so goes a long way towards a fuller, more robust understanding of the organization-environment link important to much of contemporary organizational sociology.

LITTERATURE REVIEW

While it has been replaced as a leading theoretical framework within contemporary organizational sociology, contingency theory speaks to the direct connection between the organization and its environment. Early proponents of this theory argued that because the "organization's market and technological environments have a major impact on organization design […] organization's internal structural arrangement is contingent on the demands of the external environment" (Simonetti and Boseman 1975). Or as described by Richard Scott, contingency theory contends that for organizations, "the best way to organize depends on the nature of the environment to which the organization must relate" (1981). Essentially, contingency theory differentiated itself from earlier theories of management because it did away with the notion that there was a single best way to structure an organization and instead placed emphasis on the way organizations must *actively* adapt to specific environmental criteria (Donaldson 1999:52). This theory aligns itself especially well with other environment-centered theories (like organizational ecology) and research that looks at how decoupling between organizations and their environment leads to higher mortality rates over time (e.g., Barron, West, and Hannan 1994; Ranger-Moore 1997). In these theories, fit with the environment is essential for organizational success. When functioning properly, organizations adapt, and when they do their structures align with the requirements set by their environment.

Contingency Theory: A Review

The crux of contingency theory[1] is the claim that there is no *one size fits all* when it comes to organizational structure. Instead, each organization, or organizational segment (Laurence and Lorsch 1967), is unique in its needs and environment; the organization's success is *contingent* on its ability to successfully meet those needs. Organizational structure, loosely defined as any "recurrent set of relationships between organization members[2]," enables the organization to adapt to the environment in the way that best suits the organization's goals (Donaldson 1999:51). Organizational characteristics like size (Blau 1970; Child 1973), main technology (Woodward 1965), environmental and market factors (e.g., uncertainty, competition), and organizational strategy (Chandler 1962) will determine the optimal structure for the organization. Because these characteristics affect the organization concurrently, organizational success is wholly dependent on organizational design. Unlike institutional explanations, where organizations homogeneously follow predetermined scripts (Meyer and Rowan 1977; DiMaggio and Powell 1983), there is an implicit assumption in contingency theory that organizations are actively engaged with their environment. Research has shown that organizations do this in a number of different ways, all of which follow a central premise: when faced with low levels of uncertainty organizations will centralize, while high levels of uncertainty lead to decentralization (Burns and Stalker 1961; Woodward 1965).

Burns and Stalker's classification of organizational structure as either mechanistic or organic was the first to make this argument explicit (1961:119-122). They contend that for

[1] Contingency theory is often referred to as "structural contingency theory" in the literature because the central focus is on how organizational *structure* is contingent on outside forces.

[2] Also defined in the discipline as "any purposeful arrangement of social activity that implies active control over human relations ordered for particular ends" (Ritzer 2007).

organizations in stable environments, with low rates of change, a mechanistic (centralized and hierarchical) structure is optimal. While in highly uncertain environments, where change is common, an organic (flattened and decentralized) structure is better at innovating and quickly adapting to change. The costs of adopting the complexity and rigidity associated with a decentralized structural arrangement are outweighed by greater stability and predictability (Donaldson 1999:53). The argument is not necessarily that organizations always adapt to the environment in these ways, but that the most successful organizations do. The degree of centralization or decentralization is determined by contingency factors—like size, environment, or strategy—and is different for every organization (Donaldson 2001:38).

Woodward's (1965) formulation of contingency theory starts with this premise but added that the organization's technology is an important predictor of organizational structure (Donaldson 1999:53). For her, organic structures were associated with simple technology (i.e., craft goods) while advanced technology (i.e., mass production) is more mechanistic and centralized. Mass production, for example, is more predictable, and so a centralized structure is more appropriate. Interestingly, Woodward also found that as technology advanced even further, "the progressively greater predictability of the technical system and the smoothness of production […] led first to more mechanistic and then to more organic structures" (Donaldson 1999:53). Woodward's research employed "qualitative measures of organizational structure (Donaldson 1999:54)" which differentiated itself from Burns and Stalker's "qualitative and anthropological (Donaldson 2001:38)" methods. Both methods would be employed in later contingency research, though as we will see, mainly in different literatures.

Finally, Paul Lawrence and Jay Lorsch extended the theoretical framework to the interorganizational level by contending that differentiation within firms is the result of

uncertainty in the technical environment (1967). Each of the three "subsystems" the authors studied (sales, research, and production) faced very different technical environments resulting in differentiation in "formal structures, the member's goal orientation, member's time orientations and member's interpersonal orientations" (1967:1). In turn, this differentiation affected the locus of control within that subsystem. Sales and production, for example, "where the subenvironment was more certain," maintained centralized hierarchical structures (40). Research and Development (R&D), however, required a more decentralized structure to deal with rapid changes in the market (18). The authors argue that this differentiation is positive for organizations; those with higher levels of differentiation will be more successful (46).

Early contingency theorists saw decentralization in highly uncertain environments (and centralization in stable environments) as the most efficient and effective design for organizations. Later studies agreed, focusing largely on how subjective uncertainty affects organizational structure. Hage (1965) argued that while efficiency favors centralized decision-making and formalized structures, innovation favors organizations that are decentralized and informal. Consequently, in highly uncertain environments organizations favor structures that encourage innovation, while organizations in stable environments favor structures that increase control and efficiency (Donaldson 2001:39; see also Hage and Aiken 1967, 1969). Perrow (1967) distinguished between organizations whose technology is routine (low uncertainty) and nonroutine (high uncertainty) and contended that nonroutine technologies foster decentralized structures (1967:199-200). Others interested in the effect of organizational characteristics, like size, on organizational structure have found similar trends. Blau (1970), for example, established that increasing size leads to differentiation (decentralization) in organizations. In essence, larger organizations are more divided into sub-units, hierarchical levels, etc. than are smaller

organizations (204). Likewise, Child (1973) asserted that large organizations are "more specialized, have more rules, more documentation, more extended hierarchies, and a greater decentralization of decision making further down such hierarchies" (171). These studies further extended the empirical reach of contingency theory and advanced it as an explanation of how the environment affects organizational structure.

Environmental Uncertainty and Organizational Structure

While it is true that contingency theory often focuses on environmental uncertainty and its relationship with organizational structure, there is an independent literature on uncertainty to draw from as well. Environmental uncertainty has meant different things to different researchers. In much of the literature, environmental uncertainty is left broadly defined in such a way that "it is all too easy to assume that one knows what he or she is talking about" without any actual clarity in how the term is being used (Downey and Slocum 1975:562). Understanding uncertainty as perceptions of the environment, however, was common in the very earliest studies (e.g., Burns and Stalker 1961) and has continued to be used since. Scholars who have attempted to clarify this concept have done so by parsing out the various meanings researchers have given.

For example, Milliken argued that upon careful examination three definitions of uncertainty emerge: (1) "an inability to assign probabilities as to the likelihood of future events," (2) "a lack of information about cause-effect relationships," and (3) "an inability to predict accurately what the outcome of a decision might be" (1987:134). Further, Milliken explains that the major differences between researchers who conceptualize environmental uncertainty as perception and those who see it as an objective "property of organizational environments" lies in their interpretation of uncertainty (134-135). In essence, while one camp argues that simplifying

environmental uncertainty to psychological processes ignores the very real—objective—effect of the environment, the other argues that because perceptions are directly translated into action, researchers should focus their efforts on understanding perception. While throughout the literature there exists a strong distinction between the internal and external environment (see Downey and Slocum 1975), in this paper environmental uncertainty refers to the organization's external environment unless otherwise noted.

Most empirical work within this area has tracked well with the expectations of contingency theory and has suggested that greater uncertainty is associated with increased future planning (Tung 1979), technology change (Huber, O'Connell, and Cummings 1975; Gordon and Naravanan 1984), and higher levels of innovation (Freel 2005). All of these studies follow the familiar axiom from the contingency theory literature: that with uncertainty comes decentralization in one form or another. For example, Tung (1979:691) found that organizations that perceived greater uncertainty in their environment had increased levels of future planning. Gordon and Naravanan (1984) found that as environmental uncertainty increases, key decision makers turn to local sources of knowledge and use outside information to better inform their decision-making. Huber, O'Connell, and Cummings (1975) argued that the level of control in the organization conflates the relationship between environmental uncertainty and the specificity of information used by decision-makers. Among loosely structured organizations, information specificity is positively associated with uncertainty, while the opposite is true for tightly controlled organizations (736). Finally, Freel (2005) found that uncertainty in terms of "high volatility in the customer base" seems to be associated with higher levels of innovation (which has often been seen as a byproduct of a decentralized system).

Market Uncertainty and Organizational Decision-Making

While environmental uncertainty is a popular topic of discussion amongst organizational scholars, understanding the relationship between the market and organizational outcomes is equally important. Implicit in much of the environmental uncertainty literature is that the market is a central part of the organization's external environment (though not necessarily one and the same). For example, while Duncan (1972) includes customers, suppliers, and competitors alongside the socio-political and technology components in his conception of environmental uncertainty, he does not talk about the "market" explicitly. Analyzing market uncertainty on its own, distinct from other components of the environment, is essential to really understanding how organizations act in response to various types of environmental pressures.

Researchers have measured market uncertainty in a number of ways, though most have focused on measures that ignore perceptions of the environment. Guadalupe and Wulf take this approach when they use state- and industry-level measures like trade costs and degree of import penetration in their analysis (2009:16). Likewise, Bloom, Sadun, and Reenen use counts of direct competitors, the Lerner Index (which describes a firm's market power), and degree of import penetration to describe market uncertainty's association with decentralization (2010:6-7). Even the early work in contingency theory that focused on market uncertainty used measures like price competition, product alternatives, and delivery speed to isolate firms in competitive versus uncompetitive markets (Simonetti and Boseman 1975). While worthwhile measures of market competition, these types of macro-level measures do not parallel those used by sociologists in the environmental uncertainty literature.

When measured using the objective, macro-level measures mentioned previously, empirical research overwhelmingly supports contingency theory's assumption that high levels of

competition in a market lead to decentralization. Simonetti and Boseman (1975) used Mexican and Italian firms to support the crux of contingency theory; market uncertainty, they found, is associated with decentralization of authority. They found that firms in low-uncertainty markets who had centralized structures were more effective and that decentralized firms were the most effective regardless of market forces. Guadalupe and Wulf used industry-level measures of market competitiveness to argue that increased competition "flattens" organizations (2009). By this they mean that within organizations that saw changes towards greater market competition also had "broader spans of control" and were more decentralized than other firms (2009:31). Bloom et al. conducted a cross-national study and found that market competition "foster[s] greater decentralization" (2010). According to the authors, every measure of market competition showed a "very strong and robust relationship between competition and greater levels of decentralization" even when organization- and nation-level controls were added (7). While still a rather sparse literature, there is good reason to believe that market uncertainty is associated not only with decentralized organizational structures generally, but more specifically with decentralized decision-making.

Main Hypotheses

We know that "if men define situations as real, they are real in their consequences" (Thomas and Thomas 1928). And as such, the individual's perceptions of the market should have a direct effect on organizational structure. Like many sociologists studying environmental uncertainty, I draw from Milliken (1987) and Duncan (1972) and use individuals' *perceptions* of the environment. What makes this paper unique, however, is that like many in management and economics, I do so in relation to *market uncertainty*. Though unlike those scholars, I use

perceptions of market uncertainty as my independent variable, as opposed to the "objective" measures common in those literatures. This allows me to apply the key expectations from the environmental uncertainty literature to the case of market competitiveness. Furthermore, because the market has been understudied among sociologists using subjective measures, leaving much about the effect of perceived market competitiveness unknown. The primary contribution of this paper is combining these two literatures to address this issue.

The contingency theory and environmental uncertainty literatures suggest that high levels of uncertainty, whether perceived or in actuality, are associated with decentralized organizational structures. Subsequently, I expect high levels of competition to be associated with decentralization of decision-making. Accordingly, I expect that:

> *Hypothesis 1*: Organizations who operate in highly competitive markets (and high levels of uncertainty) will tend to have a higher degree of decentralization.

Additionally, Laurence and Lorsch's (1967) work within the contingency theory literature suggests that different units within organizations react differently to the same environmental pressures. Decisions about production, for example, will be affected differently by market competitiveness than those concerning labor. Because production is an ongoing process—tightly coupled to the organization's operation—it follows that outside pressures will have less of an impact on production-related decisions than on labor-related ones. Production-related decisions, consequently, are more likely to be insulated from outside influence than are other types of decisions. As a result, I expect that:

> *Hypothesis 2*: Decisions related to labor will have a greater association with decentralization in highly competitive markets than will production-related decisions.

Examining whether these hypotheses hold when using self-reported measures of perceived market competitiveness is the next step in the analysis. If perception does, in fact, matter, then I

should see significant associations between the measures of perceived competitiveness and degree of centralization in organizational decision-making.

DATA AND METHODS

The 1997 wave of the *National Organizational Study* (NOS) was collected between June 1996 and June 1997 by researchers at the University of Minnesota, Center for Survey Research (Kalleberg, Knoke, and Marsden 2001). This wave followed up on the original National Organizational Study in 1991, which garnered its sample from respondents of the 1991 General Social Survey (Kalleberg, Knoke, Marsden, and Spaet 1993). The sampling frame for the second wave, however, was derived from the *Dun and Bradstreet Information Services*, which provided a massive set of US organizations stratified by organization size (number of employees) from which to draw a sample (for more on the sampling frame see Kalleberg et al. 1990). This survey is unique because it includes a number of interesting questions that speak to organization members' perceptions of uncertainty as well as the organizations' decision-making processes. This allows for analysis that speaks to how perceptions of the market affect organizational decision-making and various other structural processes.

From an initial sampling frame of over 15 million "work organizations" in the United States, 1,835 were chosen to participate in the study based on a stratified random sample, of which 1,002 organizations completed surveys (Kalleberg, Knoke, and Marsden 2001). For each organization, a "key decision maker" was asked to complete the survey. Business owner, human resources or other director, and other staff member comprised 30.54, 43.21, and 20.16 percent of respondents respectively across the initial sample. The survey instrument was either completed during phone interviews or mailed to the organizations and returned to the researchers.

According to the data codebook, it took an average of nine separate contact attempts to complete each survey, with 80.04 percent of surveys completed by a single respondent. Approximately 54 percent of organizations completed surveys, most by phone interview (Kalleberg, Knoke, and Marsden 2001).

Dependent Variables

Six questions in the 1997 National Organizations Survey (NOS), each asking at what vertical level in the organization a particular decision was typically made, were used as dependent variables in the linear regression models. These six variables were split into two main groups: production-related decisions (quality, schedules, and targets) and employee-related decisions (hiring, evaluation, and training). In NOS, respondents were asked to answer "who actually makes the final decision in each area" for each of the decisions listed. For analysis, the variables were reverse coded so that the highest administrative level, "someone at larger organization" (for subsidiaries), is coded as 5, followed by "head of organization" (4), "middle manager" (3), "supervisor" (2), and "somebody below [supervisor]" (1). In effect, this variable was treated as a measure of degree of centralization. For the OLS models, this means that each point in the response item corresponds to the hierarchical decision-making level for that particular decision. A positive coefficient in the analysis refers to a higher level of decision-making authority (a more centralized structure) and a negative coefficient means that decisions are typically made at lower levels of the organization (more decentralized). A 1968 study interested in measuring organizational structure used a number of similar questions to gauge the level of centralization in the organization (Pugh et al. 1968:102-104; for more on measuring organizational structure see Pennings 1973). While that study originally incorporated 23 separate

variables into a single scale, given what is available in NOS my analysis uses a much simpler set of six questions. For the measure, the average level of decision-making for most decision types hovered around "middle manager," a score of 3.0 (a standard deviation around 0.70) (Table 1).

Independent Variables and Controls

Of interest in this analysis is how organizational members perceive uncertainty as a product of "unpredictable change," often considered a subset of environmental change more generally (Milliken 1987:135). The variables I used speak to these issues of definition by taking into account "state" uncertainty—when the state of the environment is uncertain, though not necessarily the actions the organization makes itself. This conceptualization parallels Milliken's (and others') argument well. The primary independent variable in the analysis, *market competitiveness*, asked "how much competition would you say there is in your main market or service area," with four possible values ranging from *none* (1) to *a great deal* (4). Most organizations in the sample experienced some level of market competition: the average reported level was 3.037 (a standard deviation of 0.896) (Table 1). While others who have used this dataset have combined two variables, Market Competition and Foreign Market Competition, into a single scale[3] (see Song 2002), this analysis uses only the former variable. Remember that recent analyses of market uncertainty have focused exclusively on objective measures like the number of direct competitors, degree of import penetration (Bloom, Sadun, and Reenen 2010), industry-level market data, or "quasi-natural" experiments where a period of market liberalization is assumed to have increased competition and uncertainty (Guadalupe and Wulf

[3] A standardized scale combining these two variables has an alpha coefficient of 0.4911 and an interitem correlation of 0.3255. This is much too small a coefficient to justify combining the two variables for my analysis.

2009). While objective measures are useful, they do not necessarily speak to the direct environmental pressures organizations face—not to mention how organization members perceive those uncertainties.

In addition to the principal independent variable already mentioned, this paper uses a total of eleven control variables. The first two continuous variables control for the effect of organizational characteristics on organizational structure. First, an index was created to measure the degree of bureaucratization in the organization using five yes or no questions asking whether the organization had particular written documents (this variable was taken from Song 2002). For this variable, the mean score was 2.36 and the standard deviation was 1.68 (Table 1). Second, a variable measuring the number of administrative levels in the organization, ranging from *zero* to *twenty*, acts as a measure of vertical distance between the highest and lowest level in the organizational hierarchy. The mean score was 2.43 and the standard deviation was 2.09 (Table 1). The next two controls come from the organizational ecology literature. First, a measure of organizational age is included in the model. To do this, I subtracted the organization's founding year from the year the study was conducted, 1996. The mean for this variable was 39.45 years with a standard deviation of 37.84 years. In the model, the natural log was used. Second, a variable measuring the logged total number of employees, including both full-time and part-time employees, is used as a proxy for organizational size and capacity. Before I took the natural log of the variable, the mean number of employees was 3474.58 and the standard deviation was 15721.58 employees.

The next three control variables account for interorganizational influence on structure. First, a measure of organizational control, which asked whether the organization being surveyed is part of another, larger organization (*subsidiary*=1), was included. The second and third

variables asked whether the organization works closely with suppliers (*suppliers*=1) and customers (*customers*=1) respectively. In both cases, "agree" and "strongly agree" were recoded as 1 and "disagree" and "strongly disagree' were recoded as 0 to create the binary. These two variables control for influence of the organization's activities by these two highly salient audiences. Additionally, two controls were included to account for heterogeneity within fields. First, a binary variable measuring for profit status (*forprofit*=1) is used to distinguish between organizations in different sectors. Second, a binary was included measuring whether the organization was a manufacturing firm (*manufacturing*=1). Finally, to account for variation between respondents, measures of gender (*female*=1) and respondent title (*owner*=1) were included in the models. The later variable was constructed by combining director, human resources director, staff member, or other employee versus business owner.

ANALYSIS

This analysis uses ordinary least-squares (OLS) regressions because treating the dependent variable as continuous allows me to effectively compare the significance and magnitude of my measures. This analysis assumed that there is a normal, linear relationship between level of organizational decision-making (degree of centralization) and my independent variables. OLS regression is the preferred method for explaining this type of general relationship. To do this, I use the Stata 13 software package and spost 13 commands to estimate models with robust standard errors and test for significance. All reported results use two-tailed tests. Because all cases with missing data relevant to my analysis were removed from the dataset using listwise deletion, my final sample size was 562 organizations. This sample represents all ten industry categories (from the Standard Industrial Classification), though predictably most come from the

two largest sectors: service and manufacturing. Just over 68 percent of organizations in the sample are independent, while the other roughly 32 percent included subsidiaries, franchises, or local affiliates of larger organizations (Kalleberg, Knoke, and Marsden 2001).

See Table 1 on page 27

The effect of perceived market competition on the degree of centralization within the organization was tested against five other possible alternative arguments. Along with my primary variable—perceived market competition—eleven other variables representative of each alternative were included in the models. Table 2 shows the full models across all six decision types. After including the control variables, perceived market competition remained significantly associated with decentralization across four of the six decisions (Table 2)[4]. A one-unit increase in perceived market competition is associated with a 0.155-point decrease in the centralization measure for decisions pertaining to production quality ($p<0.01$), a 0.092-point decrease for production targets ($p<0.05$), a 0.120-point decrease for employee hiring ($p<0.01$), and a 0.109-point decrease for employee training ($p<0.01$) (Table 2)[5].

Of the two organizational characteristic variables, level of bureaucratization had the biggest association with decentralization (Table 2). That measure is associated with decentralized production schedules ($\beta=-0.077$; $p<0.001$), production targets ($\beta=-0.060$; $p<0.05$), and employee evaluation ($\beta=-0.047$; $p<0.05$), but not the other three decisions. The number of administrative

[4] While adj. R-squared and BIC scores are both included in Table 1, adj. R-squared was used as the primary method for choosing models and determining model fit.

[5] Sensitivity analysis using Seemingly Unrelated Regression (SUR) showed no substantive differences than in these OLS models.

levels is also associated with decentralization, though for production targets (β=-0.060; $p<0.01$) and employee training (β=-0.046; $p<0.05$) only. The two respondent characteristic measures intended to control for differences in how people in different social positions perceive organizational structure (Table 2). Interestingly, respondents job had the greatest effect, especially for production schedules (β=-0.213; $p<0.05$), employee evaluation (β=-0.225; $p<0.01$), and employee training (β=-0.272; $p<0.01$). In effect, owners are more likely to think that these three decisions are being made at higher levels in the organizational hierarchy (irrespective of where the decisions are actually made). Dissimilarly, female respondents tend to think that decisions about employee hiring are made lower in the organizational hierarchy than do their male counterparts (β=-0.233; $p<0.001$).

The three resource dependency measures have mixed empirical results (Table 2). For those organizations that are subsidiaries of another, larger, organization, decision-making structures tend to be more centralized. This is the case for production schedules (β=0.196; $p<0.01$), production targets (β=0.192; $p<0.05$), employee evaluation (β=0.152; $p<0.05$), and employee training (β=0.254; $p<0.001$). Working closely with suppliers or customers, however, has the opposite effect. Working closely with suppliers is associated with decentralized decision-making for production quality (β=-0.331; $p<0.05$), and working closely with customers is associated with decentralization for production quality (β=-0.221; $p<0.05$) and employee evaluation (β=-0.140; $p<0.05$). The two neoinstitutionalism measures also offer mixed results. For profit status is associated with more centralized decision-making for production quality (β=0.37; $p<0.01$) and employee training (β=0.259; $p<0.01$). Being a manufacturing firm, however, is associated with decentralization concerning employee hiring (β=-0.185; $p<0.05$) and employee evaluation (β=-0.219; $p<0.01$).

The organizational ecology measures play a large role in labor related decisions and are associated with decentralization across the board (Table 2). Organization age is associated with a decentralized structure concerning production schedules (β=-0.072; $p<0.05$), employee hiring (β=-0.084; $p<0.05$), employee evaluation (β=-0.126; $p<0.001$), and employee training (β=-0.084; $p<0.05$). Likewise, total number of employees is associated with decentralized decision-making for production schedules (β=-0.101; $p<0.001$), employee hiring (β=-0.100; $p<0.001$), employee evaluation (β=-0.120; $p<0.001$), and employee training (β=-0.040; $p<0.05$). These two variables also seem to play a more coercive role on organizational structure/degree of centralization than perceived market competition.

See Table 2 on page 28

The relationship between perceived market competition and decision-making authority does not exist for decisions pertaining to production schedules and employee evaluation; further analysis shows that ecological factors play a much more important role for these two decisions. In both cases, adding each set of variables sequentially shows that, when added, the two "organizational ecology" variables eliminate the significant effect of perceived market competition on degree of centralization (Tables 3 and 4). In the case of production schedules, organizational age is associated with decentralization (β=-0.072; $p<0.05$) as is total number of employees (β=-0.101; $p<0.001$). Likewise, for employee evaluation organizational age is associated with decentralization (β=-0.126; $p<0.001$) as is number of employees (β=-0.120; $p<0.001$). In each case the adj. R increases even after including the new set of variables,

suggesting that the model including them is preferred (the adj. R-squared is 0.243 and 0.338 respectively).

See Table 3 on page 29

See Table 4 on page 30

The second hypothesis, that labor-related decisions will be affected more by perceived market competition than will production-related decisions, is only somewhat supported by the analysis. First, the coefficients for production-related decisions are smaller than those for labor-related ones. This suggests that the relationship between perceived competition and degree of centralization is weaker for production-related decisions than those concerning labor. Secondly, model fit for labor-related decisions is better than for production-related decisions. This too suggests that labor-related decisions are better associated with perceived market competition than those concerning production. Still, there is no compelling evidence that the differences in coefficients between production- and labor-related decisions are significant.

DISCUSSION AND CONCLUSION

Organizations that perceive high levels of uncertainty in their environment tend to have more decentralized, or localized, decision-making hierarchies compared to those who perceive their environment as being relatively stable and uncompetitive. The association between uncertainty and degree of centralization is robust enough that it remains significant for the majority of decisions despite including controls for the major theoretical alternatives present in the literature. Additional examination of the data suggests that the second hypothesis is partially

supported, as the coefficients and adj. R-squared for the three production-related decisions are smaller than for the three labor-related ones. This suggests a stronger relationship between perceived market completion and degree of centralization in the case of labor-related decisions. Understanding degree of centralization as an outcome of market uncertainty is an important aspect of organizational life that is still largely unexplored in the literature. And while a number of researchers have worked to define, operationalize, and measure this relationship, clearly there is still much to be done. These results point to some interesting possibilities for organizational sociologists going forward.

The relationship between an organization's structure and its environment is a complicated one. Economists and management scholars who study this relationship have tended to focus on the role of the market and its objective features. Trade liberalization, counts of direct competitors, degree of import penetration, and the like have all stood in for measures of competition within this literature. Sociologists, however, have sometimes used subjective measures of uncertainty to study the broader "social environment" organizations face. These subjective—often self-reported—measures take into account how the individual views their environment, a fundamentally social process. Despite their obvious similarities, methodological differences have left these literatures largely disjoined. This paper has attempted to bridge this divide by examining the relationship between perceived market competition and organization decision-making using contingency theory as a framework and focusing on the centrality of subjective measures of uncertainty. Taking from the sociological literature on environmental uncertainty and then applying it to the case of market competition goes a long way toward bridging the gaps among sociological, managerial, and economic scholarship.

Moreover, within sociology, various theoretical paradigms have competed to define the nature of this relationship. Where contemporary organizational sociology has focused its efforts on describing the effect of isomorphic forces, it has ignored how the organization must respond directly to the constraints imposed by its environment. Other paradigms focusing on the distribution of resources or the ecological processes affecting whole organizational populations have been replaced by a new focus on institutional norms and cultural logics. This cultural move has meant a shift in how we think about organizations, decoupling structures from their fundamental causes. This new paradigm necessarily minimizes the role of the individual. For the organizational sociologist interested in the role of the environment in shaping organization's structure and strategy, this should be worrisome. Accordingly, there is good reason to question research on market competition—and environmental uncertainty more generally—which does not account for individuals' perceptions. In the end, it is clear that people still matter in the structuring of organizations. The main contribution of this paper to the literature is to offer some new evidence supporting a recoupling of the individual with the organization, and by doing so better understand the dynamics of organizational behavior.

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Tables and Figures

Table 1: Descriptive Statistics (N=562)

Variable Description	Mean	Std. Dev.	Min.	Max.
Dependent Variables				
Production Quality	2.959	1.086	1	5
Production Schedule	2.839	0.845	1	5
Production Targets	3.117	0.863	1	5
Employee Hiring	3.110	0.879	1	5
Employee Evaluation	2.826	0.858	1	5
Employee Training	3.370	0.846	1	5
Independent Variable				
Market Competition	3.365	0.857	1	4
Control Variables				
Bureaucratization Index	3.256	1.680	0	5
Administrative Levels	2.432	2.089	0	20
Log of Organizational Age	3.210	1.038	0	5.460
Log of Total Employees	4.527	2.522	0	11.502
Respondent is Female	0.482	-	0	1
Respondent is Owner	0.342	-	0	1
Organization is Subsidiary	0.295	-	0	1
Organization works with Suppliers	0.923	-	0	1
Organization works with Customers	0.746	-	0	1
Organization is For Profit	0.779	-	0	1
Organization is Manufacturing Firm	0.187	-	0	1

Source: 1997 National Organizations Survey (ICPSR 03190)

Table 2: OLS Regression of Perceived Level of Competition and Level of D-M by Decision Type

	Production Related Decisions			Employee Related Decisions		
	Quality	Schedules	Targets	Hiring	Evaluation	Training
Contingency Theory						
Competition in Market	-0.155**	-0.072	-0.092*	-0.120**	-0.064	-0.109**
	(0.056)	(0.040)	(0.044)	(0.042)	(0.038)	(0.042)
Organizational Characteristics						
Level of Bureaucratization	-0.046	-0.077***	-0.060*	-0.009	-0.047*	-0.020
	(0.032)	(0.023)	(0.025)	(0.024)	(0.022)	(0.024)
Number of Admin Levels	-0.041	0.017	-0.060**	-0.036	0.014	-0.046*
	(0.025)	(0.018)	(0.019)	(0.018)	(0.017)	(0.018)
Respondent Characteristics						
Survey Resp was Female	-0.030	-0.042	-0.041	-0.233***	-0.092	-0.037
	(0.091)	(0.065)	(0.072)	(0.068)	(0.062)	(0.068)
Survey Resp was Owner	0.133	0.213*	0.098	0.122	0.225**	0.272**
	(0.116)	(0.083)	(0.092)	(0.086)	(0.079)	(0.087)
Resource Dependency Theory						
Organization is a Subsidiary	0.163	0.196**	0.192*	0.102	0.152*	0.254***
	(0.102)	(0.073)	(0.081)	(0.076)	(0.069)	(0.076)
Works with Suppliers	-0.331*	-0.097	-0.116	-0.004	0.042	0.057
	(0.168)	(0.121)	(0.133)	(0.125)	(0.114)	(0.126)
Works with Customers	-0.221*	-0.027	-0.083	-0.123	-0.140*	-0.126
	(0.103)	(0.074)	(0.081)	(0.076)	(0.070)	(0.077)
Neo/Institutional Theories						
For Profit Status	0.372**	-0.071	0.129	-0.044	-0.060	0.259**
	(0.129)	(0.093)	(0.102)	(0.096)	(0.088)	(0.097)
Manufacturing Firm	-0.224	-0.128	-0.053	-0.185*	-0.219**	-0.117
	(0.121)	(0.087)	(0.096)	(0.090)	(0.083)	(0.091)
Organizational Ecology						
Organization Age	-0.058	-0.072*	-0.070	-0.084*	-0.126***	-0.084*
	(0.048)	(0.034)	(0.038)	(0.036)	(0.033)	(0.036)
Total Number of Employees	-0.034	-0.101***	-0.030	-0.100***	-0.120***	-0.040*
	(0.025)	(0.018)	(0.020)	(0.019)	(0.017)	(0.019)
_cons	4.211***	4.053***	4.137***	4.557***	4.185***	4.099***
	(0.326)	(0.234)	(0.257)	(0.242)	(0.222)	(0.244)
N	562	562	562	562	562	562
adj. R^2	0.109	0.243	0.120	0.248	0.338	0.178
BIC	-1865.835	-2239.807	-2131.429	-2199.483	-2298.580	-2192.342

Standard errors in parentheses
Source: 1997 National Organizations Survey (ICPSR 03190)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: OLS Regression of Perceived Level of Competition in Market for Production Schedule

	1	2	3	4	5	6
Competition in Market	-0.105*	-0.115**	-0.106**	-0.103**	-0.104*	-0.072
	(0.041)	(0.039)	(0.038)	(0.038)	(0.042)	(0.040)
Level of Bureaucratization		-0.143***	-0.107***	-0.117***	-0.111***	-0.077***
		(0.022)	(0.022)	(0.022)	(0.023)	(0.023)
Number of Admin Levels		-0.039*	-0.013	-0.020	-0.020	0.017
		(0.017)	(0.017)	(0.017)	(0.017)	(0.018)
Survey Resp was Female			0.021	0.014	-0.008	-0.042
			(0.068)	(0.068)	(0.068)	(0.065)
Survey Resp was Owner			0.462***	0.457***	0.411***	0.213*
			(0.079)	(0.079)	(0.080)	(0.083)
Organization is a Subsidiary				0.188*	0.184*	0.196**
				(0.076)	(0.075)	(0.073)
Works with Suppliers				-0.075	-0.072	-0.097
				(0.125)	(0.125)	(0.121)
Works with Customers				-0.080	-0.063	-0.027
				(0.076)	(0.076)	(0.074)
For Profit Status					0.062	-0.071
					(0.092)	(0.093)
Manufacturing Firm					-0.254**	-0.128
					(0.088)	(0.087)
Organization Age						-0.072*
						(0.034)
Total Number of Employees						-0.101***
						(0.018)
_cons	3.185***	3.776***	3.402***	3.517***	3.512***	4.053***
	(0.144)	(0.153)	(0.167)	(0.203)	(0.202)	(0.234)
N	562	562	562	562	562	562
adj. R^2	0.010	0.116	0.167	0.174	0.183	0.243

Standard errors in parentheses
Source: 1997 National Organizations Survey (ICPSR 03190)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: OLS Regression of Perceived Level of Competition in Market for Employee Evaluation

	1	2	3	4	5	6
Competition in Market	-0.098*	-0.106**	-0.096*	-0.094*	-0.101*	-0.064
	(0.042)	(0.040)	(0.038)	(0.038)	(0.041)	(0.038)
Level of Bureaucratization		-0.139***	-0.096***	-0.100***	-0.089***	-0.047*
		(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Number of Admin Levels		-0.058***	-0.028	-0.032	-0.033	0.014
		(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Survey Resp was Female			-0.011	-0.014	-0.048	-0.092
			(0.067)	(0.067)	(0.067)	(0.062)
Survey Resp was Owner			0.549***	0.542***	0.470***	0.225**
			(0.078)	(0.078)	(0.079)	(0.079)
Organization is a Subsidiary				0.152*	0.147*	0.152*
				(0.075)	(0.074)	(0.069)
Works with Suppliers				0.087	0.086	0.042
				(0.124)	(0.122)	(0.114)
Works with Customers				-0.210**	-0.185*	-0.140*
				(0.076)	(0.075)	(0.070)
For Profit Status					0.129	-0.060
					(0.091)	(0.088)
Manufacturing Firm					-0.385***	-0.219**
					(0.086)	(0.083)
Organization Age						-0.126***
						(0.033)
Total Number of Employees						-0.120***
						(0.017)
_cons	3.154***	3.778***	3.347***	3.398***	3.386***	4.185***
	(0.146)	(0.155)	(0.165)	(0.201)	(0.198)	(0.222)
N	562	562	562	562	562	562
adj. R^2	0.008	0.128	0.202	0.213	0.238	0.338

Standard errors in parentheses
Source: 1997 National Organizations Survey (ICPSR 03190)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$