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Authors

Pickering, Kathleen
Mushinski, David

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Making the Case for Culture in Economic Development: A Cross-Section Analysis of Western Tribes

KATHLEEN PICKERING AND DAVID MUSHINSKI

There is agreement today among a variety of scholars that the cultural characteristics of a tribe affect its economic development.¹ Despite this agreement, a variety of pronouncements regarding that effect have been espoused. Some scholars argue that any analysis of economic development in a region must explicitly incorporate the cultural characteristics of the people in that region.² Other scholars contend that culture may serve as a barrier to development on reservations.³ It has also been popular to assume that acculturation eliminated traditional pre-reservation cultures of tribes.⁴ Questions remain about the continuity of pre-reservation cultural characteristics and the impact of those characteristics on economic outcomes.

Part of the uncertainty about the impact of culture on economic development, in any given instance, lies in the nature of the studies undertaken in this area. Analyses of the role of culture in development have generally remained anecdotal or subjective, focusing on one tribe. As a result, the findings of those studies are not easily generalized. While cross-tribal analyses do exist, they do not typically account for the array of cultural characteristics of a tribe that might affect the development process. Further, the analyses generally do not consider whether and how culture affects the various dimensions

Kathleen Pickering is assistant professor with the Department of Anthropology at Colorado State University. Her research interests include economic anthropology, American Indian economic development, traditional ecological knowledge, and the impacts of globalization on indigenous communities.

David Mushinski is assistant professor with the Department of Economics at Colorado State University. His research interests include micro-enterprise and small business access to credit, income distributions on American Indian reservations, American Indian economic development, and regional economics.

of the development process. Examples of the different dimensions in which a reservation economy can develop include the level of economic activity and the distribution of income across households on the reservation.

This study combines data compiled by Joseph Jorgensen⁵ on a variety of pre-reservation cultural characteristics for eighty tribes in the western United States with data from the 1990 United States Census to gain insights into the impact of a variety of cultural characteristics on the economic development of those tribes. The study considers, specifically, the impact of those characteristics on the level of development of a tribe (as represented by the tribe's real income per capita) and the distribution of that income across households on the reservation. Regression results indicate that the cultural factors have no impact on the level of a tribe's development but that they do affect the distribution of income on reservations.

The empirical findings of this study have several implications for discussions of the impact of culture on economic development. The findings indicate that pre-reservation cultural characteristics of tribes continue to resonate today. Thus, they support arguments for cultural continuity and against arguments that the acculturation pressures of the past succeeded in eliminating tribal cultural norms. The regression results also suggest that the cultural characteristics of a tribe do not serve as an impediment to a tribe's level of development, but that they do have an impact on how the income obtained from that level of development is distributed. Further, the regression results suggest not only that culture matters in the development process, but also that different cultural characteristics have varying impacts on income distributions. For example, tribes that practiced inter-community reciprocity in the past exhibit greater equality in income distributions. That greater equality would be lessened, however, if those tribes also possessed hierarchical kinship units or hierarchical political processes. As a final matter, it is noted that the empirical results in this study may be viewed as an extension and reinterpretation of the findings of David Mushinski and Kathleen Pickering regarding the impact of cultural factors on inequality in income distributions on the reservations studied here.⁶

BACKGROUND

American Indian reservations have confronted issues of poverty and economic development throughout the twentieth century.⁷ Questions of how to approach economic development and overcome the causes of poverty have been analyzed most often through informative and thorough case studies exploring the experiences and obstacles of one particular tribe.⁸

American Indian economic development scholars have called for more comparative tribal studies that go beyond stories of one reservation.⁹ However, it is difficult to make broader interpretations of economic development across reservations given the complex combination of cultural, historical, institutional, and ecological factors.¹⁰ There is tremendous diversity among tribes, ignored by years of federal policy like the Indian Reorganization Act but now enhanced by the potential for self-determination

included in various federal legislation since the 1970s.¹¹ As Dean Howard Smith has noted, "since each tribe has individual cultural norms, traditions, and goals, a program designed to benefit one tribe could be completely detrimental to another."¹² The series of studies by Stephen Cornell and Joseph Kalt highlight the importance of tribal variability in examining why certain tribes are more successful in undertaking economic development than others.¹³ Any cross-reservation study should attempt to account for this diversity across tribal lines.

A few studies have undertaken cross-reservation data analysis. Cornell and Kalt assembled data on seventy tribes to test how various forms of tribal-governmental design affect economic development.¹⁴ Jerry Stubben conducted survey research among seventy-three tribes regarding the influence of tribal values on the manner in which economic development plans are realized and implemented.¹⁵ Theresa Julnes analyzed the results of mailed surveys returned by 123 tribes regarding the structure of decision-making and obstacles to economic development for tribes.¹⁶ Diane Duffy and Jerry Stubben analyzed results from 157 mailed surveys on the preferred form of ownership for economic development enterprises.¹⁷ Finally, using Census data from 1970, 1980, and 1990, David L. Vinje analyzed economic and demographic data for the twenty-three most heavily populated reservations to examine alternative strategies to gaming that tribes might pursue for economic development, finding educational attainment to be the most significant.¹⁸

Related issues concern the continuity of culture among tribes and exactly how culture affects economic development. Stephen Cornell and Marta Cecilia Gil-Swedberg describe culture as "a set of paradigms of self, of surrounding natural and human environments, of appropriate modes of action and interaction, and of appropriate distributions and forms of authority that in turn guide individual and collective activity."¹⁹ Cornell and Kalt have argued that "[c]ultural norms form the glue that holds a society's formal and informal institutions of social control and organization together."²⁰ Ann Swidler has emphasized that culture provides a set of tools for constructing strategies for action, and that it is the reappropriation of cultural resources and capacities for action in new contexts that gives culture its enduring effects.²¹

It was popular in the 1950s and 1960s for scholars to discuss Indian culture in terms of acculturation pressures and loss of culture.²² Tribal communities were often approached by policy makers as if they had no significant culture of their own, an assumption Murray Wax labeled the "vacuum ideology," in which Euro-American values and beliefs are uncritically imposed as the apparent alternative to this cultural vacuum.²³ Joseph S. Anderson and Dean Howard Smith observed a similar phenomenon in traditional approaches to economic development, labeled by Helen Deresky as "'the self-reference criterion'; the unconscious reference to one's own cultural values."²⁴ To the extent that tribal culture and values were recognized by governmental, educational, or charitable operatives, they were viewed as a hindrance to advancement and economic development.²⁵

Through myriad examples of prohibited cultural practices that immediately resurfaced when federal policy moved toward tolerance, recent research suggests a strong thread of cultural continuity among many tribes.²⁶ Other examples of supposed acculturation have now been reinterpreted as resistance or as the expression of tribal values in a new form.²⁷ Duffy and Stubben note that “American Indians continue to have a world-view and self-concept that has remained distinctive and resilient despite many years of exposure to policies of assimilation and acculturation,” noting the ongoing importance of gift giving and giveaways on many reservations.²⁸ As William Y. Adams noted in his 1971 study of Navajo ecology and economy, “[w]hat we see is not so much a cultural framework as a cluster of core values which hold together a set of seemingly disparate parts. The individual parts have changed considerably through the ups and downs of history, and yet on the whole they have held together remarkably well. Despite centuries of cultural contact, no one could mistake Navajos for Pueblos, Utes, Paiutes, Mexicans, Mormons or Gentiles—in fact, they could be nothing but Navajos.”²⁹ Cornell and Kalt have used as a working hypothesis that indigenous pre-reservation political norms continue to exert influence today.³⁰ No cross-reservation analysis has specifically attempted to test this working hypothesis, however.

Today, there appears to be general agreement among economic-development scholars that culture matters in American Indian economic development issues.³¹ Drawing from the perspectives of theorists like Karl Polanyi and Talcott Parsons, a variety of scholars have argued that economic activity is culturally and socially embedded in the institutional framework of society, and therefore integral to any analysis of economic development.³² As Frank Pommersheim noted, “[e]conomic activity in Indian country is often characterized as a ‘must’ with little attention paid to the implications for personal and cultural meaning, that aspect of life captured by the saying that ‘man does not live by bread alone.’”³³ Smith has argued for the importance of using the economic development process as a means of maintaining cultural integrity, rather than assuming cultural continuity and economic development to be mutually incompatible.³⁴ Scholars such as Cornell and Kalt and Duffy and Stubbens have stressed the importance of “cultural match” in achieving effective tribal governing institutions and successful economic programs.³⁵ Cornell and Kalt have observed that cultural norms can “offer strategic guidance at the level of economic activity, selecting for those activities that best fit with indigenous conceptions of self and of appropriate intra-group relations.”³⁶ Duffy and Stubbens have gone so far as to argue that “[t]o be successful, then, economic development *must* place communal or tribal concerns above efficiency, routinization, secularity, differentiation and, if need be, over profits.”³⁷

It must also be recognized that economic development occurs along a variety of dimensions and that cultural values may affect each dimension differently. Economic development encompasses not only the level of development (for instance, income per capita) but also the distribution of the fruits of that development (the distribution of income, for example). Applying the theory of Talcott Parsons to American Indian economic development, Smith

highlights this distinction when he differentiates the universal goal of generating wealth and income through economic development, and the culturally specific goals of economic development that influence the methods by which that wealth and income are distributed: "Each tribe must make its own decisions concerning the direction taken and what aspects of tradition are vital and evolving. Additionally, each tribe needs to formulate its own goals for economic activities."³⁸ Income inequality is a central issue in the origins and extent of social stratification.³⁹ The extent of inequality in income distribution in turn reflects the cultural, social, and political values of the society about the legitimacy of certain individuals receiving greater rewards than others for their economic and political activities.⁴⁰

Once again, however, the role of culture in development is most often asserted in a subjective or anecdotal sense.⁴¹ Given the broad, integrative, subtle, and dynamic nature of culture, it is extremely complex and difficult to analyze, especially for outsiders to a particular culture.⁴² Quantifying issues of culture in cross-reservation studies adds another level of challenge.⁴³ Consequently, few cross-reservation analyses that explore the impact of the various facets of culture on the differing dimensions of economic development exist. Cornell and Kalt construct a model by which culture operates as a value paradigm. As part of a Boolean analysis of economic development on twelve reservations, they use historical and anthropological data to determine the presence of cultural norms supporting specialization and trade, and to determine whether the pre-reservation indigenous political organization of those reservations match their constitutional form.⁴⁴ Duffy and Stubben use surveys from tribal council members as a "conduit for Indian thoughts and views," in relation to the preferability of tribal ownership of businesses, without specifying any particular cultural values at work beyond a sense of group solidarity and identification.⁴⁵ Stubben discusses the critical role of American Indian values in economic development planning, but does not include any explicit cultural values in his regression analysis of the factors that influence tribal economic development. However, he does glean a strong sense that the value of tribal ownership of property or the "tools of development" is highly interrelated with tribal sovereignty and of more significance than other variables commonly associated with tribal economic development.⁴⁶

This paper offers insights into how different aspects of culture affect two dimensions of economic development. A cross-section analysis of eighty reservations in the western United States is made using regression techniques to assess the impact of economic, demographic, and cultural factors on the level of economic development and the inequality in income distributions of those reservations. Data on economic and demographic variables contained in the 1990 United States Census are combined with data on six pre-reservation cultural characteristics gathered by Joseph Jorgensen.⁴⁷ The data set analyzed thus permits examination of whether cultural factors have an impact on the economic development of the tribes studied. The combination of contemporary economic and demographic data with historical cultural data also provides insights into the continuity of cultural factors for these tribes. If tribes really are acculturated and have lost their cultural identity, the cultural factors

identified would not be expected to have an impact on current economic development outcomes. Further, the variety of cultural factors compiled by Jorgensen and contained in this paper allow us to move beyond subjective or anecdotal discussions of the impact of culture on economic development. The independent impacts of various cultural characteristics on the levels of economic development and income distributions of the tribes can be examined statistically. In addition, estimation of separate regressions for the level of economic development of a tribe and the inequality in the income distribution of that tribe permits differentiation of the impact cultural factors have on economic development outcomes.

CULTURAL VARIABLES USED IN THE ANALYSIS

The cultural variables used in this study were assembled from Joseph Jorgensen's extensive study of western North American Indians, in which he categorized 172 territorial groups by 443 pre-reservation environmental, linguistic, and cultural characteristics.⁴⁸ Jorgensen committed ten years of research toward systematically analyzing and classifying cultural features of these 172 groups so that explicit comparative analysis could be made. His intention was "to develop a picture of environmental, linguistic, and cultural similarities and differences in aboriginal western North America, and to offer explanations for many of these phenomena."⁴⁹

From this wealth of comparative information contained in the Jorgensen data, cultural variables were selected that might be expected to affect economic outcomes, such as social structure, presence of intergroup reciprocity, and political organization. These pre-contact cultural characteristics were considered to have a potential contemporary influence on the distribution of jobs or access to economic benefits, or otherwise to have an impact on regular sources of income.⁵⁰

The 172 tribal territorial groups were then associated historically with their current reservation locations. The sample used in this analysis was limited to reservations with only one tribe or reservations with more than one tribe that shared the same cultural characteristics as classified by Jorgensen. Thus, those reservations settled by two or more culturally distinct tribes were excluded from the sample, since it would be difficult to assess how such a mixture of cultural backgrounds would influence economic outcomes.⁵¹ Ultimately, a total of eighty reservations met the requirement of cultural uniformity to be included in this analysis. The reservations are identified in Table 1.

The cultural characteristics used in the regression analysis were coded based on Jorgensen's classification of pre-reservation cultural variables of western tribes. Examples of such variables are patterns of descent or settlement. For a given cultural variable, Jorgensen defined the list of possible categories for that variable, and classified each tribe according to those categories. For example, there were three categories for forms of descent: (1) bilateral, (2) patrilineal, and (3) matrilineal.⁵² A tribe's form of descent would fall into one of these three categories. In terms of a regression analysis, we can only capture the impact of being in a specific category on some characteristic of economic development. Capturing that impact is accomplished with dummy variables,

Table 1
Reservations Included in the Analysis*

Acoma Pb	Agua Caliente Rz	Alamo Navajo Rz	Annette Islands Rz
Big Valley Rn	Cahuilla Rz	Canoncito Rz	Carson Colony
Chemehuevi Rz	Cochiti Pb	Coeur d'Alene Rz	Coyote Valley Rz
Dresserville Colony	Fort Apache Rz	Fort Mojave Rz	Fort Yuma Rz
Grindstone Creek Rn	Havasupai Rz	Hopi Rz	Hopland Rn
Hualapai Rz	Isleta Pb	Jemez Pb	Jicarilla Apache Rz
Kootenai Rz	Laguna Pb	La Jolla Rz	Laytonville Rn
Lone Pine Rn	Los Coyotes Rz	Lower Elwha Rz	Lummi Rz
Makah Rz	Manchester Rn	Mescalero Apache Rz	Moapa River Rz
Morongo Rz	Nambe Pb	Navajo Rz	Nez Perce Rz
Paiute of Utah Rz	Pala Rz	Papago Rz	Pauma Rz
Pechanga Rz	Port Gamble Rz	Port Madison Rz	Puyallup Rz
Pyramid Lake Rz	Ramah Navajo Com	Rincon Rz	Robinson Rn
San Carlos Rz	San Juan Pb	San Pasqual Rz	Santa Ana Pb
Santa Clara Pb	Santa Rosa Rn	Santa Ysabel Rz	Santo Domingo Pb
San Xavier Rz	Skokomish Rz	Smith River Rn	Soboba Rz
Southern Ute Rz	Sulphur Bank Rn	Taos Pb	Torres-Martinez Rz
Trinidad Rn	Tuolumne Rn	Uintah & Ouray Rz	Umatilla Rz
Ute Mountain Rz	Viejas Rn	Walker River Rz	Wind River Rz
Yavapai Rz	Ysleta Del Sur Pb	Yurok Rz	Zuni Pb

* Rz represents Reservation, Rn represents Rancheria, Pb represents Pueblo, and Com represents Community.

which were created for all but one of the categories. Thus, if there are three categories, two dummy variables will be created. For example, there are dummy variables for bilateral and matrilineal descent in this analysis. If a tribe practiced the particular trait under one category, the dummy variable for that category will equal one and variables for the other categories will equal zero. If a tribe falls into the excluded category (that is the category without a dummy variable) all dummy variables equal zero. A tribe that had a patrilineal pattern of descent would have zero values for the bilateral and matrilineal dummy variables. Coefficients on dummy variables are interpreted with respect to the excluded category. For example, suppose that the characteristic of economic development being considered is income inequality. The coefficient on, say, a matrilineal variable would be the difference in the level of inequality between tribes with matrilineal forms of descent and tribes with patrilineal forms of descent, since patrilineal descent is the excluded category.

Six cultural concepts were used in the regression. The definitions of these cultural variables are limited to the definitions Jorgensen used in classifying each of these variables. Two variables, the *reciprocity* and *gift-exchange* variables, reflect economic distribution. The reciprocity variable is a dummy variable that equals one if a society practiced balanced or generalized reciprocity in the distribution of food and chattels between communities or extra-local groups.⁵³ It equals zero if there was no extra-local reciprocity. In the words of Jorgensen,

In reciprocity transactions a donor gives something to a recipient, such as food, a basket, or a pot. It is expected that the recipient will give something in return in the future. Balanced reciprocity, which was by far the dominant mode in western North America, was an exchange of equal amounts between donors and receivers. The receiver did not need to repay immediately but was expected to repay at some time. Generalized reciprocity, which occurred in conjunction with balanced reciprocity in northwestern California and in the central and northern subareas of the Northwest Coast, was the practice of a kinship group leader or (in northwestern California) a nominal chief giving much more than they received in return. It was generalized because the kinship group chiefs and village chiefs gave to everyone in their groups.⁵⁴

The *gift-exchange* variable is a dummy variable that equals one if there were gifts of chattel and foods made between or among societies.⁵⁵ "Gifting differs from reciprocity in that gifts were given ostensibly with no strings attached. The giver simply gave to the receiver. In practice, however, it was bad form if the recipient did not give a gift in return at some time."⁵⁶ Reciprocity and gift exchange, in contrast to commodity exchange, create not only economic bonds, but also bonds of a psychological, social, and spiritual nature, reflecting a desire for cooperation and sharing that permeates the economic sphere.⁵⁷ They also work as a leveling device to minimize inequalities within societies where reciprocity is the dominant form of integration.⁵⁸

The pre-reservation political system is captured in *political-hierarchy* and *political-theocracy* variables. The political-hierarchy variable equals one if a tribe had a hierarchical system of subordinate political statuses. The political-theocracy variable equals one if the tribe had authority vested not in secular officials, but in a priesthood, secret society, or other religious functionary.⁵⁹ The excluded category is tribes with non-hierarchical political systems. Differences in political institutions, such as those between democratic and authoritarian traditions or free-market and socialist policies, have been associated with different cultural values regarding inequality and with different distributions of income.⁶⁰

Kinship-unit and *form-of-descent* variables are used to reflect social organization. The hierarchical-kinship-units variable reflects the relationship between demonstrated kinship units in a tribe, and equals one if a tribe had some differentiation among kinship units with respect to prestige, power, or privilege. The excluded category is tribes with non-hierarchical kinship units, where the demonstrated kinship units were not differentiated with respect to prestige, power, or privilege. The no-kinship-unit variable equals one if a tribe had no demonstrated kinship unit.⁶¹ As with political hierarchy, the

presence-of-power differentiation among kinship units may be associated with greater social acceptance of inequality in economic realms. The matrilineal and bilateral variables capture a tribe's form of descent, the matrilineal variable equaling one if a tribe emphasized membership within a descent line traced through females, and the bilateral variable equaling one if a tribe considered a person equally related to kin traced through males or females.⁶² The excluded category is patrilineal tribes emphasizing descent through male lines.

Kinship ties have been directly associated with establishing legitimacy in the access to and use of resources.⁶³ Furthermore, ethnographic studies show that social structure continues to influence resource outcomes despite changes in the specific economic activities of the society.⁶⁴ For example, among the Lower Brule Sioux, "major extended matrilineal families contend for access to tribal government office, and the election winners reward their supporters with access to jobs and program benefits. Here self-interest is embedded within a web of kinship and political loyalties that direct social action toward political accumulation rather than toward entrepreneurial market activity."⁶⁵

Finally, the *sedentary* and *semi-sedentary* variables are intended to capture the impact of pre-reservation settlement patterns on economic organization. The sedentary variable equals one if the tribe lived in permanent settlements throughout the year and for long or indefinite periods of time, and the semi-sedentary variable equals one if the tribe was not migratory and was not sedentary.⁶⁶ The excluded category is migratory tribes. Greater sedentism has been associated with more complex and centralized economic organizations and increasing inequality.⁶⁷

REGRESSION RESULTS

The estimates from two different regressions are presented in this section. The first regression estimates the impact of economic and cultural variables on tribes' levels of economic development (the Development Regression). The second regression estimates the impact of those variables on inequality in the income distributions of the reservations (the Income Distribution Regression). Two different regressions were estimated in order to determine whether cultural characteristics of tribes have differing impacts on the outcomes of economic development.

Before turning to regression results, the econometric analysis and economic and demographic variables used in the regressions are discussed. With the exception of reservation size, the economic and demographic variables used came from the 1990 United States Census. Despite some questions about the accuracy of the 1990 Census in relation to Indian reservations, the data have the benefit of being consistent in the methodology used across reservations for the same time period.⁶⁸

Both regressions were estimated using ordinary least squares. The dependent variable in the Development Regression is real income per capita. Real income per capita represents income per capita on a reservation divided by a state cost-of-living deflator.⁶⁹ Real income per capita is often used as a proxy for a region's level of economic development.⁷⁰

Various measures of income inequality were available as dependent variables for the Income Distribution Regression. The GINI coefficient, a standard dependent variable, was used in Mushinski and Pickering's analysis in 2000.⁷¹ A second measure of inequality was chosen in this study primarily to confirm the robustness of these earlier findings. This study uses the percentage of total income on a reservation obtained by the households in the bottom 40 percent of the income distribution on the reservation. Higher percentages of total income held by those households would suggest a more equal distribution. In order to account for the limited range of the dependent variable in the Income Distribution Regression, which varies only between zero and 0.4, the Income Distribution Regression was modeled as a logit model.⁷² The dependent variable in the Income Distribution Regression was $\ln(P/[0.4-P])$, where P is the percentage of total income held by households in the bottom 40 percent of the income distribution. The unit of observation for the inequality measure is households and families headed by a Native American person, or in the case of married families, a family with a Native American spouse.

Several economic and demographic variables were included in the analysis. Three variables capture the level of human capital on a reservation. Two of those variables reflect education attained by tribal residents. *EDL* is a variable identifying the percentage of American Indian, Eskimo, and Aleut individuals twenty-five years of age and older who have an elementary education or less. *EDH* is the percentage of those people who have a college degree or greater. The excluded category is the percentage of those individuals with more than an elementary education but less than a college education. Age is the median age of American Indian, Eskimo, and Aleut persons on a reservation. It may serve, in part, as a proxy for the level of experience of tribal residents. We would expect it to have a positive sign because greater experience should translate into greater income. *Labor force participation* is the percentage of American Indian, Eskimo, and Aleut persons sixteen years of age and older who are in the labor force. *Full time* is the percentage of such persons who were working thirty-five or more hours a week during the Census reference. *Managerial and professional specialty* is the percent of employed American Indian, Eskimo, and Aleut people sixteen years of age and older who worked in managerial and professional specialty occupations. *Manufacturing* is the percentage of employed persons who worked in manufacturing industries. *Population* is the number of American Indian, Eskimo, and Aleut individuals on a reservation (in thousands). *Reservation size* is the size of the reservation (in millions of acres). Real income per capita is included in the Income Distribution Regression because Simon Kuznets has hypothesized an inverse relationship between inequality and economic development.⁷³

Regression results are presented in Table 2. The Development Regression is considered first. Two sets of results in the Development Regression are discussed. First, economic variables which would be expected to affect a reservation's level of development have an impact on development. The results indicate that human capital, embodied in the education and age variables, matters. Reservations with more college graduates have greater real income per capita, while reservations with more residents who

Table 2
Economic Development and Income Distribution Regressions^a

<i>Independent Variable</i>	<i>Development Regression</i>	<i>Income Distribution Regression</i>
Intercept	0.408 (1.320)	-1.45* (0.38)
EDL	-3.31* (1.28)	0.193 (0.55)
EDH	10.17* (4.03)	0.40 (1.14)
Age	0.079* (0.021)	0.016 (0.012)
Labor Force Participation (%)	2.43** (1.42)	0.75 (0.61)
Full Time (%)	1.65** (0.89)	0.35 (0.41)
Managerial & Professional Specialty (%)	0.723 (1.63)	0.08 (0.68)
Manufacturing (%)	3.02* (1.37)	-0.72 (0.59)
Population (in 1000s)	0.015 (0.037)	0.026* (0.011)
Reservation Size (millions of acres)	-0.14 (0.37)	-0.30* (0.12)
Real Income Per Capita (Thousands of dollars)		0.014 (0.051)
Reciprocity	-0.50 (0.59)	0.43* (0.16)
Gift Exchange	0.22 (0.51)	-0.21 (0.15)
Semi-Sedentary	-0.48 (0.75)	0.08 (0.10)
Sedentary	-1.4 (0.85)	0.20 (0.25)
Matrilineal	-0.35 (0.55)	-0.31 (0.19)
Bilateral	-0.05 (0.45)	-0.53* (0.15)
Hierarchical Kinship Units	0.30 (0.48)	-0.30** (0.16)
No Kinship Unit	0.37 (0.43)	0.13 (0.14)
Political Theocracy	1.07 (0.75)	-0.27 (0.25)
Political Hierarchy	0.74 (0.53)	-0.43* (0.22)
R ²	0.613	0.413

* Statistically significant at the 5 percent level, two-sided test.

** Statistically significant at the 5 percent level, one-sided test.

^a White heteroskedasticity corrected standard errors were used in the Income Distribution Regression because a Breusch-Pagan-Godfrey test (using all independent variables as regressors in the test) indicated the presence of heteroskedasticity.

have an elementary education or less have lower real income per capita. Reservations with greater median age have greater levels of real income per capita. Further, greater labor force participation produces higher levels of income, as does a greater percentage of total employment in manufacturing. Second, the regression results indicate that none of the cultural variables has an impact on a reservation's level of development. The implications of this finding are discussed below.

The estimates in the Income Distribution Regression are an interesting contrast with the Development Regression results. The economic variables that are statistically significant in the Development Regression are not statistically significant in the Income Distribution Regression. Further, the demographic variables reservation size and population, which were not statistically significant in the Development Regression, are statistically significant in the Income Distribution Regression. The negative sign on the reservation size variable in the Income Distribution Regression might indicate that while reservation size has no impact on per capita income, larger reservations are more likely to have isolated pockets of notable economic activity and similar pockets of little economic activity, thereby producing greater inequality.

The Income Distribution Regression indicates that cultural characteristics of tribes have an impact on their income distributions. Four of the six cultural characteristics in the regression have a statistically significant impact on the income distributions of the reservations studied.⁷⁴ The statistically significant variables also have expected signs. Each of the statistically significant variables will now be analyzed. The regression result for each variable will be elucidated with an example that contrasts tribes which differ only with respect to the cultural characteristic being analyzed but which are otherwise the same for the other cultural characteristics included in this study.

The coefficient estimates on the hierarchical-kinship-units variable suggest that greater hierarchy produces greater inequality. For example, the Lummi and Makah tribes had hierarchical kinship units in the pre-contact period, and currently the bottom 40 percent of their populations hold 11.7 percent and 12 percent, respectively, of personal income on the reservation. In contrast, the Umatilla and Jicarilla Apache reservations had non-hierarchical kinship units, and currently the bottom 40 percent of their populations hold 13.6 percent and 16.9 percent, respectively, of personal income on the reservation, reflecting less income inequality.

The coefficient estimates on the political-hierarchy variable also suggest that greater hierarchy produces greater inequality. In relation to political hierarchy, the San Juan and Santa Clara tribes both had a hierarchical system of subordinate political statuses in the pre-contact period, and currently the bottom 40 percent of their populations hold 14.5 percent and 15.9 percent, respectively, of personal income on the reservation. In contrast, the Trinidad and Big Valley rancherías had non-hierarchical political systems, and currently the bottom 40 percent of their populations hold 29.5 percent and 27.6 percent, respectively, of personal income on the reservation, reflecting less income inequality.

The positive sign on the reciprocity variable indicates that the type of reciprocity embodied by the variable translates into greater equality in income

distributions. For example, the Yavapai practiced balanced reciprocity in the distribution of food and chattels between communities in the pre-contact period, and currently the bottom 40 percent of the population holds 19.9 percent of the personal income on the reservation. In contrast, the Navajo and the Canoncito reservations had no extra-local reciprocity, and currently the bottom 40 percent of their populations holds only 8.9 percent and 7.4 percent, respectively, of the personal income on the reservation, indicating greater income inequality.

The negative estimated coefficient on the bilateral variable is consistent with observations of greater inequality among cultures with bilateral descent. For example, the Skokomish and Port Madison reservations both practiced bilateral descent in the pre-contact period, and currently the bottom 40 percent of the populations holds 12.7 percent and 12 percent, respectively, of the personal income on the reservation. In contrast, the patrilineal tribes of the La Jolla Reservation and the Smith River Rancheria currently have a distribution of 21.6 percent and 25 percent, respectively, of personal income on the reservation to the bottom 40 percent of their populations, indicating less inequality in income distribution.

The results regarding cultural variables in the two sets of regressions have several implications. The contrasting results regarding cultural factors in the regressions indicate that culture affects the various dimensions of economic development differently. While cultural factors may not affect the level of development, they do affect the distribution of the product of that development. The regression results also support the observation of Smith that development as production of wealth and income must be distinguished from distribution of that income to achieve culturally specific goals.⁷⁵

The Income Distribution Regression results suggest that pre-reservation cultural characteristics and concepts of traditional social, political, and economic structuring continue to have an impact on economic distribution and income inequality. Thus, these results support the growing body of literature arguing that earlier accounts of Native American acculturation were overstated, and that critical aspects of traditional culture were being expressed albeit in new economic and ecological environments.⁷⁶ This study also confirms anecdotal impressions of cultural continuity, but goes beyond the search for material or ceremonial practices as proof. While material culture and ritual practices evolve over time, more fundamental values about how society should work, the goals for groups and individuals, the priorities for action, and the obligations one has to community and family continue to shape the outcomes of completely new forms of economic practice.⁷⁷

The statistical insignificance of all cultural factors in the Development Regression suggests that viewing culture as a barrier to economic development may be inappropriate. Since the early days of modernization theory, development analysts have been plagued by the question of whether traditional cultures were the main obstacle to economic take-off for underdeveloped countries.⁷⁸ Despite the insights of dependency theory and world-systems perspectives, the misplaced notion continues to resurface that tribes

would be better off if they were simply forced to integrate into the mainstream.⁷⁹ This study indicates that there is no statistically significant relationship between cultural factors and a reservation's real per capita income. Rather, the importance of culture lies in the influence it has over the way that development takes place, such as how the income from that development is distributed.

The statistical significance of a variety of cultural factors in the Income Distribution Regression reiterates that variability among tribes is both vast and important. Thus, generalizing about "Indian" cultural traits is misleading and potentially detrimental to understanding the real values and priorities at work within any given reservation community. This research confirms the findings of other scholars that cultural characteristics must be considered in pursuing economic development policies. This variability is likely to increase rather than decrease as tribes position themselves to embrace fully the self-determination potential built into more and more areas of reservation administration, like Bureau of Indian Affairs (BIA) 638 contracting, Housing and Urban Development (HUD) housing regulations, and tribal administration of welfare under Temporary Aid to Needy Families (TANF).⁸⁰ Policies should continue to give tribes broader reign in determining the approach they want to take in economic development planning. This will allow cultural concepts to play a role in the distribution of economic and political resources, rather than forcing some uniform assimilation into mainstream US values that support political equality and economic inequality.⁸¹ As Pommersheim has written, "[e]conomic planning and development can only be successful if there is an authentic commitment to understand history, culture, and individuals and communities at the grass-roots level."⁸²

It should be reiterated that this study focuses on western tribes. These findings cannot necessarily be extrapolated to tribes east of the Mississippi because the tribes analyzed here were arguably less disrupted in the long-term than those other tribes.⁸³ Among the western tribes, the Pueblos were able to remain in their original locations, and many of the Plains tribes had no ongoing or direct contact with Euro-Americans until the 1800s. Furthermore, the larger reservations are located in the West, often within their traditional geographic area, creating more of a physical barrier to extensive mainstream intrusions.

CONCLUSION

This study represents an attempt to determine whether pre-reservation culture affects economic development and, if so, to discern the impacts of culture on the different dimensions of economic development. The regression results support the observations of other scholars that pre-reservation cultural characteristics continue to manifest themselves in contemporary society. The results also indicate that the impact of those characteristics on economic outcomes are not uniform. While culture does not appear to serve as a barrier to economic development, it does affect the distribution of income

obtained from development. Further, various cultural characteristics have differing impacts on income distributions. The results of this study also suggest there are potential gains from moving from anecdotal observations to the type of cross-tribal analysis undertaken here.

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NOTES

1. See Duane Champagne, "Economic Culture, Institutional Order, and Sustained Market Enterprise: Comparisons of Historical and Contemporary American Indian Cases," in *Property Rights and Indian Economies*, ed. Terry L. Anderson (Lanham, MD: Rowman and Littlefield Publishers, Inc., 1992), 195–213; Stephen Cornell and Joseph Kalt, "Reloading the Dice: Improving the Chances for Economic Development on American Indian Reservations," in *What Can Tribes Do? Strategies and Institutions in American Indian Economic Development*, eds. Stephen Cornell and Joseph Kalt (Los Angeles: UCLA American Indian Studies Center, 1995), 1–59; Dean Howard Smith, "The Issue of Compatibility Between Cultural Integrity and Economic Development among Native American Tribes," *American Indian Culture and Research Journal* 18:2 (1994): 177–205.

2. See Diane Duffy and Jerry Stubben, "An Assessment of Native American Economic Development: Putting Culture and Sovereignty Back in the Models," *Studies in Comparative International Development* 32:4 (Winter 1998): 52–78.

3. See Fergus Bordewich, *Killing the White Man's Indian: Reinventing Native Americans at the End of the Twentieth Century* (New York: Anchor Books, 1997); Everett E. Hagen, *On the Theory of Social Change* (Honewood, IL: The Dorsey Press, 1962).

4. See L. Broom, B. J. Siegel, Evon Z. Vogt, and J. B. Watson, "Acculturation: An Exploratory Formulation," in *Beyond the Frontier: Social Process and Culture Change*, ed. Paul Bohannan and F. Plogg (New York: Doubleday, 1967), 255–286; Ralph Linton, *Acculturation in Seven American Indian Tribes* (New York: D. Appleton-Century Company, 1941); Edward H. Spicer, ed., *Perspectives in American Indian Culture Change* (Chicago: University of Chicago Press, 1961).

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12. Smith, "The Issue of Compatibility," 180, 202 n9.

13. See Cornell and Kalt, "Sovereignty and Nation-Building," 189–191; Cornell and Kalt, "Reloading the Dice"; Stephen Cornell and Joseph Kalt, "Pathways from Poverty: Economic Development and Institution Building on American Indian Reservations," *American Indian Culture and Research Journal* 14:1 (1990): 89–125; Cornell and Kalt, "Where Does Economic Development Really Come From?"; Joseph Kalt and Stephen Cornell, "The Redefinition of Property Rights in American Indian Reservations: A Comparative Analysis of Native American Economic Development," in *American Indian Policy: Self-Governance and Economic Development*, eds. Lyman H. Letgers and Fremont J. Lyden (Westport, CT: Greenwood Press, 1994), 121–150. See also Duffy and Stubben, "An Assessment," 57; Cornell and Gil-Swedberg, "Sociohistorical Factors," 240–241.

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16. Theresa Julnes, "Economic Development as the Foundation for Self-

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20. Cornell and Kalt, "Where's the Glue?," 5. See also Cornell and Gil-Swedberg, "Sociohistorical Factors," 243–244, 261.

21. Ann Swidler, "Culture in Action: Symbols and Strategies," *American Sociological Review* 51 (April 1986): 273–286, 276, 277, 283.

22. See, for example, L. Broom et al., "Acculturation"; Linton, *Acculturation*; Spicer, *Perspectives in American Indian Culture Change*.

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27. See William Y. Adams, "Navajo Ecology and Economy: A Problem in Cultural Values," in *Apachean Culture History and Ethnology, Anthropological Papers of the University of Arizona* 21, eds. Keith H. Basso and Morris E. Opler (Tucson: University of Arizona Press, 1971), 77–81; Richard O. Clemmer, "Seed-Eaters and Chert-Carriers: The Economic Basis for Continuity in Historic Western Shoshone Identities," *Journal of California and Great Basin Anthropology* 13:1 (1991): 3–14; Cornell and Gil-Swedberg, "Sociohistorical Factors," 239–268; Wilma Dunaway, "Rethinking Cherokee Acculturation: Agrarian Capitalism and Women's Resistance to the Cult of Domesticity, 1800–1838," *American Indian Culture and Research Journal* 21:1 (1997): 155–192.

28. Duffy and Stubben, "An Assessment," 62; Castile, "Federal Indian Policy," 223. See also Smith, "The Issue of Compatibility," 192, 199 ("That [Native American cultures] still exist as identifiable, distinct cultures after the previous assimilation and genocidal policies of the federal government proves their viability and strength. . . . [E]ven two hundred years of conflicting federal policy—during which Indians were pressured to assimilate but, at the same time, were kept isolated in order to maintain their sovereignty—have not extinguished the vitality of indigenous cultures");

Stubben, "American Indian Values," 60–61 ("Indications that tribal ownership of the tools of tribal economic development is significantly tied to such development is especially interesting in terms of the ability of such Indian values to survive after several attempts by the federal government and others to assimilate Indians into American society. . . . Even after several attempts to eliminate several tribal values, many of these values have not only survived but in the case of tribal economic development appear to be increasing in influence on Indian reservations at the present time").

29. Adams, "Navajo Ecology and Economy," 77.

30. Cornell and Kalt, "Where's the Glue?" 17; Cornell and Kalt, "Where Does Economic Development Really Come From?" 406 n4.

31. Champagne, "Economic Culture," 195–213; Cornell and Gil-Swedberg, "Sociohistorical Factors," 258–259; Cornell and Kalt, "Where's the Glue?"; Duffy and Stubben, "An Assessment," 54; Pommersheim, "Economic Development in Indian Country," 197, 215–216; Smith, "The Issue of Compatibility," 178; Dean Howard Smith, "Native American Economic Development: A Modern Approach," *Review of Regional Studies* 24:1 (Summer 1994): 87–102, 87–88; Wilkins, "Modernization, Colonialism, Dependency," 396–397.

32. Anderson and Smith, "Managing Tribal Assets," 143–144; Chandler Morse, "The Functional Imperatives," in *The Social Theories of Talcott Parsons: A Critical Examination*, ed. Max Black (Carbondale: Southern Illinois University Press, 1976), 100–152; Talcott Parsons, *Essays in Sociological Theory* (New York: Free Press, 1954); Chung-Ron Pi, *Expression of Culture in Economic Development: A Cross Country Analysis* (Aldershot, UK: Avebury, 1996), 6; Karl Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time* (Boston: Beacon Press, 1944); Smith, "The Issue of Compatibility," 182–183; Swidler, "Culture in Action."

33. Pommersheim, "Economic Development in Indian Country," 213.

34. Smith, "The Issue of Compatibility," 178, 180; Anderson and Smith, "Managing Tribal Assets," 140–141.

35. Cornell and Kalt, "Sovereignty and Nation-Building," 196, 201–205; Duffy and Stubben, "An Assessment," 54.

36. Cornell and Kalt, "Where's the Glue?" 7.

37. Duffy and Stubben, "An Assessment," 72, citing Ronald Inglehart, *Cultural Shift in Advanced Industrial Society* (Princeton: Princeton University Press, 1990).

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40. Jonathan Kelley and M. D. R. Evans, "The Legitimation of Inequality: Occupational Earnings in Nine Nations," *American Journal of Sociology* 99:1 (July 1993): 75–125.

41. Duffy and Stubben, "An Assessment," 66.

42. Anderson and Smith, "Managing Tribal Assets," 147–148.
43. Cornell and Kalt, "Where's the Glue?" 9.
44. *Ibid.*, 18–19, 23–24.
45. Duffy and Stubben, "An Assessment," 66–67.
46. Stubben, "American Indian Values," 57–59.
47. Jorgensen, *Western Indians*.
48. *Ibid.*
49. *Ibid.*, 1.
50. Other possible cultural variables might be expected to affect economic outcomes existed. Because those variables exhibited little or no variation across the reservations studied, those variables could not be included in the analysis. They are subsumed within the intercept of the regressions estimated. Further, the income measure used to obtain the inequality variable relates to regular sources of income only. The income data gathered by the Census includes a variety of formal or regular sources of income, such as wage, salary, and self-employment income. Income from non-regular sources, like gifts, ceremonial exchanges, bartered goods and services, or other lump-sum receipts, are not included in the Census data.
51. Cornell and Gil-Swedberg, "Sociohistorical Factors," 244, 249–251.
52. Jorgensen, *Western Indians*, 606. Jorgensen included a final category for each characteristic defined as "No information." Reservations were excluded from this analysis if no information was available for the cultural variables considered.
53. Jorgensen, *Western Indians*, 139, 141, 419, 597.
54. *Ibid.*, 139.
55. *Ibid.*, 140, 425, 599.
56. *Ibid.*, 140.
57. Duffy and Stubben, "An Assessment," 62; Karl Polanyi, "The Economy as Instituted Process," in *Trade and Market in the Early Empires*, eds. Karl Polanyi, Conrad Arensberg, and Harry Pearson (Glencoe, IL: The Free Press, 1957), 243–270; Pommersheim, "Economic Development in Indian Country," 213–215.
58. Eleanor Leacock, "Women's Status in Egalitarian Society: Implications for Social Evolution," *Current Anthropology* 19:2 (June 1978): 225–259; George Wenzel, "Ningiqtuq: Resource Sharing and Generalized Reciprocity in Clyde River, Nunavut," *Arctic Anthropology* 32:2 (1995): 43–60; Yunxiang Yan, *The Flow of Gifts: Reciprocity and Social Networks in a Chinese Village* (Stanford, CA: Stanford University Press, 1996).
59. Jorgensen, *Western Indians*, 489, 610.
60. Kelley and Evans, "The Legitimation of Inequality."
61. Jorgensen, *Western Indians*, 468, 607.
62. *Ibid.*, 174–175, 462, 606.
63. Clemmer, "Seed-Eaters"; Lesure, "The Constitution of Inequality."
64. Adams, "Navajo Ecology and Economy"; Clemmer, "Seed-Eaters."
65. Champagne, "Economic Culture," 203–204, citing Ernest Schusky, *The Forgotten Sioux: An Ethnohistory of the Lower Brule Reservation* (Chicago: Nelson-Hall, 1975).
66. Jorgensen, *Western Indians*, 161, 164, 444, 602.
67. *Ibid.*, 161, 164; John Bodley, *Cultural Anthropology: Tribes, States and the Global System*, Second Edition (Mountain View, CA: Mayfield Publishing Company, 1997).
68. Vinje, "Native American Economic Development on Selected Reservations," 428.
69. Cost-of-living deflators were contained in Walter W. McMahon, "Geographical

Cost of Living Differences: An Update," *American Real Estate and Urban Economics Association Journal* 19:3 (Fall 1991): 426–450.

70. The vast literature concerning Kuznet's hypothesis regarding development and income inequality uses real gross domestic product or real income per capita as a measure of development. Simon Kuznets, "Economic Growth and Income Inequality," *American Economic Review* 45 (1955): 1–28.

71. Mushinski and Pickering, "Inequality in Income Distributions."

72. See Damodar Gujarati, *Basic Econometrics*, Third Edition, 554–556, (New York: McGraw-Hill, Inc., 1995); Sudhir Anand and S.M.R. Kanbur, "Inequality and Development: A critique," *Journal of Development Economics* 41 (1993): 19–43, 29.

73. Kuznets, "Economic Growth and Income Inequality." Reported regressions include Real Income Per Capita in linear form. F tests rejected inclusion of a quadratic term for Real Income Per Capita in the Income Distribution Regression.

74. These results are generally robust to changes in the specification of the regression equation. If, for example, the sedentary and semi-sedentary variables are excluded from the regression, only the hierarchical-kinship-units variable loses statistical significance.

75. Smith, "The Issue of Compatibility."

76. Dunaway, "Rethinking Cherokee Acculturation," 165, 182.

77. Adams, "Navajo Ecology and Economy," 77–81; Swidler, "Culture in Action," 395–396.

78. Wilkins, "Modernization, Colonialism, Dependency," 392–397.

79. See Bordewich, *Killing the White Man's Indian*; Hagen, *On the Theory of Social Change*.

80. Krepps, "Can Tribes Manage"; National American Indian Housing Council, "Native American Housing Assistance and Self-Determination Act of 1996," *Pathways News* 16 (December 1996): 1–2; Kathleen Pickering, "Alternative Economic Strategies in Low-Income Rural Communities: TANF, Labor Migration, and the Case of the Pine Ridge Indian Reservation," *Rural Sociology* 65:1 (March 2000): 148–167, 152.

81. Kelley and Evans, "The Legitimation of Inequality," 112–116.

82. Pommersheim, "Economic Development in Indian Country," 216.

83. See Franz L. Wojciechowski, "Big Business and Modern Eastern Algonquian Indian Identity: the Casino Connection," *European Review of Native American Studies* 11:2 (1997): 39–42.