

**The Wealth of Indian Nations:
Economic Performance and Institutions on Reservations**

by Terry L. Anderson and Dominic P. Parker*

6/01/2004

Abstract: It is said that a rising tide raises all boats, but that has not been true for American Indians. Despite recent growth partly due to gambling, per capita income for Native Americans living on reservations in 1999 was \$7,846 compared to a U.S. average of \$21,587. Why does this bastion of poverty persist in a sea of wealth? Just as a growing number of studies show that private property, a consistent rule of law, and limited government are crucial for encouraging investment in the developing world, we argue that the same holds for reservation economies. Our preliminary empirical analysis provides evidence in support of these arguments.

Introduction

From first contact, Europeans struggled with how to interact with the indigenous population. When the Pilgrims landed, there was little choice. Out of supplies and outnumbered, they had to act peacefully to survive and indeed were able to gain substantially from trading with the Indians. Eventually formal government caught up with the early settlers in the New World and tried to organize relations with the Indians. In particular, the British Crown attempted to keep local colonies from negotiating with Indians, tried to avoid conflict by recognizing Indian land claims, and formed alliances with tribes against other colonizing nations.

* This draft was prepared for the 2004 WEAI Annual Conference. Anderson is the Executive Director of PERC and Senior Fellow, Hoover Institution. Parker is a Research Associate at PERC. We thank Tony Cookson for excellent research assistance. This is a preliminary draft. Please do not cite without author's permission.

After the Revolutionary War, the new national government had to develop its own Indian policy with respect to Indians. Chief Justice John Marshall set the stage for present Indian policy by asserting that tribes were sovereign nations. In 1831 he wrote in his famous *Cherokee Nation v. Georgia* opinion that Indian tribes were “nations within a nation,” but he went on to call them “domestic dependent nations” implying that they had alienated their power to negotiate with foreign nations by virtue of treaties with the federal government. While implying that the tribes had retained their internal powers to govern themselves, Marshall described the relationship between tribes and the United States as “that of a ward to his guardian.” Under this interpretation, the federal government attempted to monopolize treaty negotiations with tribes in order to reduce conflicts over land and forced the tribes into a subservient position by declaring them “wards.”

As wards, the federal government ultimately took control of tribal assets by holding them in trust. Tribal sovereignty might have allowed Indians to devise their own property rights and governance structures had the federal government not established the trust relationship with Indians and had it truly been willing to grant full autonomy to Indians to control their property. The Dawes Act or Allotment Act passed in 1887 had the potential to unshackle Indians from trusteeship by allotting reservation lands to individual Indians in fee simple ownership. But in 1934 the possibility of fee simple ownership ended with the passage of the Indian Reorganization Act. Since 1934 the Department of Interior has struggled to find ways to fulfill its trust responsibility and to eliminate corruption, but no one would argue that there has been much success. Not only does the trust authority raise the cost of managing Indian lands, timber, minerals, and wildlife, it provides opportunities for corruption in the use of those resources and

the funds generated therefrom. Because the federal government basically controls tribal assets, former Secretary of Interior James Watt in 19xx called reservations bastions of socialism [get exact quote], He was severely chided for his insensitivity, but his assessment was close to reality. With so many rents controlled by the government, it is not surprising that corruption prevails. Hence the Department of Interior and its Bureau of Indian Affairs (BIA) have been embroiled in a lawsuit for several years with various secretaries of interior being held in contempt of court and threatened with criminal penalties. [references]

Despite the fact that many reservations are resource rich and receive tremendous transfer payments from federal assistance programs, nearly all reservations remain among the lowest of income strata in the United States. For example, Stephen Cornell and Joseph Kalt (2000, 444) estimate that the Crow tribe in Montana has \$27 billion in tribal assets or over \$3 million per tribal member, but that these assets earn a paltry 0.01 percent. Fifty-five percent of Crow tribal members receive public assistance.

A full explanation of why Indians have remained the poorest of America's minorities has remained elusive. As with much economic development, early focus on reservation economies was on physical and human capital. The argument was that Indians were left with poor land and little capital and without the education to make their land or capital productive. Given the fact that many tribes are resource rich, this explanation seems implausible and thus begs for other variables, especially the institutional environment in which resource allocation decisions are made.

This chapter focuses on this institutional environment and how it influences economic performance on reservations. It follows the lead of a growing, robust literature which argues that

institutions, formal and informal, are the primary reason that economies prosper or stagnate. After providing a brief history of Indian institutional history, we survey the literature on economic performance and property rights in developing countries. Within this context, we consider the ways in which property rights and the rule of law influence tribal economies. This institutional theory of economic development guides our empirical analysis of Indian income as it relates to institutional and other control variables. Though our empirical findings support the theory that institutions and economic performance are inextricably related, getting from here to there, especially in the context of American Indian politics, is very difficult.

A Brief History of Federal Indian Policy

[Add lead-in paragraph here]

American Indian Property Rights¹

Hollywood depictions of pre-Columbian Indians living in communal organizations where individuals contributed to the best of their abilities and share equally in the fruits of communal endeavors offer a mystical, if not a mythical, view of how tribes were organized. “How can you buy or sell the sky, the warmth of the land?” asked Chief Seattle in a speech supposedly delivered by him in the 1850s (see Wilson 1992). The impression from this speech is that property rights and markets were inimical to an Indian culture that revered nature and her bounty. It is now well-known, however, that these words are not actually those of Chief Seattle, but rather those of Ted Perry, who paraphrased a translation of the speech, adding “a good deal more, particularly modern ecological imagery” (Wilson 1992, 1457). Though Perry, not Chief

Seattle, wrote that “Every part of the Earth is sacred to my people,” this mystical philosophy has been accepted as the standard explanation for why Indians did not despoil nature and foul their environment. As Boyce Timmons put it, “because of their cultural heritage, American Indians have a special relationship to all things, a oneness or unity of body and spirit that has made it possible for them to endure unbelievable hardships and oppression” (Timmons 1980, ix).

This mystical, mythical image ignores the rich institutional history of American Indians. Though it is difficult to fit pre-Columbian Indian institutions into the modern context of law, government, and property rights, anthropological evidence suggests that they understood the importance of institutions for getting the incentives right. Frank Speck (1939, 259) referred to Indian property rights as “naked possession” and concluded that this possession led to “the maintenance of a supply of animal and vegetable life, methods of insuring its propagation to provide sources of life for posterity, the permanent family residence within well-known and oftentimes blazed property boundaries, and resentment against trespass by the family groups surrounding them who possessed districts of their own.” Personal property was nearly always privately owned because it required a significant investment of time to produce and maintain. Clothes, weapons, utensils, and housing were often the property of the women who made them. The teepee, for example, was owned by the women who collected the hides (usually between eight and twenty hides), tanned and scraped them, and sewed them together in a collective effort. Because considerable time was spent chipping arrow heads and constructing bows and arrows, these objects were also privately owned. High-quality stone for arrow heads and knives was also privately owned, as was wood for bows that came from distant locations and could only be obtained only through long-distance trade. In short, American Indians understood the importance

of rules to limit access to the commons and devoted resources to establishing property rights when it was economical to do so.

Even after they were confined to reservations, but before the national government dictated what property rights they would have, American Indians developed institutions that enabled them to produce with the resources they had. For example, the Blackfeet began accumulating individually owned but communally herded cattle. When the federal bureaucracy took control of how property rights were held, “the tradition of individual ownership was so well established that Indians resisted government efforts to establish common property from 1910 to 1920” (Carlson 1992, 74). The more sedentary tribes such as the Cherokee “showed much aptitude and success in farming” (Hurt 1987, 230). Among tribes with an agricultural tradition, “the Indian concept of land tenure enabled various villages to make the best possible use of the land in order to meet their own specific needs” (Hurt 1987, 75).

The Allotment Era

Institutional autonomy, however, was short-lived as Congress and federal agencies began molding property rights from Washington. With the Allotment Act of 1887, the government made its first major attempt at bureaucratic control over how reservation land would be allocated. Under this act, reservation land was to be allotted to individual Indians in much the same way that the federal domain was to be transferred to non-Indians under the rules of the homestead acts. Backers of the Allotment Act touted it as a necessary step for improving the welfare of Indians. “Surplus land,” that is reservation land in excess of what was necessary to give individuals the minimum parcel (usually 160 acres), was opened to homesteading by non-Indians. Until allottees were deemed “competent,” their land was held in trust. When it was freed

from trust it could be alienated in any way the Indian owner saw fit including its sale to non-Indians. As Senator Dawes himself stated, “Till this people will consent to give up their lands, and divide them among their citizens so that each can own the land he cultivates, they will not make much progress” (quoted in Otis 1973, 10-11).

The result, however, was that much of the Indian land was sold to non-Indians. Between 1887 and 1933, Indian land holdings declined from 136,394,895 acres to 69,588,421 acres, prompting passage of the Indian Reorganization Act in 1934. Under this act, those lands that had not been released from trusteeship were to remain under the trust authority of the BIA.

Hence, reservations were left with a mosaic of land tenure including fee simple land that was released from trusteeship prior to 1934, individual trust land that was allotted to individual Indians but not released from trusteeship, and tribal trust land that was owned by the tribe but held in trust. Owners of fee simple lands have complete autonomy over their land use decisions within the limits of the law. Production decisions regarding these lands are controlled by the owner, and the land can be sold or encumbered as collateral in the capital market. In contrast to fee simple land tenure, trust lands are subject to regulation by the BIA. It grants or denies permission to change land use, approves lease arrangements, and agrees to capital improvements. When held in trust, land cannot be sold and cannot be encumbered as collateral for loans. Making matters worse, individual trust lands have often been inherited many times over, leaving multiple owners, all of whom must agree on land management decisions. This “fractionation” or “heirship” problem increases the costs of establishing a clear owner and manager who can control land use decisions and reap the benefits of good management. In the case of tribal trust land, management decisions are made by tribal governance institutions, which further reduce any

individual decision maker's incentive to maximize the net value of production. For example, Gary Libecap and Ronald Johnson (1980, 83) conclude that the politics of the Navajo Tribal Council and its grazing committees have essentially legislated "a common property condition for the range" wherein access is open to all tribal members and overuse occurs. Given these constraints, we would expect the higher transaction costs associated with management decisions to thwart optimal land use decisions.

This three-part tenure system—fee simple, individual trust, and tribal trust—yields very different productivity for several reasons. First, because the costs of organizing production under fee-simple tenure are lower than under individual or tribal trust tenure, the fee-simple owner's choice of a mix of land, labor, and capital mix should be approximately optimal. Second, because trust constraints raise the cost of capital by restricting the ability of owners to transfer land title, productivity should be lower on trust lands. Third, because the returns from individual and tribal trust lands are distributed among many owners, each has less incentive to monitor land management thus making output lower. Finally, because trust land cannot be freely alienated, the size of farms and ranches remain too small to be optimally productive (see Trosper 1978). For all of these reasons, we would expect the legacy of the allotment process and trusteeship to play an important role in reservation productivity.

The Termination Era and Public Law 280

The abolishment of the Allotment Act signaled a major shift in federal Indian policy. Led by BIA commissioner John Collier who served under the administration of Franklin D. Roosevelt, reformers sought to end assimilation policies. "Rather than aiming to destroy tribalism, Collier and other New Deal era reformers sought to revive tribal governing structures

through the Indian Reorganization Act (IRA) 1934" (Getches et. al. 1998, 192). The IRA augmented tribal authority over tribal lands and resources. The IRA also permitted tribes to enact their own tribal codes and constitutions (although most tribal constitutions were drafted by BIA officials who used a template constitution).

The resurgence in self-governance put pressure on tribal governments to manage resources responsibly and to create an environment that encouraged investment. Before it was put to the test, however, tribal sovereignty on some reservations was stripped away by Congress. Public Law 280 legislation, enacted in 1953, epitomized the prevailing Indian policy of the termination period (about 1945 to 1961). During this period, Congress passed numerous resolutions seeking to make Indians subject to the same "privileges and responsibilities" as ordinary U.S. citizens (Getches et. al. 1998, 205).

Prior to 1953 tribal courts had the authority to adjudicate most civil disputes and some minor criminal offenses arising in Indian Country. Public Law 280 curtailed tribal jurisdiction and extended state jurisdiction over reservation affairs in Alaska, California, Minnesota, Nebraska, Oregon, and Wisconsin. Congressional testimony implies that reservations in these states were targeted because they were perceived to lack adequate tribal forums and to have rampant lawlessness. Tribes in the "mandatory" Public Law 280 states did not have the opportunity to consent, although a few successfully protested and retained their tribal jurisdiction (see Goldberg-Ambrose 1997).²

The legislation gave other states the option to assume Public Law 280 jurisdiction. The procedure for doing so, however, was complicated by a variety of legal uncertainties (see Cohen 1982). Some states had disclaimed jurisdiction over Indian country in their constitutions as a

prerequisite to acquiring statehood. Would these states need to amend their constitutions to adopt Public Law 280? Other states wished to assume jurisdiction over some of the affairs named in the legislation. Was the assumption of partial jurisdiction allowed under the legislation? Furthermore, some states conditioned their assumption of jurisdiction on tribal consent. How was tribal consent to be obtained and how long would it be valid?

Supreme Court decisions validated the assumption of partial jurisdiction under Public Law 280, deemed constitutional disclaimers unnecessary as a matter of federal law, and clarified other legal uncertainties.³ Taking into account these Supreme Court decisions and considering state legislative actions, Florida, Idaho, Iowa, and Washington appear to have most credibly assumed jurisdiction over civil disputes arising between Indians and non-Indians on the reservation (Cohen 1982). Tribal authority to adjudicate such cases remains intact in many states with large Native American populations including Arizona, New Mexico, Montana, North Dakota, and South Dakota [Note: future research is needed to verify these points].

To most scholars of American Indian law, Public Law 280 is a profound and deleterious example of Congress stripping tribal sovereignty without tribal consent (see Goldberg-Ambrose 1997, Jiménez and Song 1998, Wildenthal 2003). Carole Goldberg-Ambrose (1997), the preeminent scholar of Public Law 280, argues the law has diminished BIA funding for law enforcement, stunted the development of tribal courts, and created a burden some states have been reluctant to accept. For these reasons, she contends that Public Law 280 has caused higher crime rates on reservations. More generally, she argues that “Tribes in Public Law 280 states are at a disadvantage compared with Tribes elsewhere in the United States” (Goldberg-Ambrose 1997, 37).

We do not believe that overriding tribal sovereignty without consent is generally a good route to tribal prosperity, but the decreased prominence and authority of tribal courts may have had a positive effect on Indian incomes. Non-Indians are probably more likely to perceive state courts as stable and impartial. To the extent that this perception makes non-Indians less uneasy about doing business, it will bring outside wealth to the reservation.⁴ Indeed, Public Law 280 is one solution to the sovereign's paradox described by Haddock (1994). Sovereigns can secure short-term gains by changing contractual terms once investments in non-salvageable capital have been made. The paradox is that by doing so, the sovereign will scare off potential investors and sacrifice long-term economic stability. Because Public Law 280 authorizes non-tribal adjudication of contractual disputes, it conveys a credible commitment to non-Indians that Indians will not engage in post-contractual opportunism (Klein, Crawford, and Alchian 1978).

The Era of Self-Determination

Public Law 280 and other policies of the termination era alarmed many Indian groups. According to Cornell (1988), the crescendoing rally cries of these groups effectively changed federal Indian policy. The Kennedy and Johnson Administrations took no action to terminate tribes and the Nixon Administration officially announced a new era of self-determination. Nixon's message to Congress in 1970 stressed that Indian policy should "strengthen the Indian's sense of autonomy without threatening his sense of community. We must assure the Indian that he can assume control of his life without being separated involuntarily from the tribal group" (quoted in Getches et. al. 1998, 227).

Self-determination goals were manifested in Congressional legislation and a series of Supreme Court decisions during the 1970s and 1980s. Congress passed legislation allowing

tribes greater control over forest, mineral, and other natural resources. Tribes were allowed to enter into development agreements without as much reliance on Department of Interior authorization. Congress also enacted several bills intended to assist Indian Education by funding Tribally-controlled schools. In addition, Congress enacted laws to give tribal courts and councils more exclusive control over child-custody cases, environmental standards, and substance abuse and health care programs (see Getches et. al. 1998, Cohen 1982).

Policies on gambling, however, have probably had the greatest effect on reservation commerce in recent years. Casino and bingo gaming were initiated by the Indian Self-Determination and Education Act of 1975 and a series of court decisions recognizing tribal authority to run gaming facilities in the 1980s (Evans and Topoleski 2002, Johnson 2003). By 1987, over 100 tribes had opened high-stakes bingo facilities and a few allowed poker and other card games (Johnson 2003). The Indian Gaming Regulatory Act of 1988 (IGRA), however, may have been the strongest impetus to tribe-operated gaming on a large scale.⁵ The IGRA allows tribes to run gaming operations on federal trust land under certain conditions.⁶ And the IGRA distinguished between three classes of gaming. Class I and II include bingo and relatively low-stake gaming. Class III may allow for “Vegas-style” gaming including slot machines and craps (Evans and Topoleski 2002).

Many recent Supreme Court decisions have reflected the federal policy of self-determination. In a handful of cases involving the contractual or tort claims of non-Indians engaged in business in Indian Country, the Supreme Court ruled that tribal remedies must be fully exhausted before state or federal courts could be invoked.⁷ However, the Court has recognized state court adjudication over such matters arising on reservations in Public Law 280

states.⁸ Nevertheless, the Supreme Court has struck down attempts by Public Law 280 states to regulate affairs or tax reservation businesses (including casinos).⁹ In contrast - and consistent with self-determination policy - the Court affirmed the right of tribes to levy taxes on non-Indian individuals and businesses in key decisions in the 1980s.¹⁰ Finally, the Court has often ruled to affirm the sovereign immunity status of tribes; sometimes in cases where the tribe has signed sue-or-be-sued clauses and ostensibly waived immunity.¹¹

Through these Congressional actions and Supreme Court decisions, the era of self-determination has empowered tribal governments and courts. Hence, we expect the governing institutions built by Native Americans to affect reservation prosperity more so than ever before.

Institutions and Economic Growth

Though any reader of Adam Smith should recognize the importance of institutions to the “wealth of nations,” it has only been recently that economists have refocused attention on institutions as a driving force in economic growth. Douglass North’s work in general and his book, *Institutions, Institutional Change, and Economic Performance* (1990), in particular have refocused attention on institutions in the growth process.

With increasing attention paid to the impact of markets, property rights, law, and politics on economic growth, some economists have begun trying to quantify the extent to which these institutions influence economic performance. To do so, they have developed freedom indexes in an effort to quantify institutions (see Gwartney et. al. 2003, Barro 1997). The common thread weaving the indexes together is their focus on property rights, the rule of law, and constraints on government that limit its ability to redistribute wealth.

At a 2003 conference honoring the contributions of Milton and Rose Friedman, James Gwartney and Robert Lawson applied their index to a variety of economic performance measures including cross-country income difference, investment, and economic growth. Consistent with other studies and with Milton Friedman's prediction that more economically free countries would grow more and achieve higher levels of income, Gwartney and Lawson (2003) find that economic freedom has a positive and significant impact on each measure.

Though we do not have an economic freedom index for Indian reservations, Professor Friedman's prediction is surely as applicable for Indian economies. Like so much of the literature on economic development, explanations of stagnation on Indian reservations have focused on the lack of physical capital, human capital, or natural resources. Such explanations, however, are at best insufficient and, at worst, inconsistent with the data. As pointed out above, Indian reservations often have abundant natural resources including fertile land, energy, scenery, and wildlife habitat, but these resources may contribute little to economic growth.

Some scholars have begun to recognize the importance of institutions to growth on reservations and have tried to empirically estimate their importance. Ronald Trosper (1978) was one of the first economists to mention the potential role of institutions in his study of Indian cattle ranching efficiency. Dismissing a lack of human capital as the reason for Indian cattle ranching inefficiencies, Trosper (1978, 239) concludes that "land tenure or other institutional problems" should be examined as a possible explanation.

Anderson and Lueck (1992) focused specifically on the impact of trusteeship on agricultural productivity. They estimated the impact of tenure on a cross-section of reservations using the total value of reservation output per acre. Controlling for a number of other variables

that might affect productivity, they found that the per-acre value of agricultural output was 85 to 90 percent lower on tribal trust land than on fee-simple land, and 30 to 40 percent lower on individual trust land than on fee-simple land. The magnitude of these numbers supports the contention that bureaucratic constraints on trust land reduce agricultural productivity. The inability to transfer title of trust lands, the difficulty in using trust land as collateral, and the transaction costs resulting from multiple ownership of small parcels all make it difficult to maximize productivity. The results are especially significant on tribal trust land and suggest that tribal governance institutions have not significantly offset the difficulties of making collective decisions that promote productivity.

Cornell and Kalt (2000) search for the “glue” that promotes economic growth by considering a broader range of institutions. They ask what explains the fact that some tribes are experiencing more economic development than others and conclude that “cross-tribe variations in such factors as natural, human and financial capital resources do provide some progress toward answering this question” But, they argue, “resources and knowledge tautologically set the upper bound on society’s potential for growth at any point in time. As is increasingly reflected in the economic development literature, however, how far away a society’s performance is from this upper bound depends centrally on the legal, social and political institutions that are imposed on it or selected by it” (2002, 446-47). After trying to measure the impact of formal and informal institutions on economic development, Cornell and Kalt conclude that “generous resource endowments, human capital, and access to financial capital will be virtually useless if tribes are incapable of making collective decisions and sustaining collective action, and if they lack the institutional structures necessary to maintain a hospitable

environment for human and financial investment” (2000, 267). In other words, economic development on reservations, as in other nations, depends on institutions that create a stable legal environment in which productive behavior is rewarded.

Explaining Indian Income: Data and Empirical Analysis

Following the lead of these other studies, we examine the effects that different political, legal, and land ownership regimes have on American Indian prosperity. Prior to explaining our data set and regression results, we first describe Cornell and Kalt’s (2000) empirical analysis in detail as it is closest in kin to our study. While their study lays the ground work for our empirical analysis, we emphasize a different set of legal and political institutions and we focus more on the importance of robust property rights to reservation land.

Cornell and Kalt’s Empirical Analysis

Cornell and Kalt analyze a cross-section of 67 reservations with populations of approximately 1000 or more. With this data set, they attempt to explain variation in 1989 unemployment levels and income growth from 1977-1989 (measured by the change in the percent of adults with income over a discrete amount). Their key independent variables are deciphered from their analysis of tribal constitutions. Qualitative, binomial variables indicate whether a tribal constitution gives strong powers to the executive or legislature branch of tribal government. Such governmental structures are types of representative democracies. The alternative, a general council, gives all members of the tribe voting and legislative authority. In addition, Cornell and Kalt create a qualitative variable indicating whether the tribe’s judiciary was created as a separate and independent branch of tribal government.

Cornell and Kalt argue that tribes with general council style governments “lack even rudimentary separations of power”(Cornell and Kalt 2000, 458). The lack of separation between these and judicial branches of government, they argue, means that tribal governmental power can go unrestrained. Unrestrained governments can rule for self-enrichment by biasing laws, rules, and regulations. Such an environment discourages investments other than those which are rent-seeking in nature. Based on these premises, Cornell and Kalt predict general council governments to have a negative effect on reservation employment and income growth and independent judiciaries to have a positive effect. Using an Ordinary Least Squares procedure, they find support for their prediction regarding general council governments but the coefficient estimates on their judiciary variable are only modestly significant and are not robust.

Cornell and Kalt control for several factors expected to affect economic welfare on Indian reservations. First, they find a positive correlation between per-capita income growth in adjacent counties and their dependent variables. Second, they find no relationship between the percentage of the reservation adults who are high school graduates and their dependent variables. Third, they control for the percentage of the current (1989) reservation population which has always resided on the reservation. Coefficients on this variable are negatively correlated with income growth and of moderate statistical significance. Cornell and Kalt are not surprised by this result and note that tribes reluctant to engage in the trade of labor will be less receptive to outside investors and non-Indian technology and innovations.

Fourth, Cornell and Kalt control for the “share of reservation land under private title.” They predict (and find) a negative relationship between this variable and 1989 levels of employment, arguing that the share of land held in private title measures “checker-board

ownership patterns” between tribal, federal, and state authority that leads to “significant transaction costs associated with land-based production.” However, this finding and explanation is difficult to interpret. It is not clear whether their variable consists of only fee-simple land, of only individual trust land, or combines both fee-simple and individual trust land. (Land held under individual trust status is not formally under private title. Yet individual trust owners probably have stronger property rights to their land than tribal members’ claims to tribal land.)

As the following sections will show, our empirical analysis differs from Cornell and Kalt’s in many ways. We employ a broader cross-section of reservations and examine the effects of different institutional variables on the per-capita income of American Indians. More fundamentally, however, our analysis is guided to a greater extent by the literature on economic freedom and a stable rule of law (e.g. North 1990, Barro 1997, Gwartney et. al. 2003), property rights to land on Indian reservations (Anderson and Lueck 1992), and remedies to the sovereign’s paradox and post contractual opportunism (Haddock 1994; Klein, Crawford, and Alchian 1978).

Our Cross Section Data Set

Census Bureau surveys conducted in 1990 and 2000 provide estimates of Indian income and population for 325 reservations.¹² BIA surveys provide estimates of the acreage of each reservation as well as a breakdown of acreage held in tribal trust, individual trust, and in fee simple. Data on political institutions were generously provided to us by Stephen Cornell and Joseph Kalt from their study discussed above. To this we add data from our analysis of Public Law 280 and from a gamblers’ directory of American Indian casinos.

From the above sources, we create a cross-section of data with each reservation serving as a single observation. Only reservations with 1999 American Indian populations exceeding 250, however, are included in the preliminary sample. As Table 1 shows, truncating the data set on the basis of this population size eliminates 168 (52 percent) of the Census reservations and about two percent of the 512,431 individuals identified as American Indians living on reservations. We also separately examine cross-section data sets truncated at populations exceeding 1,000. Table 1 shows the number of reservations and populations represented in each sub-sample.

We truncate our data set for pragmatic and analytical reasons. The BIA collects some of our variables of interest, but the agency's website and email have been inaccessible since May 2002 due to the lawsuit over the agency's handling of trust assets. Thus, gathering data from BIA regional and national offices is a slow and arduous process. In addition to saving us time, looking at sub-samples of more populated reservations has some analytical utility. While it is true that our population thresholds of 250 and 1,000 are somewhat arbitrary, it is also true that eliminating sparsely populated reservations decreases the likelihood that the idiosyncratic choices and characteristics of a small number of Indians will distort our empirical findings. Our results will be less influenced, for example, by the earnings of individual Indians in sparsely populated reservations.

For our sub-samples of reservations, the independent variables of primary interest measure the robustness of property rights to land, impartial enforcement of contracts and civil disputes, and the government's role in transferring reservation wealth. The following sections

describe the variables in more detail. Table A in the appendix gives definitions and indicates sources and Table 2 shows summary statistics.

Dependent Variables

Our first measure of prosperity on reservations is the per-capita income of American Indians in 1999 (1999 PCI). This measure includes wage and salary earnings, business profits, and transfer payments from tribal and state governments.¹³ To measure economic growth, we examine the percentage growth in American Indian per-capita income from 1979 to 1999; 1989 to 1999; and from 1989 to 1999. [Note: At this point we have only collected enough income data to examine 1989 to 1999 per-capita income growth].

Table 2 shows summary statistics for these dependent variables.¹⁴ Of the reservations with populations exceeding 1,000, the Crow Creek reservation in South Dakota had the lowest 1999 per-capita income at an impoverished \$4,043. The lowest real income growth rates occurred on the Crow Creek and the Santa Domingo Pueblo reservation in New Mexico (both at about -19%). In contrast, the Isabella Reservation in Michigan's Upper Peninsula had the highest 1999 per-capita income of the more populated sub-sample at \$17,436 and the highest real income growth rate at about 138 percent.

Property Rights to Reservation Land

As discussed above, much of the land on reservations is owned by individual Indians or by the tribe but is held in trust by the federal government. Most of the residual acreage on reservations is owned in fee-simple, by Indians and non-Indians. The variables, PERCENT TRIBAL, PERCENT INDIVIDUAL TRUST, and PERCENT FEE SIMPLE, respectively denote the percentage of reservation land held in each ownership category. They are constructed by

dividing the acreage in each category, reported by regional BIA offices, by Census data denoting the geographic size of reservations. [Note: At this point, our cross-section of the land ownership variables is incomplete because three of the twelve BIA regional offices have not yet responded to our data request.¹⁵] As Table 2 indicates, we have preliminary land ownership variables for 116 reservations.

Fee-simple land does not fall under the jurisdiction of the BIA and is therefore similar to fee-simple land outside of reservations. Though subject to applicable regulations, fee-simple land can be alienated, altered, and used as collateral in capital markets. In contrast, BIA approval is required before tribal and individual trust land can be alienated or altered, and these lands cannot be subjected to legal encumbrances such as liens or mortgages. Furthermore, BIA permission is often needed before holders of trust lands can change land use, make capital improvements, and lease land. Land held in individual trust is further constrained by the “heirship problem” described above (see Anderson and Lueck 1992, Miller 1988, Lindo 1997).

Anderson and Lueck (1992) find a negative correlation between the agricultural productivity of land on 39 large western reservations and the percentage of reservation land held in tribal and individual trust. Their findings provide evidence that constraints on trust land impede optimal farm management. We predict that the constraints more generally impede economic well-being and growth on reservations. Hence we expect PERCENT FEE SIMPLE to have a positive effect on the dependent variables.

Tribal Courts and Enforcement of Contracts

North (1990), Barro (1997), and Gwartney et. al. (2003) argue that impartial and consistent law enforcement is an essential ingredient of economic growth. While tribal courts

vary considerably in terms of appointment procedure, training, and length of office (see Skari 1992), it is difficult to quantify a meaningful “impartial index” from these differences. Instead of trying to do so, we employ a dummy variable, INDEPENDENT JUDICIARY, that measures conspicuous variation in tribal court systems. INDEPENDENT JUDICIARY indicates whether tribal courts are established as a separate and independent branch of government in the tribal constitution. This variable was constructed by Cornell and Kalt and employed in their 2000 paper as discussed above. Although an explicitly independent court system does not guarantee the absence of collusion between courts and tribal councils or other interested parties, it does imply a layer of removal from politics that we expect to promote impartial judgements. Thus, in accordance with Cornell and Kalt’s prediction, we expect INDEPENDENT JUDICIARY to have a positive effect on our dependent variables when controlling for other factors.

While the independence of tribal courts should encourage more legal commerce among reservation residents, it may do little to encourage investments from non-Indians contemplating business with reservation Indians. Whether warranted or not, non-Indians are likely to perceive all tribal courts as biased.¹⁶ This perception is a major obstacle to economic development because much more wealth lies outside of Indian Country than within. However, the obstacle may have been circumvented for some tribes - albeit against their will - when Congress imposed Public Law 280 upon them. By stripping tribes in some reservations of their authority to adjudicate contractual disputes between Indians and non-Indians, Congress may have made those reservations more attractive markets for investors.

We test for this effect with two variables. The first, MANDATORY PL 280, denotes the mandatory reservations named in the 1953 Public Law 280 legislation. The second, OPTIONAL

PL 280, denotes reservations in states which later assumed jurisdiction over contractual disputes under the authority of Public Law 280 [Note: this variable is preliminary]. We expect both variables to have a positive effect on reservation income.

Tribal Politics and the Size of Government

North (1990), Barro (1997), and Gwartney et. al. (2003) have shown that governing bodies primarily engaged in wealth transfers impede prosperity and economic growth. Transfers may occur through taxation or through regulatory constraints on property rights. It is difficult to measure transfer activity by tribal government, but as an approximation we use the variable, %TRIBAL EMPLOYMENT, which indicates the proportion of the over-25 Indian population on a reservation employed by the tribal government in 1989. We expect this variable to negatively effect per-capita income growth.

As discussed above, Cornell and Kalt (2000) proxy the level of transfer activity engaged in by tribal government with a variable indicating whether or not everyone in the tribe has voting rights and legislative authority. We employ Cornell and Kalt's GENERAL COUNCIL variable as a control but make no predictions concerning its effect on reservation income.

Control Variables

Because we are interested in the effect of legal and political institutions and property rights regimes on income and income growth during a period when new casinos abounded, we must control for the effect of gambling on reservation income. Precisely measuring this effect, however, is a difficult task that is outside the scope of this study.¹⁷ Factors such as when the casino was opened, how close the reservation is to urban centers (see Evans and Topoleski

2002), whether tribal members directly share in the profits, and whether the tribal-state gaming compacts restrict competition (see Johnson 2003) are likely to be important.

Because these data are not readily available, we measure gaming activity with data from a gambler's website from which we construct a control variable.¹⁸ SLOTS PER AI RESIDENT indicates the number of slot machines at reservation casinos per American Indian resident. While this measure is not as precise as we might like, we believe that it adequately proxies variation in the scope of gaming activity relative to the size of the reservation. Economic gains to individual Indians should be positively correlated with SLOTS PER AI RESIDENT even though income-sharing payments to tribal members vary by reservation.¹⁹

We also control for differences in human and physical capital across reservations. PERCENT HS GRADS indicates the number of American Indians who graduated from high school as a percentage of the 1989 reservation population over 25 years old. AMENITY INDEX indicates the average natural amenity ranking of reservation and surrounding land. The index is highest in sunny areas with mild climates (e.g., Southern California), and in areas with abundant water and topographical variation (e.g., Idaho and Western Montana). While this variable does not precisely measure the value of natural resources endowed to different reservations, it does measure characteristics that could attract retired people, businesses, and vacationers to Indian Country.

We also control for the possibility that prosperity outside of the reservation enhances economic opportunities for reservation residents. We do so by including the variables SURROUNDING AREA PCI and SURROUNDING AREA PCI GROWTH. These variables denote the average per-capita income, weighted by total population, earned by residents in

counties in or adjacent to the reservation. Another control variable, SURROUNDING AREA POP DENSITY, indicates the population density of counties in or adjacent to the reservation.

Finally, we control for the size of the reservation (RESERVATION ACREAGE). As Cornell and Kalt (2000) note, resource endowments determine the “upper bound on society’s potential for growth,” and RESERVATION ACREAGE may be a proxy resource endowments. In part, however, reservation acreage also indicates how far resident Indians are from markets.

Empirical Specifications and Regression Results

As a preliminary analysis, we test our predictions using a simple Ordinary Least Squares (OLS) procedure. The regression analysis relies on several different specifications to estimate the generic model below.

$$\text{American Indian Income} = \beta_0 + \beta_1(\text{property rights to land}) + \beta_2(\text{rule of law}) + \beta_3(\text{political regimes}) + \beta_4(\text{controls}) + e$$

Table 3 shows our OLS estimates of per-capita income on reservations in 1999. The first column estimates were computed using a sample of 113 reservations with populations of 250 or more. The second column shows estimates from a sample of 76 reservations with populations exceeding 1,000. Column 3 differs from column 2 only in that Cornell and Kalt’s INDEPENDENT JUDICIARY and GENERAL COUNCIL variables are employed. Notice that employing these variables decreases the number of usable observations from 76 to 60.

The coefficients shown in Table 3 have simple interpretations. The Column 2 coefficient on MANDATORY PL 280, for example, means that mandatory Public Law 280 reservations have per-capita income levels \$1,919 higher than non-mandatory Public Law 280 reservations when holding the other variables constant. The Column 2 coefficient on SLOTS PER AI

RESIDENT means that an increase in one slot per American Indian resident is correlated with an increase of \$1,390 in per-capita income. As a final example, the Column 2 coefficient on PERCENT FEE-SIMPLE means that an increase in the percentage of fee-simple land on a reservation of one (50) is correlated with \$17.29 (\$865) increase in per-capita income.

Table 4 shows our OLS estimates of real per-capita income growth on reservations from 1989 to 1999. The first column estimates were computed using the population threshold of 250. Estimates in the other columns were computed using the population threshold of 1,000. Columns 3 and 4 differ from Column 2 because Cornell and Kalt's proxies are employed along with measures of the extent of tribal employment on the reservation.

The adjusted R^2 for the Table 4 regressions compare favorably with Cornell and Kalt's (2000) estimates of 1977-1989 reservation income growth and are comparable to those shown in studies of cross-country variation in economic growth (see, e.g., Gwartney and Lawson 2003). In comparison with Table 3, the regressions shown in Table 4 also have slightly higher adjusted R^2 . This is to be expected because reservation income growth from 1989 to 1999 should be easier to explain than income growth for the longer and unspecified periods implicitly denoted by levels of 1999 per-capita income.

The estimated coefficients shown in Table 4 have simple interpretations. For example, the Column 2 coefficient on PUBLIC LAW 280 simply means that mandatory Public Law 280 reservations experienced 21 percent higher income growth rates than non-mandatory reservations when controlling for other factors. The Column 3 coefficient on % TRIBAL EMPLOYEES means that an increase of one in the percentage of reservation residents employed by tribal government is correlated with a decrease of one in 1989-1999 PCI growth rates. As a

final example, the Column 3 coefficient on 1989 AI PCI means that an increase of 1,000 in 1989 PCI is correlated with a decrease of nine in 1989-1999 PCI growth rates.

Discussion of Hypothesis Tests and other Results

The preliminary results provide evidence that fee-simple ownership of land spurs economic prosperity on Indian reservations. The Table 3 coefficients on PERCENT FEE SIMPLE are all positive and at least marginally significant. Although not shown in Tables 3, separate regressions that instead employ PERCENT TRIBAL and PERCENT TRUST indicate a negative relationship between these variables and 1999 American Indian per-capita income. These results suggest that the transaction costs and constraints related to tribal and individual trust ownership impede economic prosperity. However, the coefficients on PERCENT FEE-SIMPLE in Table 4 suggest that fee-simple ownership of land has not played as important of a role in stimulating economic growth in recent years. [Note: our land ownership data are still preliminary].

The regression results also provide some evidence that the legal jurisdiction conferred to mandatory states under Public Law 280 has been an impetus to economic progress. The coefficients on MANDATORY PL 280 are all positive and at least marginally significant. This suggests that state enforcement of contracts attracts non-Indian investments on reservations more so than tribal enforcement. We emphasize that we do not think that the Public Law 280 coefficients show spurious correlation between reservations in certain states and the dependent variables. Adding the exempted reservations - Red Lake in Minnesota and Warm Springs in Oregon - decreases the size and statistical significance of the PUBLIC LAW 280 coefficients and the adjusted R^2 of the relevant regressions. In addition, we control for population density,

income, and income growth in areas adjacent to reservations so we are confident that the PUBLIC LAW 280 coefficients are not driven simply by any systematic variation in these factors.

The OLS estimates also show a negative relationship between INDEPENDENT JUDICIARY and 1999 per-capita income. This result means that tribes providing for explicit separation of judicial powers in their constitutions have lower per-capita incomes.²⁰ While an independent judiciary should better enable impartial judgements over disputes among reservation Indians, an independent judiciary might also signal a strong tribal sense of sovereignty. Such a signal is likely dissuade potential non-Indian investors and may help explain the negative sign on INDEPENDENT JUDICIARY.

With respect to the political variables, the statistically significant coefficients on %TRIBAL EMPLOYEES imply a negative relationship between the size of tribal government and per-capita income growth. Consistent with cross-country studies showing negative relationships between economic growth and government spending as a percentage of GDP, this result implies that larger tribal governments impede the welfare of most reservation Indians.

Note that the coefficients on our measure of gaming activity on reservations are statistically significant in all regressions. The positive coefficients on SLOTS PER AI RESIDENT show that reservation Indians benefit economically from having gambling facilities. This empirical finding, while less sophisticated, is consistent with Evans and Topoleski (2002). Finally, note that the negative coefficients on 1989 AI PCI in Table 4 imply convergence (see Barro 1997). Convergence of reservation income may mean that low-income tribes adapt the economic development strategies of higher-income tribes. Alternatively, convergence may

indicate that the lower income tribes earn a higher return per-unit of physical and human capital employed.

Future Empirical Work

The regression results displayed and discussed here are preliminary. We have a list of variables to refine and include so to make our results more reliable. Although not trivial, the easiest tasks on our list include gathering tribal and individual trust acreage data from the BIA regional offices that have not yet responded to our request and collecting BIA spending data on a reservation-by-reservation basis so to more accurately measure monetary transfers to tribes. Tasks that will require substantially more work may include more research on optional Public Law 280 states and more research on reservation gambling.

Conclusion

Economic development on Indian reservations will remain impossible to reach until we release ourselves from mystical interpretations that depend solely on culture and take seriously the institutional setting of reservation economies. A growing body of literature documents that property rights and the rule of law, albeit informal, were at work both before and following European contact. Federal trust authority, however, undermined property rights on reservations, and tribal political institutions have generally undermined the rule of law.

Though preliminary, the data presented here suggest that the same variables that are important to economic prosperity in developing countries are important on reservations. Fee simple land ownership, a fair and stable legal environment, and a government that can resist the temptation to engage in transfer activity improve income levels and economic growth rates. These results are consistent with other studies of American Indian institutions and are only likely

to strengthen as we develop better data for measuring the impact of institutions on economic performance. None of this is to say that culture is not important; indeed culture can be an important complementary factor in the growth process. Without a formal and informal institutional environment that lowers transaction costs and rewards productivity, however, Indian economies are likely to remain enclaves of poverty in a sea of prosperity.

REFERENCES

- Anderson, Terry L. 1995. *Sovereign Nations or Indian Reservations? An Economic History of American Indians*. San Francisco, CA: Pacific Research Institute for Public Policy.
- _____ and Dean Lueck. 1992. Land Tenure and Agricultural Productivity on Indian Reservations. *Journal of Law and Economics* 35(2): 427-454
- Barro, Robert J. 1997. *Determinants of Economic Growth: A Cross-Country Empirical Study*. Cambridge, MA: MIT Press.
- Carlson, Leonard A. 1992. Learning to Farm: Indian Land Tenure and Farming Before the Dawes Act. In *Property Rights and Indian Economies*, ed. Terry L. Anderson. Lanham, Md.: Rowman and Littlefield.
- Clinton, Robert N., Nell Jessup Newton and Monroe E. Price. 1991. *American Indian Law: Cases and Materials*. Michie Co: Charlottesville, VA.
- Cornell, Stephen and Joseph S. Kalt. 2000. Where's the Glue? Institutional and Cultural Foundations of American Indian Economic Development. *Journal of Socio-Economics* 29 (443-70).
- Evans, William N. and Julie H. Topoleski. 2002. The Social and Economic Impact of Native American Casinos. Working Paper 9198. National Bureau of Economic Research.
- Getches, David H, Charles Wilkinson and Robert A. Williams Jr. 1998. *Cases and Materials on Federal Indian Law*. West Group: St. Paul, MN.
- Goldberg-Ambrose, Carole. 1997. *Planting Tail Feathers: Tribal Survival and Public Law 280*.
- Gwartney, James D. and Robert A. Lawson. 2003. What Have We Learned for the Measurement of Economic Freedom? Paper presented at the Conference: The Legacy of Milton and Rose Friedman's *Free to Choose*. October 23-24, Dallas, TX.
- Gwartney, James D., Robert A. Lawson with Neil Emerick. 2003. *Economic Freedom of the World: 2003 Annual Report*. Vancouver, BC: Fraser Institute.
- Haddock, David D. 1994. Foreseeing Confiscation by the Sovereign: Lessons from the American West in *The Political Economy of the American West*, Terry L. Anderson and Peter J. Hill, eds. Lanham, MD: Rowman and Littlefield.
- Hurt, F. Douglas. 1987. *Indian Agriculture in America: Prehistory to the Present*. Lawrence: University of Kansas Press.

- Vanessa J. Jimenez & Soo C. Song. 1998. Concurrent Tribal and State Jurisdiction Under Public Law 280. *The American University Law Review* 47. 1627-1707.
- Johnson, Ronald N. 2003. Indian Casinos: Another Tragedy of the Commons? Working Paper.
- Klein, Benjamin; Crawford, Robert G.; and Armen A. Alchian. 1978. Vertical Integration, Appropriable Rents, and the Competitive Contracting Process. *Journal of Law and Economics* 21(3): 297-326.
- Libecap, Gary D. and Ronald N. Johnson. 1980. Legislating Commons: The Navaho Tribal Council and the Navaho Range. *Economic Inquiry* 18: 69 -86.
- Lindo, Michelle M. 1997. *Youpee v. Babbitt*: The Land Inheritance Problem Revisited. *American Indian Law Review* 22(1): 223-246.
- McChesney, Fred S. 1992. Government as Definer of Property Rights: Indian Lands, Ethnic Externalities, and Bureaucratic Budgets. In *Property Rights and Indian Economies*, ed. Terry L. Anderson. Lanham, Md.: Rowman and Littlefield Publishers.
- Miller, Margo S. 1988. Tribal Responses to Federal Land Consolidation Policy. Project Report, Harvard Project on American Indian Economic Development. Available at: http://www.ksg.harvard.edu/hpaied/pubs/pub_129.htm (Visited on November 13, 2003).
- North, Douglass C. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- Otis, Delos Sacket. 1973. *The Dawes Act and the Allotment of Indian Lands*. Francis Paul Prucha, ed. Norman: Oklahoma University Press.
- Pommersheim, Frank. 1995. Braid of Feathers: *American Law and Contemporary Tribal Life*.
- Skari, Andrea. 1992. The Tribal Judiciary: A Primer for Policy Development. In *What Can Tribes Do? Strategies in American Indian Economic Development*. Eds. Stephen Cornell and Joseph P. Kalt: UCLA American Indian Studies Center: Los Angeles, CA.
- Speck, Frank G. 1939. Aboriginal Conservators. *Bird Lore* 40: 258-61.
- Thompson, William N. and Robert Schmidt. 2002. Not Exactly "A Fair Share": Revenue Sharing and Native American Casinos in Wisconsin. *Wisconsin Policy Research Institute Report* 15(1). Available at: <http://www.wpri.org/Reports/reports.html> (Visited on November 18,2003).
- Timmons, Boyce D. 1980. Foreward in *The Peace Chiefs of the Cheyennes*, Stan Hoig, ed. Norman: Oklahoma University Press.

Trosper, Ronald L. 1978. American Indian Relative Ranching Efficiency. *American Economic Review* 68 (4): 503-516.

Williams, Ethel J. 1970-71. Too Little Land, Too Many Heirs: The Indian Heirship Land Problem. *Washington Law Review* 46(?): 709-744.

Wilson, Paul S. 1992. What Chief Seattle Said. *Environmental Law* 22:1451-1468.

Table 1: American Indian Populations on Census Reservations

State	All Census Reservations		Reservations with population > 250		Reservations with population > 1000	
	# of Res.	Population	# of Res.	Population	# of Res.	Population
Alabama	2	198	0	0	0	0
Alaska	1	1,204	1	1,204	1	1,204
Arizona	20	244,253	17	243,862	11	240,318
California	96	14,219	16	9,041	1	2,180
Colorado	2	3,073	2	3,073	2	3,073
Connecticut	3	217	0	0	0	0
Florida	11	1,170	2	895	0	0
Georgia	1	55	0	0	0	0
Hawaii	5	25	0	0	0	0
Idaho	4	6,964	3	6,910	3	6,910
Iowa	1	619	1	619	0	0
Kansas	3	1,209	2	1,209	0	0
Louisiana	3	344	1	265	0	0
Maine	5	1,615	3	1,475	0	0
Massachusetts	2	62	0	0	0	0
Michigan	10	4,853	6	4,706	2	2,378
Minnesota	14	17,064	9	16,485	4	13,765
Mississippi	1	4,108	1	4,108	1	4,108
Montana	8	43,373	8	43,373	8	43,373
Nebraska	5	4,305	3	4,161	2	3,640
Nevada	25	7,297	9	5,626	1	1,198
New Jersey	1	0	0	0	0	0
New Mexico	22	30,044	19	29,872	11	25,813
New York	9	7,375	6	7,169	3	5,720
North Carolina	1	5,832	1	5,832	1	5,832
North Dakota	2	7,127	2	7,127	2	7,127
Oklahoma	1	6,338	1	6,338	1	6,338
Oregon	10	4,844	2	4,380	2	4,380
Rhode Island	1	7	0	0	0	0
South Carolina	1	358	1	358	0	0
South Dakota	9	44,264	9	44,264	8	43,947
Texas	3	1,107	3	1,107	0	0
Utah	4	3,087	1	2,824	1	2,824
Virginia	1	33	0	0	0	0
Washington	26	25,949	19	25,401	9	21,390
Wisconsin	11	13,446	10	13,283	5	10,377
Wyoming	1	6,394	1	6,394	1	6,394
TOTAL	325	512,431	158	501,360	80	462,289

Notes: (1) The Census does not report any American Indian reservations in the following states: Delaware, Illinois, Indiana, Kentucky, Maryland, Missouri, New Hampshire, Ohio, Pennsylvania, Tennessee, Vermont, and West Virginia. (2) In cases where reservations straddle multiple states, the reservation is considered part of the state in which the majority of reservation residents live.

Table 2: Summary Statistics

VARIABLE	Reservations with population > 250					Reservations with population > 1,000				
	OBS	MIN	MAX	MEAN	ST. DEV	OBS	MIN	MAX	MEAN	ST. DEV
Dependent Variables										
1999 AI PCI	160	3,398	38,647	10,106	4,137	81	4,043	17,436	8,813	2,466
89-99 AI PCI GROWTH	138	-19.8%	455%	42.46%	57%	80	-19.8%	138%	32%	25%
Property Rights to Land										
PERCENT TRIBAL	116	0%	100%	56%	42%	77	1%	100%	56%	39%
PERCENT TRUST	116	0%	59%	12%	17%	77	0%	59%	13%	17%
PERCENT FEE-SIMPLE	116	0%	99%	32%	35%	77	0%	99%	31%	34%
Rule of Law										
INDEPENDENT JUDICIARY	63	0	1	0.11	0.32	60	0	1	0.08	0.28
MANDATORY PL 280	160	0	1	0.22	0.41	81	0	1	0.11	0.32
Political Regimes										
GENERAL COUNCIL	63	0	1	0.22	0.42	60	0	1	0.23	0.43
%TRIBAL EMPLOYMENT	101	0.14%	45.2%	9.4%	7.3%	71	0.17%	25.5%	9.3%	6.4%
Control Variables										
SLOTS PER AI RESIDENT	141	0	5.68	0.61	1.01	80	0	3.14	0.25	0.51
1999 PCI IN REGION	137	14,006	28,077	19,350	2,732	80	14,251	26,847	18,764	2,422
89-99 PCI GR. IN REGION	137	-9.7%	49.6%	17.5%	8.8%	80	-1.7%	47.2%	18.4%	8.5%
POP. DENSITY IN REGION	136	1.7	580.5	79.9	114.3	80	1.7	297.2	50.0	69.1
AMENITY SCALE	137	-3.4	11.15	2.35	3.32	80	-3.1	11.15	1.78	3.04
PERCENT HS GRADS	160	6.2%	91.7%	69.9%	11.2%	81	40.9%	84.4%	70.9%	8.31
RESERVATION ACREAGE	159	64	15.6 M	463,547	1.4 M	81	832	15.6 M	851,047	1.86 M

**Table 3: Preliminary OLS Estimates
for 1999 American Indian Per-Capita Income**

Dependent variable = 99 AI PCI

	(1) Indian populations >250	(2) Indian populations >1,000	(3) Indian populations >1,000
Independent Variables			
CONSTANT	7,481 (2.95)**	6,249 (2.48)**	6,288 (2.87)**
Controls			
99 PCI IN REGION	0.019 (0.13)	0.065 (0.45)	0.0847 (0.67)
POP. DENSITY IN REGION	4.54 (0.96)	1.09 (0.19)	-3.94 (0.75)
SLOTS PER AI RESIDENT	969.07 (3.33)**	1,390.18 (2.76)**	2,606.69 (4.77)**
RESERVATION ACRES	-0.0007 (1.92)*	-.0005 (1.85)*	-.0008 (2.66)**
AMENITY SCALE	185.48 (1.77)*	206.37 (2.11)**	234.04 (2.65)**
Land Ownership			
PERCENT FEE-SIMPLE	13.04 (1.65)	17.29 (1.95)*	15.15 (1.82)*
Rule of Law			
MANDATORY PL 280	2,405 (3.17)**	1,919 (2.47)**	1,109 (1.63)
INDEPENDENT JUDICIARY	-----	-----	-1,509 (1.94)*
Political Regimes			
GENERAL COUNCIL	-----	-----	414.35 (0.79)
Observations	113	76	60
Adjusted R ²	0.30	0.33	0.56
F-Statistic	7.78	6.20	9.42

Notes: Absolute value of t-statistics in parentheses. ** indicates statistically significant coefficients at 5% level for a one-tailed t-test. * indicates statistically significant coefficients at 10% level for a one-tailed t-test.

**Table 4: Preliminary OLS Estimates
for 1989-1999 American Indian Per-Capita Income Growth**

Dependent variable = 89-99 AI PCI GROWTH

	(1) Indian populations >250	(2) Indian populations >1,000	(3) Indian populations >1000	(4) Indian populations >1,000
Independent Variables				
CONSTANT	44.59 (2.08)**	23.86 (1.37)	54.36 (2.70)**	58.62 (2.64)**
Controls				
1989 AI PCI	-0.010 (4.42)**	-0.008 (4.18)**	-0.009 (4.90)**	-0.009 (5.53)**
89-99 PCI GROWTH IN REGION	-0.386 (0.97)	-0.228 (0.73)	0.041 (0.15)	0.300 (1.09)
SLOTS PER AI RESIDENT	32.80 (7.98)**	21.37 (4.30)**	31.08 (5.86)**	30.79 (6.09)**
RESERVATION ACRES	-9.18E-07 (0.19)	-3.52E-06 (1.13)	-3.33e-06 (1.19)	-5.08e-06 (1.77)*
AMENITY SCALE	1.84 (1.59)	0.97 (1.01)	1.04 (1.12)	1.12 (1.33)
PERCENT HS GRADS	0.666 (1.81)*	0.848 (2.62)**	0.546 (1.61)	0.546 (1.52)
Land Ownership				
PERCENT FEE-SIMPLE	-0.046 (0.42)	0.0009 (0.01)	-0.0889 (0.91)	-0.097 (0.83)
Rule of Law				
MANDATORY PL 280	28.28 (3.42)**	21.19 (2.78)**	19.67 (2.89)**	15.51 (2.46)**
INDEPENDENT JUDICIARY	-----	-----	-----	-6.51 (0.79)
Political Regimes				
GENERAL COUNCIL	-----	-----	-----	5.15 (1.04)
%TRIBAL EMPLOYEES	-----	-----	-1.03 (2.67)**	-1.00 (2.42)**
Observations	117	74	70	59
Adjusted R ²	0.49	0.41	0.57	0.64
F-Statistic	14.78	7.45	10.96	10.53

Notes: Absolute value of t-statistics in parentheses. ** indicates statistically significant coefficients at 5% level for a one-tailed t-test. * indicates statistically significant coefficients at 10% level for a one-tailed t-test.

Table A: Variable Definitions and Sources

VARIABLE	DEFINITION	SOURCE
Dependent Variables		
1999 AI PCI	1999 per-capita income of American Indians living on the reservation	US Census Bureau
1989 AI PCI	Same as above for 1989. CPI adjusted and specified in 1999 dollars	US Census Bureau. CPI data come from the Bureau of Labor Statistics. The mid-year (June) index was used.
89-99 AI PCI GROWTH	The percentage growth in CPI adjusted American Indian PCI from 1989 to 1999	Compiled from the two sources listed above.
Property Rights to Land		
PERCENT TRIBAL	Acreage of tribally owned trust land divided by the total acreage of the reservation.	For most reservations, 1999 or 2000 ownership data come from individual reports sent to us by the real estate divisions of regional BIA offices. For reservations in the 4 BIA regions that have not sent us reports, we use 1990 ownership data compiled by Steve Cornell and Joseph Kalt of the Harvard Project on American Indian Economic Development.
PERCENT TRUST	Acreage of individual allotted trust land divided by the total acreage of the reservation.	Same as above
PERCENT FEE-SIMPLE	The difference between total acreage and the sum of trust, tribal, and federal land divided by the acreage of the reservation.	Same as above
Rule of Law		
INDEPENDENT JUDICIARY	= 1 if the tribal constitution explicitly specifies a separate and independent judicial branch, otherwise =0	Compiled for 67 reservations by Steve Cornell and Joseph Kalt of the Harvard Project on American Indian Economic Development.
MANDATORY PL 280	= 1 if the reservation is a mandatory Public Law 280 reservation, otherwise =0	Public Law 83-280 (18 U.S.C. § 1162, 28 U.S.C. § 1360). Mandatory states are Alaska, California, Minnesota (excluding Red Lake Res.), Nebraska, Oregon (excluding Warm Springs Res.) and Wisconsin (excluding Menonimee Res.) .

VARIABLE	DEFINITION	SOURCE
Political Regimes		
GENERAL COUNCIL	= 1 if the tribal constitution establishes a general council governing body, generally giving all tribal members voting privileges, otherwise = 0	Compiled for 67 reservations by Steve Cornell and Joseph Kalt of the Harvard Project on American Indian Economic Development.
%TRIBAL EMPLOYEES	1989 tribal government employees divided by 1989 American Indian population over the age of 25	Same as above
Control Variables		
SLOTS PER AI RESIDENT	Number of slot machines presently on reservation casinos divided by 1999 American Indian population.	http://www.gamblinganswers.com/casinos/country/US/ (visited on November 10, 2003)
1999 PCI IN REGION	The 1999 per-capita income of non-Indians living in reservation counties or counties directly adjacent to the reservation	US Census Bureau
89-99 PCI GROWTH IN REGION	The percentage growth, from 1989-1999, in real per-capita income as described above	US Census Bureau. CPI data come from the Bureau of Labor Statistics.
POP. DENSITY IN REGION	The population density of reservation counties and counties directly adjacent to the reservation	US Census Bureau
RESERVATION ACREAGE	The total acreage of the Reservation	US Census Bureau
PERCENT HS GRADS	The number of American Indians with high school degrees (or higher) divided by the Indian population that is over 25 years old.	US Census Bureau
AMENITY SCALE	A measure of the physical characteristics of a county that enhance the location as a place to live. The scale combines six measures of climate, typography, and water area that reflect environmental qualities most people prefer.	ERS of the USDA at http://www.ers.usda.gov/briefing/rural/data/

ENDNOTES

1. For a complete discussion see Anderson (1995).
2. Three reservations in mandatory Public Law 280 states were exempted: Red Lake Reservation in Minnesota, Warm Springs Reservation in Oregon, and Menominee Reservation in Wisconsin (18. U.S.C. § 1162(a)). Although tribes and Indians in California, Florida, New York, and Texas were named by Congress as candidates for assimilation, only California was also named in the Public Law 280 legislation (Getches et. al. 1998).
3. See *Washington v. Confederated Bands of Yakima Indian Nation* (1979) and *Kennerly v. Montana District Court* (1971).
4. To be sure, Public Law 280 may make Indians more uneasy about doing business with non-Indians. However, American Indians on reservations have fewer alternative business partners than non-Indians living outside reservations. If they refuse to contract with non-Indians for fear of impartial court judgements, American Indians will forgo a greater number of potentially beneficial transactions.
5. Currently there are about 201 tribes engaged in Class II or Class III gambling. See the website of the National Indian Gaming Association. Available at: <http://www.indiangaming.org/library/index.html#facts> (visited on November 12, 2003).
6. Under the IGRA, states can only run Class III casinos when the state allows Vegas-style gaming elsewhere. In addition, a reservation is supposed to allow gaming only if it has been authorized by the National Indian Gaming Committee and approved by a tribal-state compact (see Evans and Topoleski 2002, Johnson 2003).
7. See especially *Iowa Mutual Insurance Co. v. LaPlante* (1987) and *National Farmers Union Ins. Companies v. Crow Tribe of Indians* (1985).
8. See especially *Williams v. Lee* (1959) and *Kennerly v. District Court* (1973).
9. See especially *Santa Rosa Band of Indians v. Kings County* (1975), *Bryan v. Itasca County* (1976), and *California v. Cabazon Band of Mission Indians* (1987).
10. See especially *Washington v. Confederated Tribes of the Colville Indian Reservation* (1980) and *Merrion v. Jicarilla Apache Tribe* (1982). Note, however, that a more recent Supreme Court decision rescinds some tribal taxing authority over non-Indians in Indian Country (see *Atkinson Trading Co. v. Shirley* (2001)).
11. CITE relevant cases
12. Census data exclude some Indian lands, mostly in Alaska and Oklahoma, that are not technically reservations. According to the Census, a reservation is land that has been set aside for the use of the tribe, either by tribal treaties, agreements, executive orders, federal statutes, secretarial orders, or judicial determinations. Reservation lands are further designated as colonies, communities, pueblos, ranches, rancherias, reservations, reserves, tribal towns, and

villages. While Alaska and Oklahoma have large indigenous populations, most American Indians and Natives in these states do not technically live on reservations anymore. Federally recognized tribes in Oklahoma are identified as living in Tribal Statistical Areas (OTSA), which are typically defined by the boundaries of former reservations. Populations in Alaska are identified as living in Alaskan Native Village Statistical Area (ANVSA). Future research will consider whether it makes sense to include OTSAs and ANVSAs in our cross-section data set. Not doing so excludes up to 227,000 American Indians living in 24 OTSAs and up to 54,000 Alaskan Natives living in 128 villages.

13. Census income data include “Social Security or Railroad Retirement income; Supplemental Security Income (SSI); any public assistance or welfare payments from the state or local welfare office; retirement, survivor, or disability pensions; and any other sources of income received regularly such as Veterans' (VA) payments, unemployment compensation, child support, or alimony.”

14. Our income data come from U.S. Census, but the BIA also provides estimates. While we do not yet have the BIA estimates for comparison, Evans and Topoleski (2002, 23) have noted a key distinction: “... in the Census, race is self-reported, whereas to be included in the BIA numbers, you must be a registered tribal member, which generally means having one-quarter or more Native American blood, and having that certified.” Despite these differences in methodology, however, Evans and Topoleski note a strong correlation between BIA and Census data sets.

15. BIA regional offices in Oklahoma and Virginia have not responded to our request and the BIA office in New Mexico has partially responded. For some of the reservations in these regions, we have constructed proxies using 1990 data compiled by Cornell and Kalt (2000). While the older data are temporary substitutes for current data, we believe that they are reliable because land tenure has only changed slightly in the other BIA regions over the past ten years.

16. [Cite literature on the perceived bias of tribal courts]

17. Those interested in a systematic study of the effects of casino gambling on American Indian employment and non-income measures of economic well-being should consult Evans and Topoleski (2002).

18. The directory is available online at : <http://www.gamblinganswers.com/casinos/country/US/> (visited on November 12, 2003). This source provides us with an indication of Indian gaming activity across reservations, but it is not totally adequate for our purposes. The website does not indicate when gaming activity was initiated, so the variables lack a time-series element. [Note: we are currently determining the year in which reservation casinos opened.]

19. Of course, casinos with more slot machines do not necessarily generate greater net revenues than casinos with fewer slot machines. However, we doubt that tribes would invest in more slot machines without good knowledge of their potential market. For example, it is unlikely that big, class III casinos will be built on rural reservations. And it is more likely that tribes will invest in large, class III casinos if they have a credible commitment from the state or other tribes to limit competition. Observing where Indian casinos with lots of slot machines exist, therefore, implicitly conveys information about gambling demand in the area and any statutory limits on competition from other casinos.

20. In contrast, Cornell and Kalt (2000) find a positive, moderately significant relationship between this variable and employment levels on reservations in 1989. Future work will try to discern why our results differ.