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Engines of Change? Tribal Casinos, Economic Wellbeing, and Intergenerational Mobility

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Abstract

The literature on place-based policies has argued that improvements in local economic conditions for one generation could have long-reaching effects on the socio-economic success of their children. A growing volume of work on unearned income transfers also suggests that treating families to additional income could have positive effects on the household children. The mechanisms through which these two types of change in family economic circumstance could affect children are different. This study examines three different types of changes in family economic circumstance: improvements in local economic conditions with and without associated unearned income transfers; and unearned income transfers without associated changes in local economic conditions. We investigate the effects of these treatments on the adult generation who are parents when the changes take place, and on the children's generation as adults. We use individual-level panel data from the US Census and the Internal Revenue Service that links the two generations. The advent of tribal casino operations due to the passage of the Indian Gaming Regulatory Act, together with individual tribal arrangements provide sources of variation in local economic conditions.

Keywords: Income inequality, earnings inequality, race, ethnicity, casinos, mobility, American Indian
JEL classification: J15, J24, 48, I38

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1 Extended Abstract

There is a strong positive correlation between family resources and children's social and economic outcomes as adults. The intergenerational transmission of socio-economic status is well documented (Almond, Currie and Duque, 2018). However, relatively little is known about how improved economic opportunities and unearned income transfers received by households affect children's long-term outcomes. The literature on geographic differences in economic outcomes suggests that families "moving to opportunity" could improve children's outcomes by relocating to areas experiencing better economic conditions (Chetty, Hendren and Katz (2016); Chetty and Hendren, 2018 (1)(2). Studies on the long-term effects of recessions demonstrate that experiencing worse economic conditions during childhood affects education and labor market success in adulthood (Stuart, 2022). But how do the combined effects of improved economic opportunity and increases in unearned cash transfers impact children's outcomes?

This study considers three different types of changes in family economic circumstance and their impacts on the next generation. First, we examine the impact of opening tribal casinos, often described as "engines of economic growth," on the population of individuals residing on reservations and immediately adjacent counties in 1989, both American Indians(AIs) and non-AIs, and we follow them until 2017. Second, we expand this analysis to explicitly analyze cases in which the tribe distributed unconditional cash transfers to tribal members. Finally, we consider a subset of tribal members who reside away from the reservation, and investigate the effect of unconditional cash transfers on this group. While they receive the cash transfers, these tribal members are not directly affected by the casino operations. Importantly, all three of these treatments affect the same demographic groups at the same time, and are brought about by the same institutional changes.

The changes in family economic status we study are directly related to the provisions of the Indian Gaming Regulatory Act (IGRA) taken up by various tribes.[1] A thorough examination of the industry and the impact of its development and continued operations on AIs and others directly or indirectly affected by it has not been conducted primarily due to the scarcity of data for AIs in standard longitudinal data sets. Several cross-sectional analyses have been conducted (Evans and Topoleski, 2002; Wolfe et al, 2014) and they generally show beneficial results with regard to incomes. However, a persistent concern is that the estimates from cross-sectional studies may be biased due to the changing composition of tribal reservations with the arrival (or departure) of reservation residents, potentially as a consequence of casino operations. Research based on panel data have been limited to individual tribes for whom such data are available (e.g. Akee et al, 2010; 2013; 2018 and 2020).

1.1 Data

We assemble a novel individual panel data set for those residing on AI reservations in 1989 prior to the start of the Indian Gaming industry. We then follow the same set of individual households over time. The data in this study come from two separate sources: the U.S. Census Bureau and the IRS. Records are linked at the U.S. Census Bureau using a unique identification key, called a "PIK."[2] Only those

[1] AI gaming was authorized via the passage of the Indian Gaming Regulatory Act (IGRA) of 1988. This law provided a standardized method for AI tribal governments to create casino operations on their federally-recognized tribal lands. The purpose of the IGRA was to provide AI tribal governments with a source of revenue in an era of declining federal support of tribal programs and services. The use of the profits from tribally owned and operated casinos are mandated to benefit tribal governments or operations.

[2] For more information on the linking process, see Chetty et al, 2020; Wagner and Lane, 2014.

observations that received the unique person identifier are used in the analysis.[3]

The first population we examine are adults, ages 25 to 45, who filed their 1040 from a tract or zip code within a designated reservation area in 1989. We then calculate household annual earnings for these adults as measured by their 1040 information from tax years 1989 to 2017. The selection in 1989 is important, as IGRA was passed the year prior and the casinos we study were established after that year. We trace the same individuals in all subsequent years in the panel data, regardless of whether they continued residing on the reservation or moved away.

We then link census demographic data to these adults. Our demographic data is a multi-year data set that combines the 2000 and 2010 decennial censuses with ACS data from 2001 to 2017. Key to our analysis is the identification of AIs—we code someone as AI if he or she reports "American Indian/Alaska Native," or reports a specific tribe, in any one of the first four race variables on a decennial census or ACS. For the adult analysis, we use Adjusted Gross Income (AGI) for our analyses, which includes all sources of income for a tax unit and all adjustments to income. Our analysis focuses on all income sources for a household and provides a snapshot of the conditions prior to taxation and any potential governmental transfers.

We link any children to the 1989 adults by using dependent claiming on 1040s. A child's invariant parent is the earliest claimer of a child, and we first see dependent claiming in tax year 1994. We link children to their demographic information in the same manner as their parents. We then link the children, as adults, to their 1040 filing and W-2 information (beginning in 2005). The children in the sample were born between 1978 and 1991.[4]

We link data on casino operations and, where applicable, associated cash transfers, to the individual level panel data. The casino data was collected by the authors using publicly available information. This variable is zero for all years prior to the start of casino operations and is coded as one in the year the casino started operations on the reservation and for every year thereafter. For tribes that did not open a casino until the end of our observation period in 2017, the casino variable is coded as zero throughout. The decision to pursue casino operations is dependent upon each tribal government and thus provides the time and spatial heterogeneity in casino openings. Because we do not observe the tribal decision making process, and tribes who acquire a casino (or acquire it earlier) likely differ on a number of dimensions from tribes who do not acquire a casino (or acquire it later). That is why it is important to account for time-invariant unobserved heterogeneity at the tribal level.

As Figure 1 demonstrates, the share of census tracts that were affected by casino operations among all tribal census tracts takes off in the early 1990s, and by 2005 there are more census tracts with casino operations than not. Per capita transfers start a couple of years after casino operations, and affect about half to two thirds of the casino census tracts. Children in our sample were on average around 12 or 13 years of age when the casino opened.

Casino operations on tribal lands encompass all types of enterprises from slot machines located in temporary structures to resort-style establishments. Data from the Bureau of Labor Statistics show that in 2018 there were more than 200,000 individuals employed in tribal casinos. In Figure 2 we plot the real 2018 dollar value of casino revenues for both AI and non-AI casino industries. There are two

[3]The record-linkage approach we use to link the data introduces some bias that is well documented. See Bond, 2014 and Chetty et al, 2020. Because our study covers a panel of multiple years of tax filings (1989 through 2017) the selection issues are somewhat less severe as compared to work using fewer years of tax data.

[4]In the full paper, we also examine the set of AI adults who did not live on reservation land in 1989. This population may have been eligible for unearned cash transfer money even though they never lived near a casino, which allows us to further differentiate the effect of the subsidy from the effect of the labor market. We also run multiple sensitivity analyses.

Figure 1: Expansion of Casino Operations/Cash Transfer Programs by Census Tracts by Year

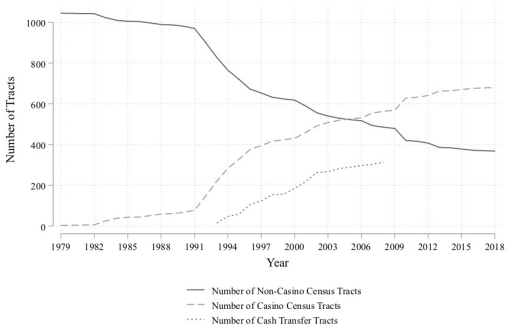
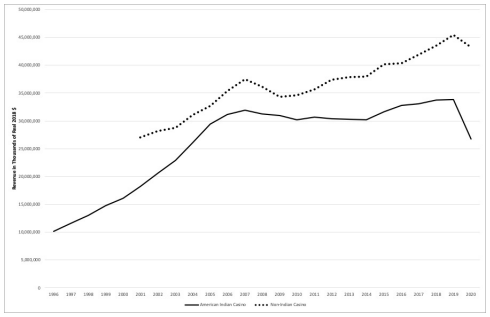


Figure 2: Casino Revenues for AI and Non-Indian Owned, 2001-2018



notable in this figure. The first is that the size of the AI casino industry is quite large and has ranged from approximately 77-85 percent of the non-Indian casino industry in the past fifteen years. Also notable is the strong growth in the AI casino industry in revenues from the mid 1990s onward.

1.2 Empirical strategy and results (preliminary and incomplete)

The individual panel nature of the data allow us to run models accounting for individual-level time-invariant heterogeneity through individual fixed effects. We consider the impact of casino operations and separate out the effect of unconditional cash transfers across AI race. The main estimating equation is:

$$\mathrm{Y}_{it} = \alpha_0 + \beta \times X_{it} + \gamma \times Casino_t + \delta \times Casino_t \times AI_i + \lambda \times PerCap_t + \xi \times PerCap_t \times AI_i + \theta_t + \mu_r + \epsilon_{it} \tag{1}$$

AI stands for AI race, PerCap indicates the presence of a per capita unearned income transfer. The outcomes of interest are household earnings and adjusted gross annual household income, employment, as proxied by the presence of non-zero wage and salary earnings, marital status and the number of children claimed on the tax return. We consider all persons residing on a tribal reservation and reporting AI race as members of the tribe the tribal land belongs to. Our estimates should be interpreted as intention to treat, and thus likely under-estimate the true effects of the treatment. We include a vector of variables in X_{it} that change at the individual level over time. We also include a year-of-reported-earnings-specific fixed-effect θ_t to account for unobserved factors that affect everyone at the same time. We also include a tribal reservation fixed-effect μ_r

The validity of the model estimates depends on the assumption of parallel trends in outcomes across reservations that started casino operations earlier and those that started later or never. To test the validity of this assumption, and to investigate the evolution of outcomes over time, we conduct event-study analyses of the effects of casino operations. We break out the pre- and the post- casino periods into the number of years before and after the operations started. We then interact the pre- and post- casino dummies with AI race. Recent developments in the difference-in-differences identification literature have pointed out that with staggered treatments, like the ones we have in this study, certain adjustments to the standard diff-in-diff panel model estimation are necessary. In robustness analyses we implement the new estimators developed by Calloway and Sant'Anna (2021).

Next we examine social and economic outcomes for the children of households that resided on tribal lands in 1989. All children that can be traced to these households are included in the estimation.

We consider children as "treated" to the casino if they were younger than 18 when the casino operations started. The effect of households' casino and cash transfer exposure is identified from comparisons between children of the same cohorts whose parents resided on a reservation that (eventually) opened a casino and those that did not, and across children of different cohorts whose parents resided on the same reservation in 1989. The main estimating equation is:

$$\mathrm{Y}_i = \alpha_0 + \beta \times X_i + \gamma \times Casino_i + \delta \times Casino_i \times AI_i + \lambda \times PerCap_i + \xi \times PerCap_i \times AI_i + \theta_t + \mu_r + \epsilon_i \quad (2)$$

Where i indexes the individual, casino is an indicator variable equal to one if the casino opened before the person turned 18, and the vector X_i includes indicators for AI race, gender and the child's birth cohort. Included are fixed effects for county of residence of the parents in 1989 μ_r and the year in which the outcome is measured θ_t.

Table 1 contains estimates from model 1, including individual filer-specific fixed effects. The coefficients thus represent within-individual changes in earnings, income, and employment status. We run separate estimations for individuals who already have children in 1989 and those who do not. If households with and without children react differently to the casinos, then our main focus is on those with children. Fertility itself may be affected by the treatment, and so we split the sample based on the presence of children in 1989.

Casino operations have positive and large effects on AI earnings. Non-AIs without children, experience a decline in earnings and income associated with the casino, in the order of 2 to 3 percent. AIs with and without children in 1989 react differently to casino operations in terms of employment. Those without children are less likely to be employed after the casino opens. When we consider this finding together with the effects on wages and income, it appears that the casino leads to higher wages for those employed, and a slight reduction in overall employment in that group. AIs with children in 1989 experience the opposite effects with an increase in the probability of reporting positive earnings after the casino opens. The unearned cash transfers have negative effects on earnings, income and employment for everyone. They have positive and large effects on AI total income, especially among AIs with children in 1989. This is consistent with the nature of these transfers as they are sent to tribal members only.

Table 2 presents the estimates from equation (2) applied to individuals for whom we have observations from ages older than 24. We restrict the age range in this manner to allow individuals to graduate college and avoid picking up zero or small incomes while they are in school. In these regressions the outcome is individual income, not household income as in the parents' analysis. The casino increases individual income across the board by two to three percent and has small but positive effects on the probability of employment. The effects of casino operations on AI children are quite different depending on whether the casino also comes with cash transfers. For those who do not have cash transfers, the casino reduces overall income and the probability of employment. The cash transfers have positive effects on total income for those who are eligible to receive them. The combined effect of casino operations with cash transfers lead to positive changes in children's incomes as adult for AIs, even though the probability of reporting positive wages is substantially reduced. Overall, the cash transfers lead to lower employment but higher incomes. Interestingly, we also find a substantial reduction in the probability of marriage among AI children affected by casino operations without associated cash transfers. The cash transfers do not appear to have differential effects on the probability of marriage.

Table 1: Outcomes for Adults by the Presence of Children in the Household in 1989

VARIABLES	Log Wages		Log Income		Employed	
Casino	-0.00259	0.0296	-0.0103	0.000959	0.000552	0.00115
	(0.0123)	(0.0203)	(0.0104)	(0.0108)	(0.0024)	(0.0032)
Casino x AI	0.121***	0.138***	0.0889***	0.0624***	-0.0130***	0.0154***
	(0.0177)	(0.0183)	(0.0175)	(0.0196)	(0.0032)	(0.0050)
Cash Transfer	-0.0631***	-0.0810***	-0.0478***	-0.0537***	-0.00846***	-0.0146***
	(0.0109)	(0.0233)	(0.0101)	(0.0121)	(0.0025)	(0.0032)
Cash Transfer	-0.0155	0.052	0.0630*	0.107***	-0.000201	0.00991
x AI	(0.0277)	(0.0328)	(0.0322)	(0.0243)	(0.0077)	(0.0069)
Observations	1,997,000	3,528,000	2,179,000	3,917,000	2,994,000	4,989,000
R-squared	0.258	0.051	0.388	0.124	0.648	0.583
Number of PIK	129,000	216,000	130,000	217,000	130,000	217,000

Source: Census demographic data 2000–2017; IRS Form 1040 and W-2; Census Numident. DRB release number CBDRB-FY22-CES014-014.

To sum up: We find that casino operations resulted in improved wages and income for adult American Indians relative to non-Indians. The effects of casino operations on wages and income for non-Indians are negative, but they appear only in the presence of unconditional cash transfers coupled with casino operations. There are no significant effects on the wages of non-AI populations arising from casino operations only. Unconditional cash transfers led to a decrease in earnings for everyone, but an increase in income for American Indians—consistent with the premise that the cash transfers are disbursed to tribal members only. Further, we see higher employment for AIs with children in areas without cash transfers. There are no substantial differences in employment rates for families with children when cash transfers apply. However, we see a significant decline in employment among childless AI individuals.

Table 2: Child Outcomes in Adulthood

VARIABLES	Log Child Individual Income		Working in Adulthood		Married in Adulthood	
Casino x AI	-0.0443	-0.162***	-0.0321***	-0.0171**	-0.0347***	-0.0415***
	(0.0315)	(0.0411)	(0.0086)	(0.0084)	(0.0114)	(0.0131)
Cash Transfer		0.338***		-0.0458***		0.0206
x AI		(0.0921)		(0.0177)		(0.0209)
Casino	0.0212**	0.0312***	0.00382**	0.00405	0.00727**	0.00727
	(0.0083)	(0.0108)	(0.0018)	(0.0034)	(0.0037)	(0.0047)
Am Indian (AI)	-0.229***	-0.232***	-0.0481***	-0.0475***	-0.139***	-0.140***
	(0.0172)	(0.0169)	(0.0037)	(0.0036)	(0.0093)	(0.0093)
Cash Transfer		-0.0157		-0.00027		-3.51E-05
		(0.0140)		(0.0044)		(0.0057)
Observations	9,095,000	9,095,000	11,660,000	11,660,000	11,660,000	11,660,000
R-squared	0.222	0.222	0.25	0.25	0.066	0.066

Note: All individuals are greater than 25 years of age in results shown above. Including younger individuals do not qualitatively change our results. Source: Census demographic data 2000–2017; IRS Form 1040 and W-2; Census Numident. DRB release number CBDRB-FY22-CES014-014.

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