

Local Institutions in Economic Development: The Effect of Juntas Auxiliares in Puebla, Mexico

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Abstract

This study investigates the effect of Juntas Auxiliares, a local governance institutions unique to the state of Puebla, Mexico, on the economic development at the municipality level. I gather information of the number of Juntas Auxiliares in 172 municipalities of Puebla and used administrative public data to measure the impact of Juntas Auxiliares on 2020 household income levels. Using territorial extension of each municipality as the instrument for the number of Juntas Auxiliares to solve for endogeneity and, defending the instrument with 31 falsification tests, I found that Juntas Auxiliares are significantly associated with a 2% increase in household income, indicating their positive contribution to local economic development.

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1 Introduction

There's a pattern that seems to be true: regions with less indigenous population have more economic development. However, that simplistic view fails to explain the complex underlying mechanisms that are behind that correlation. This paper explores the hypothesis that coordination failures between local or community institutions and higher-level structures, such as municipal, state, or national bodies, may be at the heart of such underdevelopment.

This article analyzes the impact of a distinct local institution — the Juntas Auxiliares in the state of Puebla, Mexico — on economic development. These entities provide the community with local participation mechanisms that can reach higher level institutions, such as the municipality, state or country entities. Juntas Auxiliares serve as a bridge between citizens and the state. With a certain degree of administrative autonomy, they have legal attributions in local affairs management in different dimensions, such as: sports, culture, national programs, public works and services, and the protection of indigenous communities.

Through a painstaking collection of public data from Mexican institutions and a crafted effort to find and document the number Juntas Auxiliares across Puebla's municipalities, this paper paints a comprehensive picture of their influence on economic development within these regions.

To solve for the endogeneity issue that might cause the fact that economic performance may explain number of Juntas Auxiliares and vice-versa, I propose territorial extension of each municipality as the instrument for the number of Juntas Auxiliares. A series of 31 falsification tests were conducted to defend the exogeneity and excludability of the instrument. I found that the territorial extension of the municipalities of 27 out of the 32 states of Mexico, don't have a significant relation with income, providing evidence in favor of the validity of the instrument.

The OLS and the IV results are consistent with the following findings: each Junta Auxiliar is associated, on average, to a 2% increase of household income, suggesting that these local institutions are indeed engines of economic growth.

In conclusion, this research found evidence supporting the hypothesis that providing links between local communities and high-level institutions foster economic development. In this case, the analysis presents solid evidence that Juntas Auxiliares increase the income of the households at the municipality level.

This article enriches the literature not only in the fields of political, development, and institutional economics but also sheds light on governance, decentralization, deconcentration, and the autonomy of institutions from an economic perspective and methodology. Furthermore, it appears to be the inaugural study to scrutinize the Juntas Auxiliares of Puebla from an economic point of view, specifically regarding economic development. If that's the case, this research lays the groundwork for future analysis of the impact of Juntas Auxiliares in other dimensions, such as education, health, and conflict.

The paper is structured as follows. Section 2 presents the literature review, In Section 3, I provide a brief historical context of the institutional framework of the colonization

in Latin America as well as the referred literature. I included a subsection of the legal background to understand the origins, characteristics, and powers of Juntas Auxiliares. In Section 4, I describe the data used in this analysis. In Section 5, the methodological approach is presented, as well as the defend of the instrument. In Section 6 results, Section 7 conclusions and Section 8 is a brief list of future research avenues.

2 Literature Review

The interplay between coordination failures, local institutions and economic development in Latin America has garnered attention within some academic circles.

Research on local enterprise partnerships, such as (Pike et al., 2015) in England, highlights the significance of local institutional frameworks in fostering regional economic growth.

Numerous studies have examined the historical adversities faced by indigenous communities. Works by Dippel (2014) and Feir et al. (2022) delve into the profound impact of forced coexistence policies and economic exploitation on Native American reservations, while research by Feir (2016) assesses the long-term consequences of forced assimilation policies, such as those implemented through Indian boarding schools. Barsanetti and Ferreira (2023) explore the historical occupation and its relation to modern deforestation, indicating the enduring effects of colonial practices on indigenous land. Additionally, studies like those by Feir and Auld (2021), Frye and Parker (2021), and Carlos, Feir, and Redish (2022) further contribute to our understanding of the link between indigenous self-governance, economic development, and dispossession.

Issues of coordination failures, especially in historical contexts, have also been explored in seminal works such as those by Greif et al. (1994), who examined the role of merchant guilds in supporting economic cooperation and enforcement.

In terms of the broader Latin American context, recent scholarship has aimed to unearth the roots of underdevelopment in the region. Valencia Caicedo (2023) provides a fresh economic and political history of Latin America and the Caribbean, while other studies, like Dell (2010) have focused on specific countries and historical periods to shed light on how colonial legacies and institutional structures have influenced developmental trajectories. The scholarship has been particularly rich in analysing the role of institutions in Latin American, from the colonial era to the present day, exploring the ways in which they have either harmed or foster regional development.

This paper contributes to the literature by intersecting the mentioned topics; local governance, indigenous institutions, coordination failures, and economic development in Latin America. While much has been written on each of these topics individually, this study appears to be among the firsts to provide an analysis of the intersection between.

3 Context

3.1 Colonization and Institutional Framework

Colonizers arrived in the Americas in 1492 and chose to impose systems and institutions that benefitted them, whether for the purpose of settling in the new lands or extracting its resources (Acemoglu, Johnson, and Robinson, 2001). In Latin America, indigenous communities were co-opted without any say in how these systems or institutions would be implemented and developed. However, Indigenous institutions have shown remarkable endurance, surviving in numerous societies for centuries. As a result, they continue to exert a substantial influence on contemporary outcomes (Michalopoulos and Papaioannou, 2013; Bentzen et al., 2017; Angeles and Elizalde, 2017; Gennaioli and Rainer, 2007; Giuliano and Nunn, 2013; Michalopoulos and Papaioannou, 2014), either in the form of customs passed down through generations or as communities that continue to exist and are part of society with their language, traditions, and rules.

Pre-colonial communities had their systems for tax collection, education, and organization. Some of these were modified by the colonizers, while others were completely replaced. However, these changes were coercively imposed, often violently. The fact that these new institutions were imposed in a top-down manner could have led to a cultural and ideological clash between local and foreign institutions, resulting in a series of coordination failures. The effects of these failures, or the failures themselves, may persist to this day (Dippel, 2014). This is one reason why some Latin American societies may exhibit underdevelopment.

Building on the previous discussion, Dippel (2014) investigates the effects of forcing Native American communities into the framework of modern institutions. In his study, he looks into how this forced integration has been harmful to the social and economic well-being of Native communities. His research shows that placing outside economic systems onto these communities, which often don't match their indigenous practices, has had a negative effect on their development. This study highlights how the introduction of mismatched systems can cause problems and slow down economic progress.

3.2 Review of Legal Background: Understanding Juntas Auxiliares

If coordination failures between modern institutions and local institutions contribute to underdevelopment, a straightforward solution might involve establishing local citizen participation mechanisms. This way, community members can voice concerns and propose solutions that reach higher levels of governance.

In other words, legal systems and their established mechanisms exert significant influence on the trajectory of development (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998). A well-conceived mechanism that facilitates interaction between higher-level institutions and community individuals might foster development.

The Juntas Auxiliares in Puebla exemplify this approach, offering direct interaction between citizens and government authorities. Below the familiar hierarchy of Country, State, and Municipality, Puebla features the Juntas Auxiliares as a grassroots layer of

governance. They foster a close connection between citizens and the state, retain a degree of administrative autonomy, and play a crucial role in local affairs management, acting as a link between the community and the broader municipal government.

The origin of the Juntas Auxiliares lies in the history of the capital city: Puebla, where ancient communities were gradually absorbed by the city due to continuous urban expansion. For this reason, in 1962, by decree of the state governor, the communities were integrated into the municipal structure of the city of Puebla under the name of Juntas Auxiliares.

Over the years, this mechanism was adopted by other cities/municipalities of the state, and in 2001 the state congress formally recognized the institutional figure in the Municipal Organic Law of the State of Puebla under the name of Juntas Auxiliares with the following objective:

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The Juntas Auxiliares will coordinate with the City Councils to contribute to the functions they perform in terms of administration, collection, execution, and supervision.

That is, the communities existed, only that now they were given a space to participate, collaborate, and assist in the tasks of the Municipality. For which, the law establishes terms and percentages in which the Juntas receive a budget from the same Municipality.

Later, in 2013, the Municipal Organic Law of the State of Puebla was reformed and granted the status of "decentralized body of the municipal public administration," with which they received more freedoms in organizational terms and decision-making.

It is important to point out certain characteristics and powers that the Juntas Auxiliares have and are mentioned in the law:

- To be part of a Junta Auxiliar, you must prove to be an inhabitant of the jurisdiction of the Junta.
- The Junta has the power to send to the City Council the proposals it deems conducive to their incorporation into the municipal planning process.
- Provide facilities and, if necessary, collaborate with the City Council so that it ensures the safety and public order of the town.
- Promote and manage public works and services that they consider necessary, to the State Government, Federal Agencies, National and International Non-Governmental Organizations.
- Encourage sports, cultural, and educational activities, suggesting the necessary actions to the City Council for their inclusion within the respective municipal programs.
- Drive the programs and actions implemented by the City Council in favor of people with disabilities, girls and boys, women, and the elderly.

- Preserve, enrich and promote the native languages, knowledge, and all the elements that constitute the culture and identity of the Indigenous Peoples.

That is, the Juntas Auxiliares are the first step in the governance of the municipality, with functions and powers related to planning, security, sports, culture, and protection of indigenous communities that allows the people to participate and have an impact or, at least, an opinion, on public and general concerns of the community.

4 Data

4.1 Gross Domestic Product (GDP) and Municipal Income

For my analysis, I initially considered using the Gross Domestic Product (GDP) per municipality as the outcome variable. However, disaggregated GDP data at the municipal level in Mexico is not readily available. Instead, I opted to use estimates of municipal income per household, which were available through the National Institute of Statistics and Geography (INEGI, 2020c). These estimates provide a broad perspective on the economic conditions within each municipality and serve as a viable proxy for local economic output. The data can be accessed from INEGI's report on Municipal Income Estimations for 2020 (INEGI, 2020c).

4.2 Geographic and Demographic Data

The territorial extent for each municipality was obtained from INEGI's 2020 National Population and Housing Census (INEGI, 2020b). In addition, I calculated average latitude, longitude, and altitude from detailed locational data for all localities within each municipality, sourced from INEGI's Advanced Geo-statistical Information Module (INEGI, 2020a).

I also included demographic data regarding the indigenous population, which was sourced from the National Institute of Indigenous Peoples (INPI). This dataset provides disaggregated estimates of the indigenous population percentage by municipality, based on census data and sample surveys from selected municipalities (INPI, 2020).

4.3 Juntas Auxiliares in each municipality

A significant challenge was the lack of public data on the number of Juntas Auxiliares in the municipalities of Puebla. To address this gap, I conducted a detailed investigation across official municipal websites, contacted municipal headquarters, and reviewed various academic and journalistic publications. This effort enabled me to compile data on 172 out of the 215 municipalities in the state of Puebla, resulting in a total of 658 Juntas Auxiliares. It is important to note that not every municipality has the same number of Juntas Auxiliares; some have only one, while others have more than ten. This source of variation is exploited in this paper.

5 Methodology

5.1 OLS

In order to analyze the effect of Juntas Auxiliares in the economic development of the society, the following OLS model was proposed:

$$\text{Income}_m = \beta_0 + \beta_1 \text{Juntas Auxiliares}_m + \beta_2 \% \text{ indigenous pob}_m + \beta_i X_m + \epsilon_m \quad (1)$$

Where:

- Income_m is the dependent variable representing the estimated income per household in municipality m , at year 2020.
- β_0 is the intercept; it represents the expected value of income when all independent variables are zero.
- $\text{Juntas Auxiliares}_m$ is the independent variable of interest, indicating the number of Juntas Auxiliares in municipality m .
- β_1 is the coefficient that indicates the expected change in *Income* with each additional Junta Auxiliar within the municipality, assuming everything else is constant.
- $\% \text{ indigenous pob}_m$ is the independent variable indicating the estimated percentage of Indigenous population in municipality m .
- β_2 is the coefficient that indicates the expected change in *Income* for each percentage point increase in the indigenous population of the municipality.
- X_m vector of geographic controls, indicating the altitude, longitude, and latitude of municipality m .
- β_i is a vector of coefficients corresponding to each of the geo-control variables (which include altitude, longitude, and latitude), indicating how changes in these variables are expected to affect *Income* of the municipality.
- ϵ_m is the error term for the municipality m , capturing all other factors affecting *Income* that are not included in the model.

However, this model presents an endogeneity problem: higher or lower income may cause the community to demand more Juntas Auxiliares and Juntas Auxiliares may cause conditions that affect income. In other words, there could be a reverse causality issue.

5.2 Solving the endogeneity: IV

In order to solve the endogeneity problem, I use territorial extension of each municipality as instrument for the number of Juntas Auxiliares.

This is because a municipality with a small territorial extent has neither the incentives nor the reasons to establish many Juntas Auxiliares. Conversely, a municipality covering a large area has two strong reasons for defining several Juntas Auxiliares.

The first, as mentioned in the historical context regarding the origin of the Juntas; these were communities that were already established within the municipality territory and were granted the title of Juntas Auxiliares. This means that if you have a larger territorial extent, you are more likely to encompass several communities, making it much harder to argue for a small number of Juntas Auxiliares.

The second reason for a municipality with a broad territorial reach to define multiple Juntas Auxiliares resides in an logistical and organizational argument. Community members will prefer to have the Junta's meeting centers close by, so it is illogical for a large municipality to have only one Junta Auxiliar.

To look at the relationship between Juntas and Territorial extension, the results of the first-stage regression are presented in Table 1.

Table 1: First stage

Dependent variable:	Juntas Auxiliares		
Mean of dependent variable:	3.83		
	OLS (1)	OLS (2)	OLS (3)
Territorial Extension	0.009*** (0.002)	0.010*** (0.002)	0.010*** (0.002)
Latitud		1.242*** (0.370)	1.190** (0.381)
Longitud		-1.511** (0.549)	-1.670** (0.614)
Altitud		0.00094* (0.000389)	0.0011* (0.0004)
% indigenus population			0.616 (1.058)
Number of observations	171	171	171
R-squared	0.13	0.21	0.20
F-statistic	27.87	12.14	9.74

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

From the first stage is important to mention the following: first, the instrument has a lot of predictable power for the endogenous variable, especially without any control. With an F-statistic of 27.87, it can be argued that this is an strong instrument.

Second, percentage of indigenous population has no explanatory power for number of Juntas Auxiliares. Not even if it is the only control (see Table A1). It's crucial to note that controlling for Juntas Auxiliares and the percentage of the indigenous population in the second stage could be seen as problematic. This is because Juntas Auxiliares were originated from communities that were predominantly indigenous during the pre-Hispanic era or the colonial period. Additionally, one of the aims of the Juntas Auxiliares is to "preserve, enrich, and promote all the elements that constitute the culture and identity of the Indigenous Peoples," which might suggest that the indigenous population percentage is an outcome of the Juntas Auxiliares.

If that were the case, including the indigenous population percentage would mean including a bad control. However, the evidence suggests otherwise. Percentage of indigenous population has no significant explanatory power for number of Juntas Auxiliares.

In other concerns, there might be a serious problem regarding territorial extent as an instrument; it might be that territorial extent affects income, potentially violating the exogeneity and excludability condition.

5.3 Defending the instrument: 31 falsification tests

In order to defend the instrument condition I had the following idea: if territorial extension of another state's municipalities doesn't have an impact on income, I can argue the validity of the instrument.

However, I could test this idea on more than one state since I have data for municipalities from all 32 states of Mexico. Therefore, I decided to conduct 31 falsification tests.

Table 2 present the results of running 32 regressions of income per household on territorial extension at the municipality level. This table includes the results for the municipalities of Puebla.

Only 5 out of the 32 Mexican states exhibit a statistically significant relationship between territorial extension and income household, suggesting that, in most cases, territorial extension does not impact income.

This evidence supports the validity of the instrument, reinforcing the idea of using territorial extent as an instrumental variable for number of Juntas Auxiliares. The lack of widespread significance across the states reinforces the argument that observable and unobserved factors of income are unlikely to be systematically correlated with territorial extension, allowing for a more confident interpretation of the causal effects in the analysis.

Table 2: Falsification tests

State	Coefficient	Std. Errors	p-values	Observations
Agascalientes	2.421	(1.629)	0.168	11
Baja California	0.042	(0.080)	0.628	5
Baja California Sur	0.047	(0.123)	0.722	5
Campeche	0.170	(0.200)	0.415	11
Coahuila	0.050	(0.058)	0.394	38
Colima	1.508	(1.542)	0.354	10
Chiapas	0.083	(0.084)	0.325	118
Chihuahua	0.082	(0.044)	0.067 •	67
Ciudad de México	−3.981	(9.918)	0.694	16
Durango	0.103	(0.064)	0.115	39
Guanajuato	0.218	(0.232)	0.352	46
Guerrero	0.067	(0.157)	0.668	81
Hidalgo	0.245	(0.349)	0.485	84
Jalisco	0.139	(0.090)	0.126	125
Estado de México	0.281	(0.412)	0.495	125
Michoacán	0.083	(0.131)	0.527	113
Morelos	1.212	(1.420)	0.400	33
Nayarit	0.046	(0.403)	0.911	20
Nuevo León	0.162	(0.242)	0.508	51
Oaxaca	0.073	(0.075)	0.335	570
Puebla	0.327	(0.179)	0.069 •	217
Querétaro	1.298	(1.111)	0.259	18
Quintana Roo	0.068	(0.212)	0.754	11
San Luis Potosí	0.225	(0.128)	0.084 •	58
Sinaloa	0.157	(0.157)	0.334	18
Sonora	0.108	(0.051)	0.037 *	72
Tabasco	0.083	(0.344)	0.813	17
Tamaulipas	0.135	(0.122)	0.277	43
Tlaxcala	0.886	(1.516)	0.561	60
Veracruz	0.088	(0.096)	0.361	212
Yucatán	0.397	(0.160)	0.015 *	106
Zacatecas	0.067	(0.087)	0.444	58

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

6 Results

In Table 3 are shown the regression results for the effect of Juntas Auxiliares on household income at the municipal level in the state of Puebla.

The first four columns display results using simple OLS, and columns 5 to 7 show results using Territorial Extension as an instrument for Juntas Auxiliares.

Table 3: Effect of Juntas Auxiliares on Economic development

Dependent variable:	Income per household 2020						
Mean of dependent variable:	29,230.28						
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	IV (5)	IV (6)	IV (7)
Juntas Auxiliares	546.4*** (136.2)	463.8*** (128)	447.7*** (114.2)	1056.98*** (221.12)	937.3* (371.7)	705.7* (303.1)	449.4● (266.7)
Latitud		-1646.0* (666.2)	-545.0 (617.2)	524.64 (600.8)		-1824.0* (702.9)	-546.3 (702.9)
Longitud		-3135.0** (1015.0)	-316.3 (1000)	300.8 (973.99)		-2829** (1083)	-314.3 (1040)
Altitud		2.49*** (0.713)	0.07 (0.734)	0.23 (0.716)		2.27** (0.763)	0.07 (0.762)
% indigenous population			-11290*** (1,706.0)	-6419.2** (2256.8)			-11290*** (1,707)
(Juntas Auxiliares) x (% indigenous population)				-1397.61** (438.45)			
Number of observations	171	171	171	171	171	171	171
R-squared	0.09	0.25	0.41	0.42	0.04	0.23	0.41
1st stage R-squared					0.13	0.21	0.20
1st stage F-statistic					27.87	12.14	9.74

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

For the coefficient of Juntas Auxiliares, there is a consistent positive and statistically significant relationship with Income per household, with at least 10% of significance across the different specifications. Providing, on average, an increase of 2% on income per household per each Junta Auxiliar. This pattern holds true even when adjusting for a range of control variables. This result provides support to the hypothesis that local institutions can indeed foster economic development.

The inclusion of an interaction term between Juntas Auxiliares and the percentage of the indigenous population provides insight into how these two variables might collectively influence household income at the municipal level. It was included to shed lights on the hypothesis that: Juntas Auxiliares provide a mechanism for indigenous population to participate actively, voice concerns and propose solutions that reach higher levels of governance.

The coefficient of the interaction term is negative, providing some evidence that, maybe, Juntas Auxiliares are not giving indigenous population the necessary tools to boost development. Nevertheless, in this same regression (4), it can be observed that

the coefficient of percentage of indigenous population decreases by almost half and the coefficient of Juntas Auxiliares increases by more than double. In that case, the interaction of these two variables per se, doesn't benefit economic development, but it makes the other variables better off. In total terms, regression (4) provides a better effect on income considering the effects of Juntas Auxiliares, percentage of indigenous populations and the interaction term than if we just consider the effect of Juntas Auxiliares and percentage of indigenous populations in regression (3) or (7).

However, it's important to clarify that results from regression (4) that includes the interaction term, should not be interpreted as a causal relationship, as endogeneity is not controlled by the instrumental variable. Doing the regression with the interaction term and the IV could result in a 'forbidden regression,' potentially leading to biased estimates. The result is only presented as an informative piece of information, not as a causal result.

Overall, this analysis highlights the positive role that local governance structures — like Juntas Auxiliares — play in economic outcomes.

7 Conclusion

In conclusion, this research has made significant steps in understanding the effect of local governance structures in economic development. There's econometric evidence of the consistent positive impact of Juntas Auxiliares on household income across municipalities in Puebla. These findings align with the hypothesis that local institutions are catalysts for economic growth.

The positive and statistically significant coefficients for Juntas Auxiliares across different model specifications and within the OLS and the IV approach, provides solid evidence to argue that local institutions can be effective in driving economic development.

Overall, the research suggests that Juntas Auxiliares play an influential role in municipal governance and economic outcomes, validating their importance in Puebla's social and economic framework. The examination of the exogeneity of territorial extent as an instrument through 31 falsification tests solidify these findings, offering a robust argument for the selected econometric approach.

The comprehensive data, the careful application of statistical methods, and the discussion of potential limitations all contribute to the strength of this study's conclusions: is better to build bridges.

8 Future research avenues

The paper advances the discourse on local institutions' effectiveness in economic development, setting a foundation for further research and policy consideration. For instance:

- Investigate the impact of Juntas Auxiliares on other outcomes such as education, healthcare, and conflict.

- Strengthen the analysis by utilizing a more extensive dataset, not just limiting to the year 2020 but also including older or more recent data to verify the robustness of the results.
- Employ alternative approaches, for instance, taking advantage of the fact that Juntas Auxiliares only exist in the state of Puebla and not in the other Mexican states, to conduct comparative studies across states.
- Exploring the differential impacts of Juntas Auxiliares in urban versus rural settings to understand the variability in their effectiveness.
- Examining the role of Juntas Auxiliares in fostering civic engagement and political participation among residents.
- Conducting qualitative research to understand the cultural and social dynamics within Juntas Auxiliares and how they shape community interactions.
- Analyzing the financial management and efficiency of Juntas Auxiliares, looking at budget allocations, spending, and fiscal outcomes.

This study encourages other researchers to look into this scope to provide and build more solid evidence on the discussion of the effect of local institutions, especially to understand if this type of mechanisms are replicable and scalable in other settings.

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9 Appendices

Table 4: Table A1

Dependent variable:	Juntas Auxiliares
Mean of dependent variable:	3.83
% indigenous population	−1.165 (0.872)
Number of observations	171
R-squared	0.01
F-statistic	1.78
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1	