The Effect of Fiscal Transfers on Local Economic Development

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Abstract

Many countries rely on a system of intergovernmental fiscal transfers to support local governments. We examine the effect of such transfers on local budgets and economic development by exploiting a 1991 decentralization reform in the Philippines that resulted in newly created cities getting a large and permanent increase in fiscal transfers from the national government. Comparing outcomes over time in pre-existing cities to cities created after the 1991 reform, we find strong evidence of spending increases in the new cities, followed by increased economic activity – new cities exhibit an increased nighttime light intensity of about 10 percent. Our estimates are robust to controlling for regional shocks, town-specific time trends, and population changes over time.
JEL Codes: H2, R5, O1, H4, R1

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1 Introduction

National governments throughout the world devolve administrative and spending powers to local governments, reasoning that local governments may be more responsive to local needs and barriers to economic development. However, because national agencies are better equipped to collect taxes, a fiscal imbalance arises: local governments cannot raise enough local revenues to cover spending responsibilities, hindering their ability to promote economic activity. In response, national governments institute a system of fiscal transfers to fund local government budgets. These transfers are large in magnitude and fund a significant portion of local spending. Even in the US, federal grants account for about one third of state budgets – totalling about $750 billion per year (Dilger, 2015). In the Philippines, a developing country, fiscal transfers fund as much as 90 percent of local budgets, which amounts to about $5 billion per year.

Given the magnitude of these intergovernmental fiscal transfers, it is important to determine whether they achieve their objective of fueling economic activity. While it may seem natural for local goverments to spend out of a fiscal windfall, in some contexts they may lack the capacity to implement spending projects, or the money can be lost to graft. Moreover, fiscal transfers may crowd out local revenue-generating effort, further eroding local governments' capacity to spend on projects that are conducive to development. Previous empirical studies find mixed results on local revenue crowd-out and spending (Arreaza and Reuter, 2012; Berset and Schelker, 2020). In addition, previous studies (e.g. Knight, 2002; Leduc and Wilson, 2017; de Carvalho Filho and Litschig, 2022) focus on transitory shocks to fiscal transfers, which are likely viewed as different from permanent increases.

We present the first estimates of the effect of a large and permanent increase in the fiscal transfer received by local governments. To do this, we exploit a 1991 decentralization reform in the Philippines that devolved many administrative and spending responsibilities to local governments, and devised separate revenue allotments depending on city status. In this system, cities get transfers that are effectively twice as large as those received by municipalities. Municipalities that transition to cityhood experience a budget shock that is both large and permanent, in contrast with many transfers studied in previous literature. The size of the fiscal transfer is purely a function of

national tax revenues and the number of current cities.[1]

We employ a difference-in-differences research design that compares outcomes over time in pre-existing cities to municipalities that were newly classified as cities after the 1991 reform. This relies on the assumption the change in outcomes over time in pre-existing cities provide a good counterfactual for the changes that the newly classified cities would have experienced had they remained municipalities. Using town-level budget data from 1992-2016, we show evidence in favor of this assumption. Various budget outcomes for both groups trend similarly, and only diverge following cityhood.

We then show that transfers permanently increase in these newly classified cities following cityhood, and that per capita spending rises dramatically. This is noteworthy given prior work (Arreaza and Reuter, 2012) that shows that capacity constraints may prevent municipalities from spending large exogenous fiscal transfers. Contrary to the crowding out prediction, we find that locally generated revenues increase following the reclassification. In this context, newly classified cities declare a moratorium on tax rate increases, so increased revenues must come from an increase in collection effort and/or higher economic activity.

Subnational data on economic activity is difficult to come by in developing countries. Rather than standard economic data, we measure economic activity using nighttime light intensity. Nighttime light intensity is a well-established proxy for economic activity in the development economics literature precisely because it has the advantage of being available at the subnational level even in countries without high quality income data (e.g., Henderson, Storeygard, and Weil, 2012; Hodler and Raschky, 2014). Our estimates show that newly classified cities exhibit increased luminosity of about 10 percent, an effect that builds over time and peaks after two years of receiving higher transfers. Our estimates are robust to controlling for regional shocks and town-specific time trends, and to controlling for population changes over time.

Our findings complement previous work on the effects of intergovernmental transfers. Dahlberg et al. (2008) use a discontinuous grant rule in Sweden to show that transfers result in increased spending. Litschig and Morrison (2013), using data from Brazil, go further and show that in-

[1]This will be discussed further in Section 2. The criteria are population, land area, and equal sharing.

creased transfers over a four-year period in the 1980s improve education and poverty outcomes. de Carvalho Filho and Litschig (2022) return to this same setting to analyze long-run outcomes. They find that the educational improvements persist more than twenty years after the end of the increased transfers. Our results complement this work by examining the effects of a permanent increase in intergovernmental transfers.

Through our results on local revenue generation and spending, we also contribute to an extensive literature that investigates the flypaper effect, a well-known empirical puzzle in public economics.[2] The flypaper effect exists when exogenous fiscal transfers result in greater public spending increases than locally generated funds (Inman, 2016). Vegh and Vuletin (2015) theorize that this is due to a precautionary savings motive, a theory that they assess using Argentinean data.

These findings have important policy implications. They imply that transfers need not crowd out local revenue generation and spending. Because of this, central governments can effectively use transfers to stimulate economic development away from the center. Thus, national governments can continue to collect the bulk of taxes, which they likely do more efficiently than local governments, and transfer it back to local governments, who are likely to be more effective at spending the money.

2 Institutional Background

2.1 Local Budgets and the Intergovernmental Transfer System

The current budget system in the Philippines is based on the Local Government Code of 1991. This law required a decentralization of spending responsibilities, accompanied by a system of revenue-sharing, from the national government to the local government units. Local government units, namely provinces, cities, and municipalities, became responsible for health, social services, agricultural extension, environmental issues, and local public works, though health and social welfare services are a shared responsibility with the national government (Diokno, 2012). Devolving these functions was justified on the reasoning that empowering local officials enhances electoral accountability. Moreover, local officials were expected to be more efficient at providing goods and services than the national government (Guevara, 2000).

[2]Leduc and Wilson (2017) offer a review of recent studies on the flypaper effect.

Figure 1 illustrates the different tiers of local government in the Philippines. The responsibilities increase with the level of government. The national government is the highest level, followed by the provinces and independent cities. Within provinces, there are component cities and municipalities. Within cities and municipalities, there are barangays or villages. Each tier of government is headed by an elected executive that serves a three-year term. Provinces are headed by governors, while cities and municipalities are headed by mayors. By the end of the time period under study, there were 81 provinces, 145 cities, and 1,489 municipalities.

Local government units fund the devolved functions using a combination of locally generated revenues and fiscal transfers from the national government. Locally generated revenues can take the form of tax revenues, primarily business and real property taxes, and non-tax revenues, which include regulatory fees or user charges, as well as permits and licensing fees (Weena, 2007). For each tier of government, collections are equal to revenues, except in the case of property taxes, which are the purview of provinces and cities. Provinces often delegate the collection of these property taxes to municipalities. Under this system, municipalities collect property taxes from its residents, and remit 35 percent of the collections to the province. They also share 25 percent to the component barangays that generated the property tax. Therefore, only 40 percent of the property tax collections stay with the municipality as revenue. Cities do not remit property tax collections to provinces, but they share the collections with the barangays. For cities, two-thirds of the property tax collections stay with them as revenue.

Despite these sources of local revenue, ever since the 1991 reform, the bulk of local budgets have been sustained by fiscal transfers from the national government (gue). As required by the 1991 reform, the national government releases 40 percent of internal revenues to local government units in the form of a block grant. This came to be known as the Internal Revenue Allotment (IRA). Figure 2 describes how this amount is divided among the different levels of local government units. While municipalities share in a slightly larger amount of the total IRA (34 percent) than cities (23 percent), because there are substantially more municipalities than cities, each municipality only receives roughly one-third of the transfer received by a city (Capuno, 2013). Interestingly, this is not necessarily because the cities bore a higher cost of the devolved functions. As discussed

by Manasan (2009), municipalities absorbed almost 40 percent of the total cost of functions devolved from the national government while cities absorbed only 5.7 percent. This means that cities enjoyed a greater transfer in excess of the cost of devolved functions than municipalities did.

2.2 Transitioning From Municipality to City

The revenue-sharing system described in Section 2.1 resulted in a large disparity between the transfers received by municipalities and the transfers received by cities. This created a reward for municipalities that achieve cityhood.[3] To qualify for a referendum on cityhood according to the original 1991 reform, a municipality must meet two of the three criteria: 1) locally generated revenues of at least 20 million pesos for two consecutive years, 2) at least 150,000 population size, and 3) contiguous land area of 100 square kilometers. Since land area is fixed over time and population is not directly manipulable by the local government, municipalities typically qualify for cityhood by meeting the revenue requirement. Of note, the revenue requirement was later raised to 100 million pesos in 2001. Meeting two of these criteria does not automatically convert a municipality into a city, it allows the municipality to put the question of cityhood to a vote by its residents, and then Congress (Capuno, 2013). Figure 3 shows the timing of when 67 municipalities became new cities after the 1991 reform.[4] The new cities receive their higher IRA share the year after cityhood ratification.[5]

3 Data and Empirical Strategy

3.1 Data

Fiscal data for cities and municipalities come from the Bureau of Local Government Finance. These data are available from 1992 to 2017. Formatting changes between those periods limits the variables that we can extract. The data allow us to examine changes in locally generated revenues by type of revenue: 1) non-tax collections, and 2) tax collections. Within tax collections, we can further separate business taxes from property taxes. We report tax collections rather than revenues, which is different in the case of property taxes collected in municipalities. When municipalities

[3]While reclassifying municipalities as cities does not cost the national government anything, this is essentially a zero-sum game: the 66 pre-existing cities lose from having to share revenue with more cities than before.

[4]This does not include 16 cities whose cityhood ratifications were contested in the Supreme Court for several years.

[5]Thus, in figures showing the impacts of the IRA transfer, we draw a dashed line before cityhood ratification and a solid line after that year.

become cities, they are allowed to keep all property tax collections instead of remitting 30 percent to the province in which they are located.

The dates pertaining to transformation of municipalities to new cities are based on the Philippine Standard Geographic Code Summary of Changes.[6] In descending order of size, there are currently 17 regions, 81 provinces, 145 cities, and 1,489 municipalities. Of the 145 current cities, 67 became cities after the 1991 reform. The rest are pre-existing cities. Household population data are drawn from the Census.

Data on subnational economic activity is sparse at the local level. Therefore, we rely on a measure of economic activity used in other papers in the development economics literature: nighttime light intensity data from Hodler and Raschky (2014).

3.2 Empirical Strategy

We compare changes over time in pre-existing cities versus newly created cities. Our strategy requires that these two groups would have trended similarly if the newly created cities had not received the increased transfers. We discuss and show graphical evidence in favor of this assumption in Section 4. Pre-existing cities are unaffected by the 1991 reform and face no incentives to change their tax and spending behavior. In addition, the size of their IRA transfer only incrementally changes during the study period. We estimate fixed effects panel data models to estimate the effect of the transfer on measures of local budgets and economic activity:

$$ln(budget\ outcome_{it}) = \beta(new\ city_i * cityhood_t) + c_i + u_t + \varepsilon_{it} \quad (1)$$

Where $ln(budget\ outcome_{it})$, the log of the budget outcome reported for town i in year t is the dependent variable; $new\ city_i * cityhood\ date_t$ is the treatment variable that takes on a value of 1 for new cities after cityhood approval; and c_i and u_t control for town and year fixed effects, respectively. This is a two-way fixed effects specification; the town fixed effects subsume a time-invariant indicator for being a newly classified city, while the year fixed effects subsume an indicator for the year of cityhood. In other specifications we include region-by-year fixed effects, which account for the effects of regional shocks and allow towns in different administrative regions to follow differ-

[6] See https://psa.gov.ph/classification/psgc/

ent trajectories over time, and town-specific linear time trends, which allow each town to follow a different trend over time. We also include a time-varying control for household population. Robust standard errors are clustered at the town level.

To illustrate our results, we also estimate a dynamic model that includes leads and lags of the intervention:

$$ln(budget\ outcome_{it}) = \sum_{\substack{t=-4 \\ \neq -1}}^{4+} \delta_t \cdot (new\ city_i * 1(cityhood_t)) + c_i + \lambda_{rt} + \varepsilon_{it} \tag{2}$$

Equation 2 accounts for town fixed effects, c_i, region-by-year fixed effects, λ_{rt}, and the final lag, 4+, estimates the average effect from four years after cityhood through the end of the data. The leading δ_t terms serve as placebos, and test whether soon-to-be new cities begin diverging from pre-existing cities even before cityhood, while the lagged δ_t terms show the dynamic effects of the increased transfers received after cityhood.

4 Results

4.1 Graphical Evidence and First Stage Effect on Transfers

Before showing the main results, we first examine whether the parallel trends assumption appears to be valid in this setting. In Figures 4 to 8, we graph the estimated lagged and leading δ_t coefficients from Equation 2, for each outcome.[7] The validity of the parallel trends assumption is supported by these figures, as the leading terms are all statistically and jointly indistinguishable for zero. If the newly established cities had instead started diverging from the pre-existing cities even before cityhood, one might suspect that any effects after cityhood is due to pre-existing trends, rather than the increased transfers that become available with cityhood.

Next, we show the strength of the first stage of the policy. Figure 4 shows the estimated divergence in the IRA transfer between newly established cities and pre-existing cities. One year after cityhood, the graph shows that the amount of transfer sharply increases and is sustained at that higher level throughout the post-period. his establishes the strength of the intervention.

[7] Estimates are normalized to the first leading term for illustrative purposes.

Table 1 estimates the effect of receiving this increased intergovernmental transfer on the overall reliance of the new city on intergovernmental transfers. The baseline estimate is an increase in the share of the budget funded by the transfer of 20 percent, relative to pre-existing cities. This estimate is robust to using multiple specifications, including adding controls for region-by-year fixed effects, and town-level linear time trends. In the next section, we examine how this increased transfer, which is essentially an unconditional block grant, affects tax and spending choices of the newly established city.

4.2 The Effect of Transfers on Local Budgets

Since the increased transfer is essentially a block grant, and has historically been well in excess of the cost of devolved functions even for cities, it is interesting to examine whether governments react to this transfer by decreasing revenue generation efforts, and whether they actually spend the funds. In Tables 2 to 4, we report estimates of β from Equation 1 for the available budget outcomes. All specifications incude controls for town fixed effects, region-by-year fixed effects, and population.

Figure 5 suggests that the impact on local revenue generation is nuanced. Overall, total local revenues increase as a result of the transfer, indicating that the fiscal windfall does not appear to crowd out local collection efforts. However, the mix of revenue sources appears to change. Tax collections as a share of local revenues goes down significantly while non-tax collections rise. Table 2 confirms this. Total local revenues increase by about 13 percent, but local governments also shift away from relying on tax revenues, by 11 percent, to on non-tax revenues, which increase by 20 percent.

The detail in the budget data allow us to further separate the result on tax collections into effects by type of tax: property tax – borne by households, and business tax – borne by local businesses. Table 3 shows that newly created cities reduce their reliance on property taxes but not on business taxes. The share of property taxes in locally generated revenues decreases by 20 percent, without a corresponding change in business taxes.

Figure 7 shows that spending does gradually increase following the receipt of the transfer.

Across most specifications of Equation 1, Table 7 an almost doubling of per capita total spending.[8] Unfortunately, data limitations prevent us from examining the type of spending that increases as a result of the increased transfers. While higher public spending alone does not necessarily imply a welfare-enhancing effect, it does suggest the possibility of increased economic activity in the newly established city. We investigate this possibility using nighttime light intensity data, which is available subnationally over our study period.

4.3 The Effect of Transfers on Economic Activity

As shown in Section 4.2, the increased transfer had significant effects on budget outcomes. It changed the local revenue generation patterns of new cities, and led to large increases in spending per capita. Unfortunately, subnational data on economic activity does not exist consistently in the Philippines, so we cannot, for example, directly measure whether the transfers led to higher per capita incomes. However, using nighttime light intensity data from Hodler and Raschky (2014), we can examine whether there is evidence of increased economic activity.

Figure 8 shows that there is, in fact, evidence of a gradual increase in economic activity. This begins to manifest in the second year after cityhood, and keeps rising in subsequent years. Estimates are presented in Table 5. The first column is the baseline specification of Equation 1. We report estimates from three additional specifications. We include a time-varying control for household population in the second column. In the third column, we include region-by-year fixed effects to account for regional shocks. Given the diversity and economic disparities in the Philippines, it is also likely that comparing cities within the same region is more reasonable. The fourth column includes an indicator for the year before cityhood, which formally tests whether new cities diverge from pre-existing cities even before cityhood, which leads the receipt of the larger transfer. Finally, the last column allows for town-specific linear time trends. Moreoever, we account for zeros by showing estimates for two transformations of the luminosity measure: Panel A shows the estimates when the dependent variable is the natural logarithm of 1 plus the luminosity measure, while Panel B uses the inverse hyperbolic sine transformation. Across specifications, we estimate an increase of about 10 percent in economic activity.

[8] Allowing for town-specific time trends cuts this static estimate in half, likely because of the gradual build-up of the effect. A fully dynamic specification would restore the magnitude of these estimates.

5 Discussion

This paper studies a unique setting where local governments can access permanently larger unconditional transfers from the national government. Using a difference-in-differences framework, we study the impact of these transfers on local government budget choices, as well as a proxy for economic activity within the town. Our results suggest a change in the revenue generation mix, toward non-tax collections and away from tax collections. Moreover, local governments appear to be spending the increased transfer on public programs, though we am unable to disaggregate these into public works, health, and education. However, nighttime light intensity data suggest that the overall effect of the increased transfer is positive. Economic activity shows a sustained gradual increase throughout the years after cityhood.

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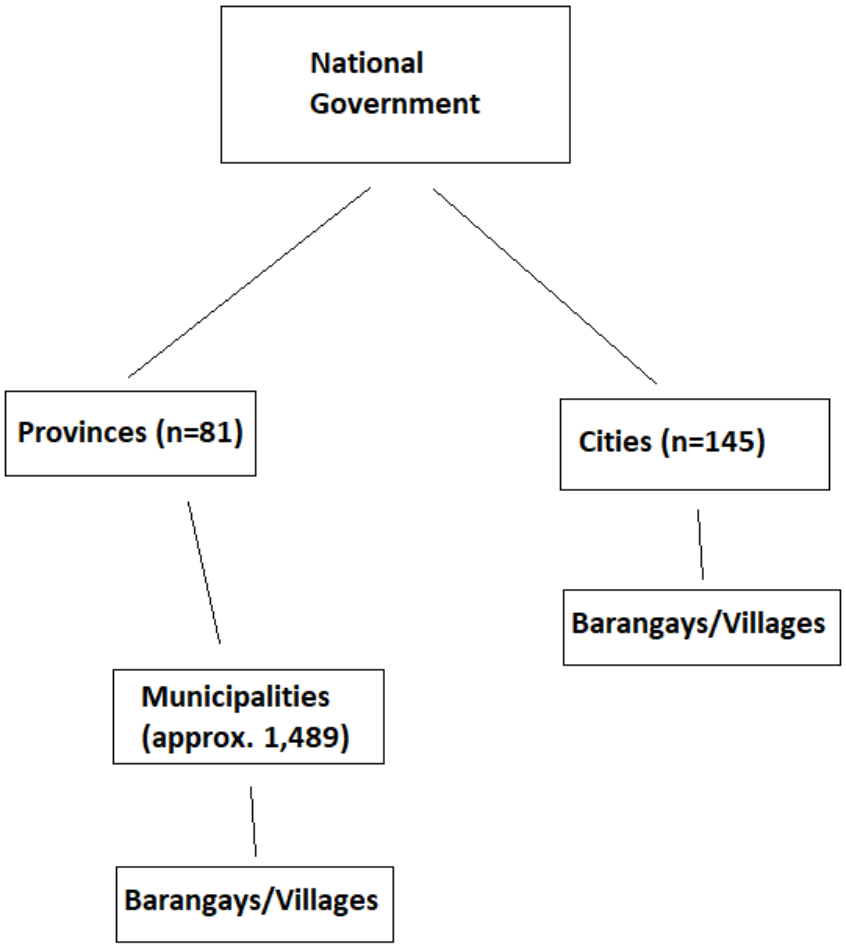
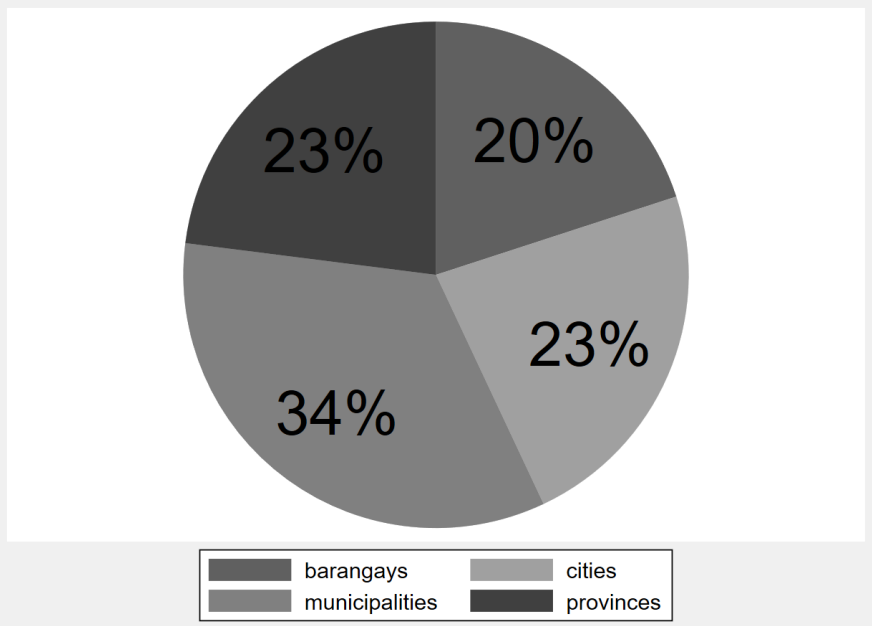
Figures

Figure 1: Tiers of Government in the Philippines



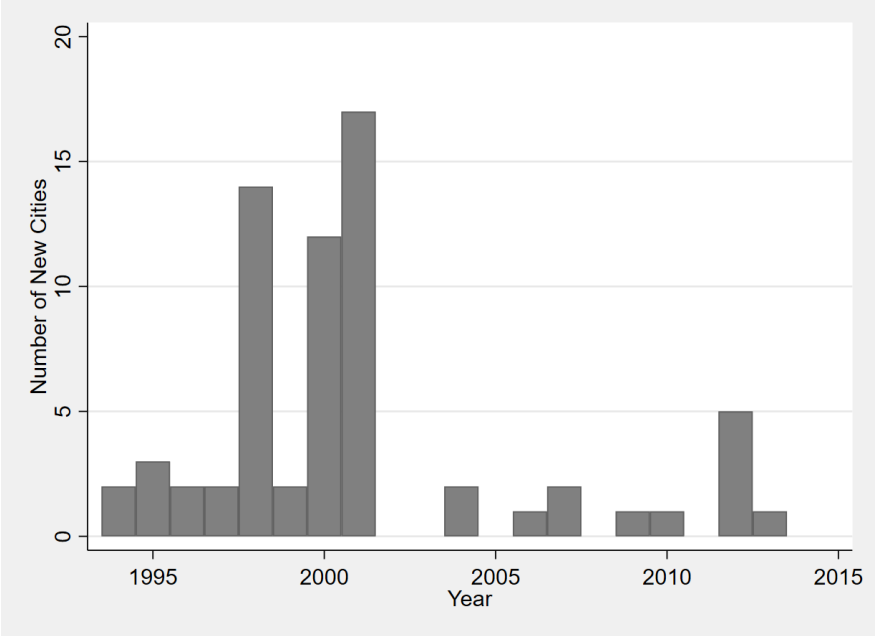
Note: The above figure is a simplified depiction of the government layout in the Philippines. It does not make a distinction between independent and component cities. Each tier of government is headed by an elected executive. Provinces are headed by governors, while cities and municipalities are headed by mayors. Barangays are trivial to this paper, as they are merely the recipient of revenues shared by the tiers of government that they belong to.

Figure 2: Apportionment of National IRA to Local Government Tier



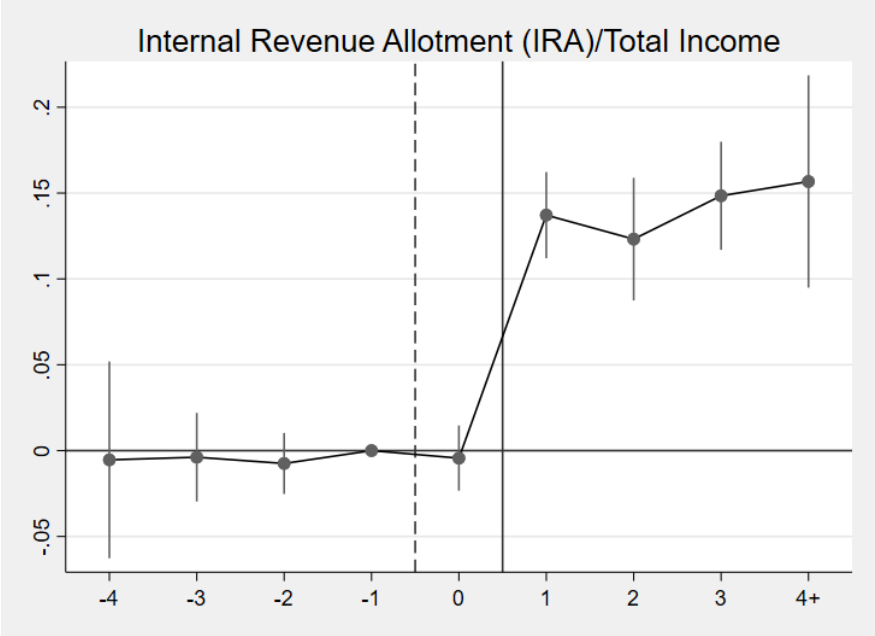
Note: The above figure shows how the IRA, which is equal to 40 percent of internal revenues collected by the national government, is distributed to each tier of local government. The highest tier in this figure are the provinces, which are equivalent to states, followed by cities and municipalities, and then barangays (villages). Within each tier of local government, the IRA is then distributed to each local government unit according to the following criteria: 50 percent population, 25 percent land area, and 25 percent equal sharing.

Figure 3: New Cities, by Year of Cityhood



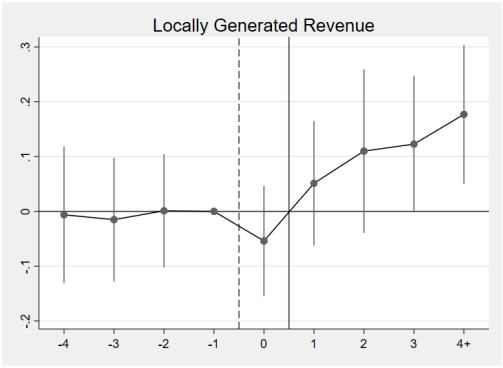
Note: The above figure shows how many municipalities became cities each year during the study period. The year is based on the date of cityhood ratification.

Figure 4: Dependency on Intergovernmental Transfers Over Time

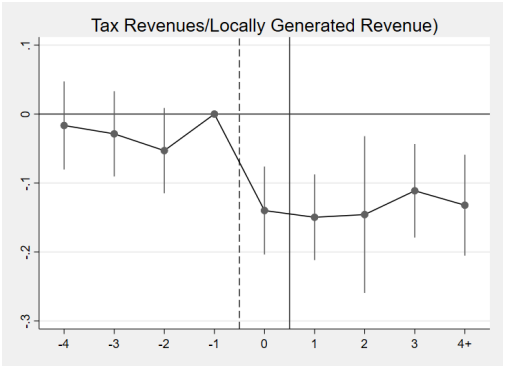


Note: The above figure plots estimates of δ_t from Equation 2. t=0 is defined to be the year that cityhood was ratified, making t+1 the first year of the increased intergovernmental transfers.

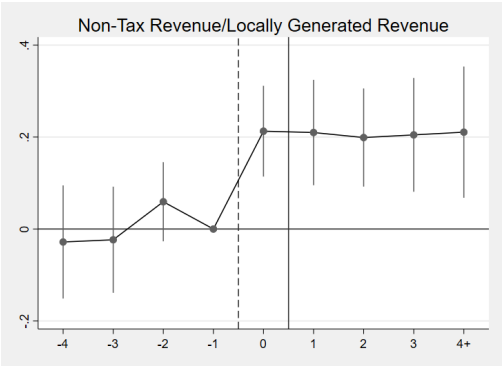
Figure 5: Effect on Local Revenue Generation



(a)



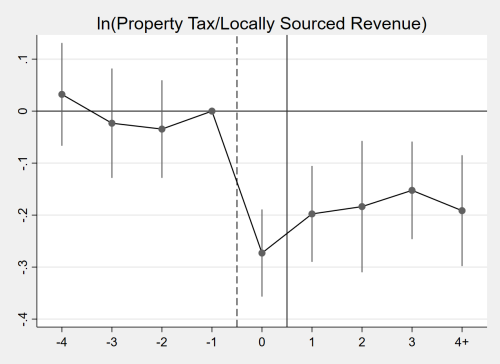
(b)



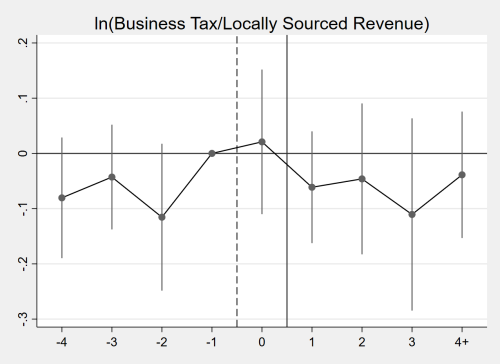
(c)

Note: The above figure plots estimates of δ_t from Equation 2. t=0 is defined to be the year that cityhood was ratified, making t+1 the first year of the increased intergovernmental transfers.

Figure 6: Effect on Property Tax and Business Tax Collections



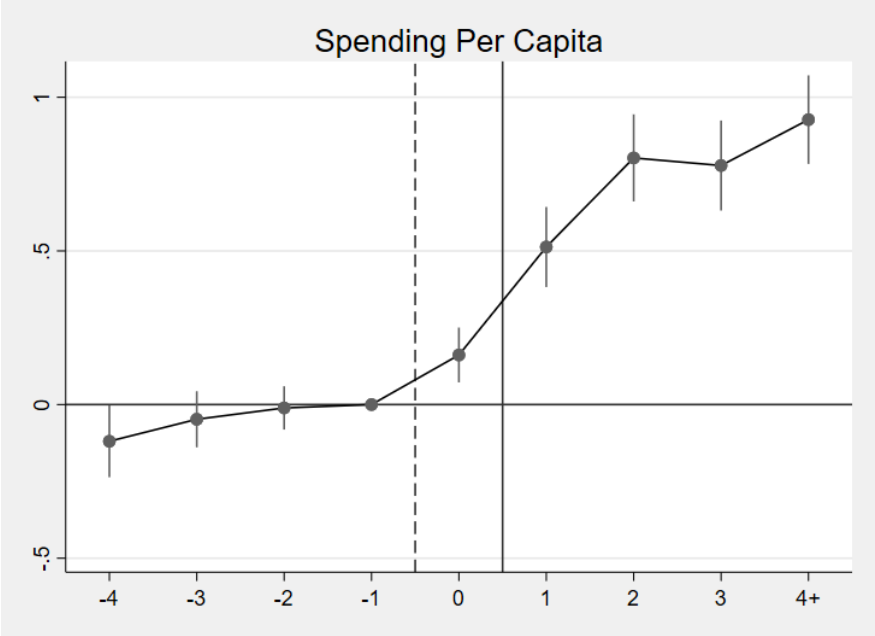
(a) Property Tax



(b) Business Tax

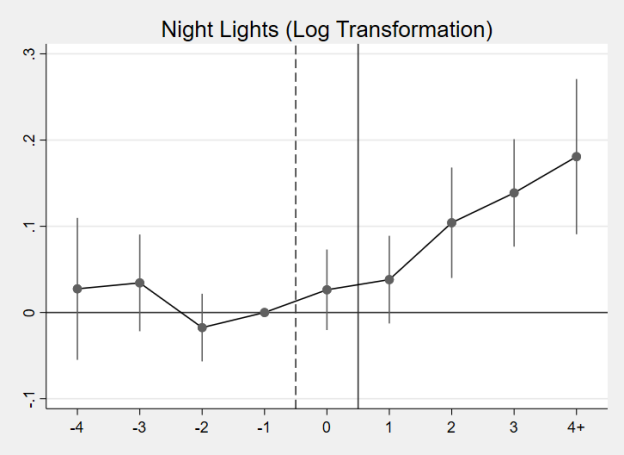
Note: The above figure plots estimates of δ_t from Equation 2. t=0 is defined to be the year that cityhood was ratified, making t+1 the first year of the increased intergovernmental transfers.

Figure 7: Effect on Per Capita Spending

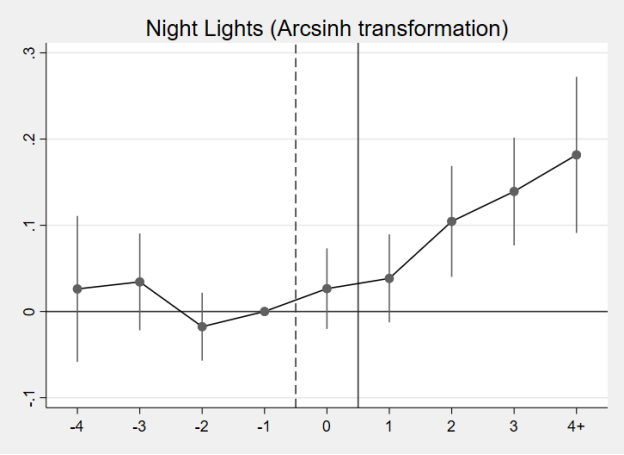


Note: The above figure plots estimates of δ_t from Equation 2. t=0 is defined to be the year that cityhood was ratified, making t+1 the first year of the increased intergovernmental transfers.

Figure 8: Effect on Economic Activity as Measure by Nighttime Light Intensity



(a)



(b)

Note: The above figure plots estimates of δ_t from Equation 2. t=0 is defined to be the year that cityhood was ratified, making t+1 the first year of the increased intergovernmental transfers.

Tables

Table 1: Effect of Cityhood on Internal Revenue Allotment Dependency

	(1)	(2)	(3)	(4)	(5)
Town*Cityhood	0.216***	0.211***	0.205***	0.206***	0.207***
	(0.0524)	(0.0524)	(0.0574)	(0.0611)	(0.0470)
Town*Year Before Cityhood				0.00842	
				(0.0511)	
Observations	3125	3125	3125	3125	3125
Town FE	x	x	x	x	x
Control for population		x	x	x	x
Region-by-year FE			x	x	x
Town-Specific linear time trends					x

Note:
* Significant at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

Table 2: Effects on Local Revenue Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
	Locally Generated Revenues		Tax Revenues		Non-Tax Revenues	
New City*Post-Cityhood	0.136**	0.137**	-0.116***	-0.112***	0.205***	0.206***
	(0.0528)	(0.0560)	(0.0285)	(0.0300)	(0.0575)	(0.0613)
New City*Year Before Cityhood		0.00230		0.0221		0.00842
		(0.0495)		(0.0292)		(0.0512)
Observations	3125	3125	3125	3125	3125	3125
Town FE	x	x	x	x	x	x
Control for population	x	x	x	x	x	x
Region-by-year FE	x	x	x	x	x	x

Note:
* Significant at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

Table 3: Effects on Tax and Non-Tax Collections

	(1)	(2)	(3)	(4)
	Property Taxes		Business Taxes	
New City*Post-Cityhood	-0.217***	-0.221***	0.0123	0.0145
	(0.0428)	(0.0462)	(0.0125)	(0.0135)
New City*Year Before Cityhood		-0.0190		0.0130
		(0.0453)		(0.0113)
Observations	3125	3125	3125	3125
Town FE	x	x	x	x
Control for population	x	x	x	x
Region-by-year FE	x	x	x	x

Note:
* Significant at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

Table 4: Effects on Spending Per Capita

	(1)	(2)	(3)	(4)	(5)
Town*Cityhood	0.832***	0.812***	0.786***	0.800***	0.480***
	(0.0609)	(0.0572)	(0.0582)	(0.0617)	(0.0574)
Town*Year Before Cityhood				0.0771	
				(0.0507)	
Observations	3125	3125	3125	3125	3125
Town FE	x	x	x	x	x
Control for population		x	x	x	x
Region-by-year FE			x	x	x
Town-Specific linear time trends					x

Note:
* Significant at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

Table 5: Nighttime Light Intensity

	(1)	(2)	(3)	(4)	(5)
A. ln(1+luminosity)					
New City*Post-Cityhood	0.0948*	0.0758	0.103**	0.0982*	0.0251
	(0.0543)	(0.0520)	(0.0470)	(0.0510)	(0.0340)
New City*Year Before Cityhood				-0.0251	
				(0.0308)	
B. Arcsinh(luminosity)					
New City*Post-Cityhood	0.0960*	0.0768	0.104**	0.0993*	0.0257
	(0.0556)	(0.0534)	(0.0478)	(0.0519)	(0.0343)
New City*Year Before Cityhood				-0.0243	
				(0.0315)	
Observations	3125	3125	3125	3125	3125
Town FE	x	x	x	x	x
Control for population		x	x	x	x
Region-by-year FE			x	x	x
Town-Specific Linear Time Trends					x

Note:
* Significant at the 10% level
** Significant at the 5% level
*** Significant at the 1% level