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Urban Challenges in a complex World

The urban geographies of the new economy, services industries and financial market places

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Paper Title: Analysis of the Link Between Urbanization and Public Expenditure in the Philippines

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Extended abstract

- Theoretical background

The relationship between urbanization and government spending has been examined in several studies. Jetter and Parmeter (2018) analyzed the data for 175 countries from 1960-2010 and found that urbanization is closely related to public expenditure, particularly on specific sectors such as education, health care, and social issues. Henderson (2005) pointed out that huge public infrastructure investments in health, safety, transportation and environment are needed in cities. Meanwhile, Rodrik (1998) analyzed the link between trade openness and government size and found that urbanization is negatively correlated with government spending. Meanwhile, Bo, Xu, and Liu (2017) examined the relationship between urban form and urban public services expenditure and noted that urban elongation is positively correlated with urban public services expenditure while compactness is urban compactness is insignificantly correlated to public expenditure.

Examination of the relationship between urbanization and public expenditure is a pertinent topic for policy-makers in urban areas, particularly on how public funds can be allocated efficiently to induce or improve urbanization. In addition to this, as urbanization typically exhibits positive correlation with economic growth, understanding how urbanization relates to government spending can provide useful inputs on policy responses on spatial inequality.

- Research questions

The Philippines is a rapidly-urbanizing country with more than half of the population lives in urban areas. The Philippines is also one of the fastest growing economies in the world with 6-7 percent growth rate over the past years. Alongside with the growing urbanization and rapid economic growth, the country is also experiencing widening spatial disparity. For instance, the capital Metro Manila is a mega-city of 12 million population and accounts for almost 40% of country's economic output. On the other hand, regions in Mindanao remain sparsely populated and only contributes about 1-3% of the total output.

To address the widening spatial gap and make urbanization inclusive, it is important to understand how urbanization relates to public expenditure. This study has two main objectives. First, this study aims to examine the differences among provinces in the Philippines

in terms of urbanization and government spending. Second, this paper explores the link between urbanization and public spending at the provincial-level in the Philippines.

- Methodology

This study utilizes OLS regression to estimate the relationship between urbanization and government spending. This study examines the cross-sectional data of the 78 provinces in the Philippines. The OLS model is estimated using the formula below:

$$\ln(\text{Public Expenditure}) = \beta_0 + \beta_1 \ln(\text{Urban Pop}) + \beta_2 x_i + \varepsilon_i$$

$\ln(\text{Public Expenditure})$ is the dependent variable, $\ln(\text{Urban Pop})$ is the independent variable, and X_i includes other control variables such as population, income, life expectancy, percentage of working population, percentage of dependent population, number of voters, inequality, number of cities, and geographic features. Table 1 presents the variable used in this paper and their expected correlation with public expenditure. Public expenditure data is sourced from Bureau of Local Government Finance (BLGF) and socio-economic indicators were collected from Philippines Statistical Authority (PSA).

Table 1: Description of Variables

Variable	Description	Year	Expected Correlation
Public Expenditure	Total Current Operating Expenditures	2010	N/A
Urban Pop	Number of people living in urban areas	2010	+
Population	Number of people living in provinces	2010	+
Income	Income per capita	2009	+
Life Expectancy	Length of life expectancy	2009	+
Working Population	Percentage of Working Population (15-64)	2010	+
Dependents	Percentage of Population (less than 15-year-old and over 65-year-old)	2010	+
Voters	Number of registered voters	2010	+
Inequality	Gini Index	2009	-
Cities	Number of Cities	2010	+
Landlocked	Whether a province is landlocked	N/A	+
Island	Whether a province is an island province	N/A	-

- Results/findings

Table 2 present the results of the OLS regression. As expected, urban population is positively correlated with government spending. The coefficient on urban population is statistically significant on both specifications. With the inclusion of other control variables, the estimation predicts that a unit increase in urban population is linked with 0.094 increase in public expenditure. This finding is in line with previous researches which note a positive relationship between urbanization and government spending. The number of cities is also associated with increase in public expenditure. This finding confirms the facts that cities receive a substantial share of intergovernmental transfer which enable them finance more public services. In the Philippines, 23 percent of internal revenue allotment (IRA) is allotted to 144 cities.

Table 2: Main regression results

Variables	1		2	
	Coefficient	Std.Error	Coefficient	Std.Error
Urban Pop	0.404***	-0.027	0.094*	0.033
Population			-0.329	0.351
Income			0.334	0.143
Life Expectancy			-0.39	0.623
Working				
Population			0.427	0.442
Dependents			1.027	0.841
Inequality			-0.121	0.583
Voters			0.826	.357
Cities			0.114***	0.015
Landlocked			0.08	0.085
Island			-0.136	0.183
R-sq	0.747		0.937	
N	78		78	

Signif. codes: 0 '***' 0.001 '**' 0.05 '*' 0.10

This study also explores the link between urbanization and government spending by looking at specific sectors such as: general public services; education, culture and sports/manpower development; health, nutrition, and population control; social services and social welfare; and economic services. The results show the urbanization is strongly linked in all sectors.

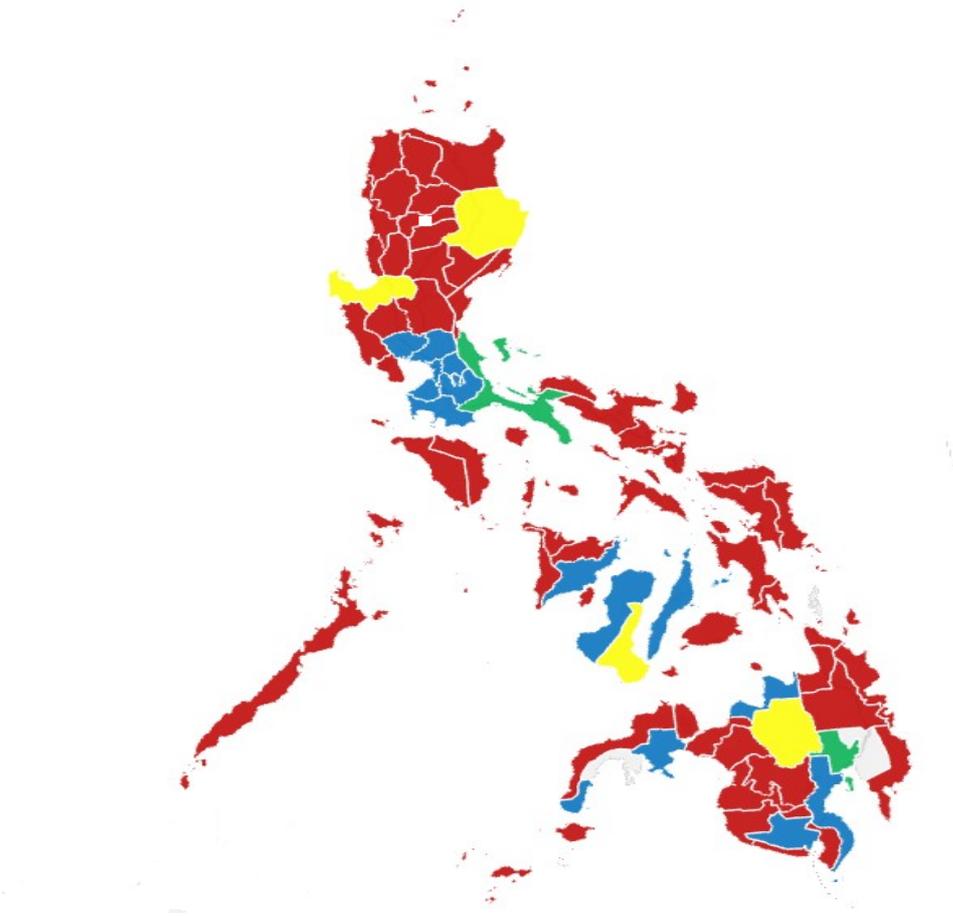
Table 3: Regression by Expenditure Category

Variable	General Public Services	Education, Culture & Sports/Manpower Development	Health, Nutrition & Population Control	Social Services and Social Welfare	Economic Services
Urban Pop	0.270***	0.504***	0.180**	0.250***	0.246***
Std. Error	0.028	0.066	0.053	0.069	0.042
R-sq	0.543	0.437	0.13	0.149	0.316
N	78	78	78	78	78

Signif. codes: 0 '***' 0.001 '**' 0.05 '*' 0.10

Based on the relationship between urbanization and public expenditure, there four distinct types of provinces that can be identified: Type 1 (high urban population and high public expenditure); Type 2 (high urban population but low public expenditure); Type 3 (low urban population but high public expenditure); and Type 4 (low urban population and low public expenditure). High or low category is distinguished based on the average. Value higher than average is classified as high, while value lower than average is categorized as low.

Figure 1: Types of Provinces



- Type 1: High Urban, High Expenditure
- Type 2: High Urban, Low Expenditure
- Type 3: Low Urban, High Expenditure
- Type 4: Low Urban, Low Expenditure

For the Type 1 provinces, there are two subgroups that can be identified. The first subgroup are the provinces located adjacent to Metro Manila such as Batangas, Bulacan, Cavite, Rizal and Laguna. The second subgroup are the provinces that have metropolitan areas such as Cebu, Davao, Iloilo, and Negros Occidental. There are very few provinces that can be categorized as Type 2 or Type 3. On the other hand, many of the provinces in the Philippines are can be categorized as Type 4 provinces where there is low urban population and low government spending.

Different policy recommendations can be made according to the characteristics of the provinces. For Type 1 provinces, policies that can sustain economic density and manage possible congestion problems should be promoted. Type 1 provinces with metropolitan areas should also consider establishing intergovernmental network that would facilitate planning and management (Ortega, Acielo, and Hermida 2014). For Type 2 provinces, policies that can maintain and increase quality of urbanization as well as policies that can improve the local financial condition should be prioritized. For Type 3 provinces, polices that can create economic mass and promote efficient allocation of public funds should be encouraged. For

Type 4 provinces, policies that can encourage economic density as well as policies that can widen the local financial based should be prioritized.

- Significant/general conclusions

This study demonstrates the link between urbanization and public expenditure using the data on the provinces in the Philippines. This study shows that urbanization is positively linked with increased government spending in the Philippines. This study also categorizes provinces based on the relationship between urbanization and public expenditure. This study also outlines policy recommendations for different types of provinces in the Philippines.

- References

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