

## **Drivers of Economic Dynamism among Philippine Cities**

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### **ABSTRACT**

Cities and Municipalities Competitiveness Index (CMCI) is an annual ranking survey conducted to assess the competitiveness of cities and municipalities across the Philippines. The conduct of CMCI aims to improve local competitiveness among participating cities and municipalities leading to a business-friendly environment for investors. ([www.dti.gov.ph](http://www.dti.gov.ph))

For the past 6 years, the number of participating cities and municipalities in the CMCI survey has continually increased, and the indicators intending to evaluate competitiveness have evolve in response to the need for an improved measure of competitiveness. Originally, three (3) pillars were used; and the 4<sup>th</sup> Pillar, Resiliency was added in the 2017 CMCI survey.

This study intends to determine how the other pillars of the index, i.e, Government Efficiency, Infrastructure and Resiliency, can influence or explain the cities' economic dynamism. Economic Dynamism score by itself is already indicative of how well the city has made itself attractive to investors and expanded business opportunities in the area. Specifically, it looks into which among the indicators of the significant pillar can well explain economic dynamism.

Using the CMCI survey results for cities from the 2017 and 2018 surveys, the study utilized Panel Regression Analysis. After testing for possible econometric issues which can possibly influence the validity of the inference, the Panel-Corrected Standard Errors model was used for the pillar-level explanatory variables regression and the indicators level explanatory variables regression.

In the first model, results indicated that economic dynamism is significantly explained by government efficiency and infrastructure pillars. The positive coefficients in both pillars indicate that the higher the city's score for government efficiency and infrastructure, the higher would also be its score for economic dynamism. The effect of resiliency was not statistically proven significant.

Of the individual indicators of government efficiency, the following are the significant drivers of economic dynamism: Business registration efficiency, LGU's capacity to generate local resource, compliance to BPLS, peace and order, and social protection. For infrastructure, the significant drivers of economic dynamism are: road network, availability of basic utilities, health, accommodation capacity, financial technology capacity, and information technology capacity. Under resiliency, the significant drivers of economic dynamism include: the conduct of annual disaster drill, presence of sanitary system, budget for DRRMP, and size of employed population.

Given the peculiarity of the characteristics of local economies, there is no 'one-size-fits-all' policy reform. Hence, from the foregoing results, it is recommended that the LGU must assess itself along the indicators that are considered as significant drivers of competitiveness and should focus its development efforts, policies and programs to enhance the identified significant drivers of economic dynamism.

## **I. Introduction**

In terms of the size and structure of the local economy, Philippine cities are varied. If there is one thing in common, it is the fact that these cities continue to strive to attain and/or maintain an inclusive economic growth and sustainable development. The attainment of long term local economy growth rests on the ability of the city to improve the level of productivity and to attract investments. The inflow of investment is vital if the economy needs to be vibrant and dynamic. But, making a city an investment destination always poses a challenge to the majority of Philippine cities because investors certainly scout for locations where they can be assured of an attractive return.

In this context, this study is conducted in order to determine how government efficiency, the presence of infrastructure and the degree of disaster resiliency would influence the competitiveness and economic dynamism of Philippine cities. The annual CMCI survey from which the data of this study was taken endeavor to assess different cities along the different indicators. The result of this study will help local governments and the private sector in designing and implementing programs and strategies which are targeted on the relevant drivers of economic dynamism, making the local economy more competitive in attracting investments and eventually attaining inclusive growth and sustainable development.

### **I.1 Background of the Study**

Cities and Municipalities Competitiveness Index (CMCI) is an annual ranking survey conducted to assess the competitiveness of cities and municipalities across the Philippines. The conduct of CMCI aims to improve local competitiveness among participating cities and municipalities leading to a business-friendly environment for investors. ([www.dti.gov.ph](http://www.dti.gov.ph))

For the past 6 years, the number of participating cities and municipalities in the CMCI survey has continually increased, and additional indicators have evolved in response to the need for an improved measure of competitiveness. Originally, three (3) pillars were used, and the 4<sup>th</sup> pillar on Resiliency was added beginning in the 2017 CMCI survey.

Although the CMCI provides competitiveness ranking for cities and municipalities, the focus of this study are the Philippine cities. This is in recognition to the fact that cities with their respective economic, social and environmental issues are seen as the drivers of the wealth of nations, regions and localities. They will be one of the driving engines of economic growth, financial sustainability and competitiveness that attract local and foreign investors. (<https://www.weforum.org/reports/competitiveness-cities>)

Varying levels of economic dynamism and competitiveness among Philippine cities is evident. However, the index itself does not provide light as to why differences exist. Hence, this study endeavors to determine whether the three (3) pillars of the index namely: government efficiency, infrastructure, and resiliency would help explain differences in the level of competitiveness or dynamism among cities.

## I.2 Statement of Research Problem and Objectives

This study sought to determine whether the other pillars of the index, i.e, government efficiency, infrastructure, and resiliency can influence or explain the cities' economic dynamism. Economic dynamism score by itself is already indicative of how well the city has made itself attractive to investors and expanded business opportunities in the area.

Specifically, it wanted:

1. to determine which among pillars of the index significantly influence economic dynamism of cities;
2. to verify which among the detailed indicators of each of the pillar significantly explain economic dynamism.

## I.3 Significance of the Study

The research is highly significant to the LGUs. Findings of this study will serve to guide LGUs in the design of program and strategies which are targeted on the factors that are relevant drivers of economic dynamism.

## I.4 Scopes and Limitations

All Philippine cities were covered in the study. However, the regression result for the individual indicators excluded the city of Marawi due to insufficiency of data. The study covers two (2) periods, i.e., 2017 and 2018 because the pillar on resiliency was included only starting CMCI survey for 2017.

The CMCI competitiveness score was utilized to explain the influence of the pillars and factors instead of competitiveness rank since the rank of the city is dependent on and is affected by the performance of other cities. While, competitiveness scores are directly based from the data generated/ submitted by the LGUs and are not affected by the performance of other cities.

## II. Review of Related Literature

### II.1 Conceptual Framework

This study investigates whether the other 3 pillars of competitiveness used to derive the CMCI will significantly explain cities' economic dynamism. The conceptual framework for the pillar level determinants is given in Figure 1.



**Figure 1. Schematic Diagram: Determinants of Economic Dynamism**

Economic dynamism is the concrete representation of productivity which is defined as output per unit of input. This pillar measures how the locality efficiently uses the resources available to improve the standard of living of its people. According to Edmund Phelps as cited by Department of Trade and Industry Competitiveness Bureau (2018), this pillar is a mix of the entrepreneurial spirit and financial institutions that channel dynamism hence, this is associated with activities that create stable expansion of business and industries and higher employment. The pillar has 8 indicators that include size of the local

economy and its growth of which both are measured in terms of business registrations, capital, revenue, and permits; capacity to generate employment, cost of living, cost of doing business, financial deepening, productivity and presence of business and professional organizations (Department of Trade and Industry Competitiveness Bureau (DTI-CB), 2018).

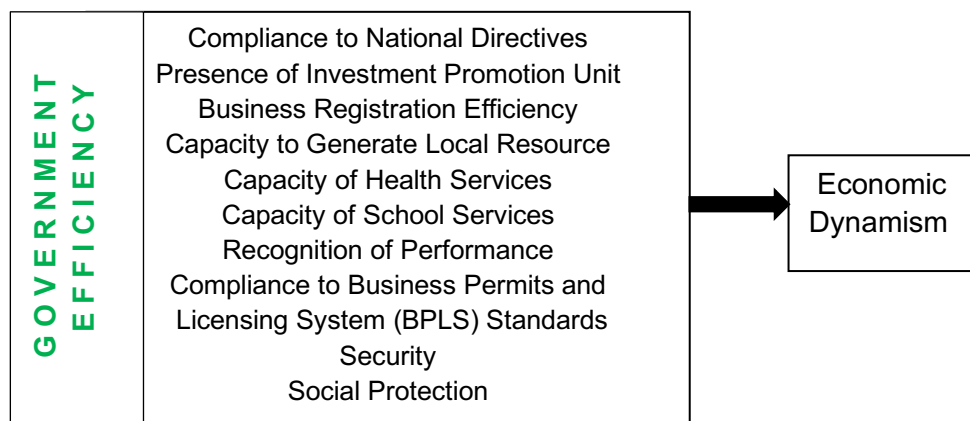
The factors that are used to explain productivity are government efficiency, infrastructure and resiliency. Government efficiency refers to the quality and reliability of government services and support for effective and sustainable productive expansion. This pillar represents the people and culture factor that are needed to catch up with the mindset as depicted in the competitiveness framework of Michael Porter ( Cities and Municipalities Competitiveness Index, 2019). In addition, this factor looks at government as an institution that is generally not corrupt; able to protect and enforce contracts; apply moderate and reasonable taxation and is able to regulate proactively (La Porta et al, 1999 as cited by Department of Trade and Industry Competitiveness Bureau (DTI-CB) 2018). The 10 indicators of government efficiency is given in Figure 2. This variable exhibited a strong significant unambiguous positive relationship with economic performance (Rodrik, Subramanian and Trebbi 2004; Rodriguez-Pose and Zhang 2019) and considered as the top influential variable in advancing economic dynamism in developing countries (Petraikos & Arvanitidis, 2008). This is because efficient governments and low levels of corruption generate trust that encourages interaction and reduces transaction costs thereby creates a powerful incentives for economic activity (Rodriguez-Pose & Zhang, 2019). On the other hand, a highly unstable political regime would bring uncertainty, discourage investment and thus, hinder economic potential (Petraikos & Arvanitidis, 2008).

Infrastructure is what makes productivity sustainable over time as this refers to the physical building blocks that connect, expand, and sustain a locality and its surroundings to enable the provision of goods and services. The pillar represents the basic inputs of production such as energy, water; interconnection of production such as transportation, roads, and communications; sustenance of production such as waste, disaster preparedness, environmental sustainability and human capital formation infrastructure. The 10 indicators of infrastructure is given in Figure 3. This variable has a positive significant contribution (Boccanfuso, et al. 2015; Rodriguez-Pose and Zhang 2019; Elnasri, 2014; Munir, Elahi and Khan, 2018 ) and the most important factor in terms of their role to productivity or economic growth (Petraikos and Arvanitidis, 2008). Infrastructure could directly and indirectly affect economic growth. Direct contribution is through the sector's contribution to GDP formation and as input in the production process of other sectors while its indirect effect is seen via the reduction of transaction and other costs which allow efficient use of conventional productive inputs and thus, increase total factor productivity (TFP) (Munir, Elahi, & Khan, 2018). In addition, the connectivity that better infrastructure leads to higher dependence and specialization that creates more business opportunities, promotes market competition, and drives innovation (Du & Douch, 2018).

Resiliency is the 4<sup>th</sup> pillar added starting in the 2017 round of CMCI survey. This factor is added to represent the capacity of the local government to facilitate businesses and industries to create jobs, raise productivity, and increase the incomes of citizens over time despite of the shocks and stresses it encounters (Department of trade and Industry Competitiveness Bureau (DTI-CB), 2018). The pillar has 10 individual indicators which is illustrated in Figure 4. This variable is expected to have a positive relationship with productivity as can be inferred from the study of Di Falco and Chavas (2008) in agroecosystem productivity and Simonet et al (n.d.) on economic growth. However, it is inconclusive whether this variable is significant to affect productivity.

While the first framework seeks to show how economic dynamism can be explained by the different pillars, individual indicators are also regressed against economic dynamism (as shown in Figures 2 to 4) in order to derive specific policy recommendations. The score of

government efficiency is a composite index that embodies 10 indicators. Compliance to national directives is measured by the presence of an updated Comprehensive Development Plan (CDP). This plan is mandated by Section 106 and 109 of the Local Government Code of 1991 that is to be initiated by the Local Development Council (LDC) and approved by the *Sanggunian* (Department of the Interior and Local Government, 2009). This document contains the road map for development and progress of each Local Government Units (LGUs) that outlines its vision and goals and its strategic plans for the 5 development project sectors, namely: social, environment, economic, institution and infrastructure (Department of the Interior and Local Government Region IV-A CALABARZON). Another indicator of government efficiency is the presence of Investment Promotion Unit (IPU) which is gauged by the presence of investment codes, physical office of IPU, staff and local executive order or ordinance that mandates the implementation of the investment code or the setting up of IPU. This indicator signifies the seriousness of the LGU to improve its business environment through streamlining procedures and establishing close coordination among the concerned government agencies regarding investor and business-related issues and concerns (Philippine Board of Investments). An effective IPU is expected to increase both domestic and foreign investment and enhance its contribution to national economic development (Organisation for Economic Co-operation and Development (OECD)). In addition, the study of Canare et al. (2017) reported that this has a positive and significant relationship with business creation. Business registration efficiency is measured in terms of the number of days and steps involved in getting building and occupancy permits. In the study of Canare et al. (2017), this variable has a positive effect on business creation but was not proven statistically significant.

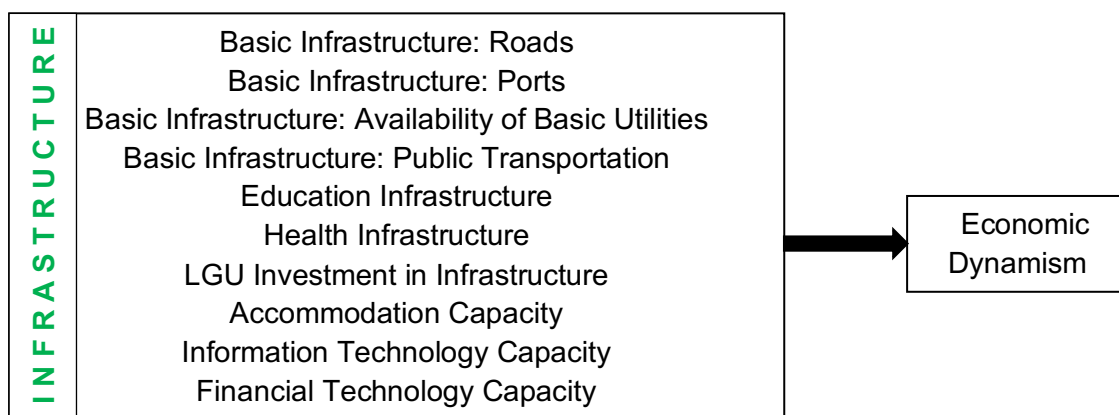


**Figure 2. Schematic Diagram of the Individual Indicators of Government Efficiency as Determinants of Economic Dynamism**

The capacity to generate local resource is also one of the indicators of government efficiency. This is assessed by the LGUs' ability to collect business taxes, real property taxes and total revenues. This variable has a positive significant relationship with entrepreneurial activity (Canare, Francisco, & Fernando, 2017). Moreover, capacity of health services is assessed by the number of doctors, nurses and midwives in both public and private is said to have a significant potential to boost economic growth due to the creation of necessary jobs for the delivery of health care and the increased productivity of healthier labor force through reduced absenteeism, disability and early retirement (World Health Organization, 2017). Likewise, capacity of school services is measured by the number of teachers and students in both public and private secondary schools in the locality. In the study of Ahmad and Luqman (2012), this variable was found to have a negative significant relationship while Hanif and Arshed (2016) indicated that education has a robust

positive significant effect on economic growth. This is because it is associated with skill-biased technological change (World Bank). A large pool of workers with secondary education is indispensable for knowledge spillover to take place and for attracting imports of technologically advanced goods and foreign direct investment. Recognition of performance is measured by the number of DILG granted awards and other regional, national and international awards conferred by credible institutions. This has a positive association with economic activities (Delgado-Garcia, Quevedo-Puente, & Blanco-Mazagatos, 2018).

Compliance to Business Permits and Licensing System (BPLS) standards is measured by the presence of an automated BPLS and the number of days and steps involved in getting mayor’s permit for new business applications and renewal of permits. This variable which represents business registry modernization that evolved from a paper-based registration to web-enabled registry capable of delivering products and services online via transactions involving authenticated users and documents has a positive impact on fostering formal sector entrepreneurship (Canare, Francisco, & Fernando, 2017). This is because the process can reduced transaction time and costs, improved data quality and accuracy by reducing human error, provide real-time access to registry updates that is an important tool for market surveillance and business monitoring and facilitated anti-corruption efforts by removing middle persons and providing full transparency of information (Klapper, Lewin, & Delgado, 2009). Security (peace and order) is gauged by the number of policemen in the locality is said to have positive significant effect on economic growth because it reduces uncertainty and risk for investment and increases productivity in capital and labor (Santhirasegaram & Selvarathinam, 2008). Social protection is the last indicator of government efficiency listed in Figure 2 which is measured by the number of citizens in the locality with PhilHealth registration. This variable offers opportunities for enhanced economic activity and growth by providing direct insurance against the financial risk of catastrophic health expenditures (World Health Organization, 2017). This would mean that individuals do not have to bear the entire costs of their health care out of pocket that estimated to drive 150 million people into poverty worldwide every year (Xu, DB, G, AM, & Evans, 2007).

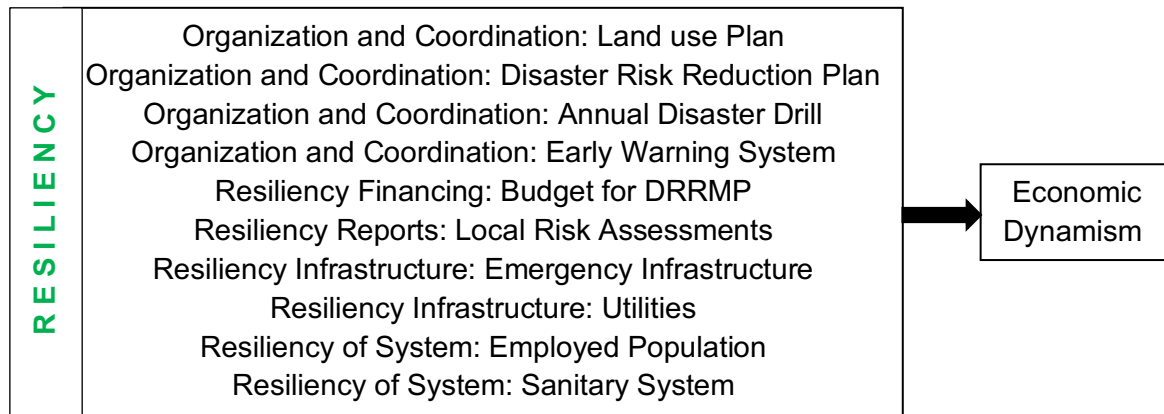


**Figure 3. Schematic Diagram of the Individual Indicators of Infrastructure as Determinants of Economic Dynamism**

Figure 3 shows the 10 indicators of infrastructure, 3 of which relate to transport infrastructure. These are existing road networks, ports and public transportation. Existing road network is measured in terms of kilometers covered by asphalt, gravel, concrete and unpaved roads in proportion with the city’s total land area. This variable represents the

interconnectivity and the level of mobility in the locality. The basic ports (air, land and sea/wharf) infrastructure is measured through its distance (in terms of kilometers) from the city center in order to provide guidance on how near the center of government to its entry points. Basic public transportation infrastructure which represents the mobility of the local population is measured by the number of buses, passenger vans, jeepneys, tricycles, taxis, ferries (ship and fast craft), passenger *bancas* and motorized and non-motorized vehicles. These variables have positive impact on economic activity because it provides accessibility of businesses to key factors of production (labor and intermediate inputs), access to market (moving from production to consumption), and speedy and reliable movement of people and information (for service sector). Availability of basic utilities is gauged by the average hours of water and electricity services at the central business district and the percentage of households served. Reliable and affordable energy supply allows businesses to prosper while limited supply of these inputs constrains the overall economy (Du & Douch, 2018). Education infrastructure represents the availability of facilities for basic education and higher education. This variable is measured in terms of the number of schools and classrooms in (both private and public) secondary and tertiary levels as well as technical vocational education and training. CAF Development Bank of Latin America (2016) stressed that there is a direct relationship between school infrastructure and educational performance of which investment in educational infrastructure contribute to improve the quality of education and economic performance. The impact of education infrastructure on education quality could be seen in improved school completion and cycle completion rates, increased registration, reduced absenteeism of teachers, and increased scores in standardized tests.

Health infrastructure is gauged by the number of clinics, diagnostic centers and hospitals in both public and private health services and its corresponding number of beds. This indicator represents the availability of facilities for health maintenance and emergencies. This is expected to have a positive impact on economic activity as availability of these infrastructures would contribute to labor and capital productivity. The indicator that represents the prioritization of LGU for infrastructure is measured in terms of the ratio of LGU investment in infrastructure to its total LGU budget. The study of Du and Douch (2018) pointed out that infrastructure (transportation to be specific) is generally provided by government because of high building costs and negative environmental externalities. Investment in improvements of the aforementioned plays a key role in the reduction of transport cost and thereby increased welfare. That is, better infrastructure should generate relatively higher returns (Du & Douch, 2018). Accommodation capacity is gauged in terms of the number of rooms and number of DOT accredited hotels, resorts, tourist inns, apartelles, pension house and the like. This is expected to have a positive impact on the standard of living of the people in the locality as this stimulates domestic demand (Proenca & Soukiazis, 2008). The last 2 indicators in Figure 3 talk about digital infrastructure. These include information and financial technology capacity indicators. Information technology capacity reflects the ICT readiness of the city. The former measured by the number of cable, internet and telephone/mobile service providers available in the locality while the latter represents both the ICT capacity and financial liquidity/development in the city that is assessed by the number of off-site and on-site automated teller machines (ATM). These infrastructures are essential due to the role of technology choice in determining productive efficiency that provides crucial competitive edge in the future markets and aid in the decision-making process of entrepreneurs (Du & Douch, 2018).



**Figure 4. Schematic Diagram of the Individual Indicators of Resiliency as Determinants of Economic Dynamism**

For resiliency, there are 4 indicators that pertain to organization and coordination as shown in Figure 4. These are: the presence of updated Comprehensive Land Use Plan (CLUP), Disaster Risk Reduction Management Plan (DRRMP), annual disaster drill and early warning system. The presence of an updated CLUP and DRRMP are measured together with the availability of the physical office, staff and local executive order or ordinance that mandates the implementation of those said plans. The city's budget allocation is added for DRRMP. CLUP is the plan for the long-term management of the local territory that identifies areas where development can and cannot be located and directs public and private investments. This plan is assigned to the *Sanggunian* because implementation requires the exercise of the political powers of the LGU through legislative action (Department of the Interior and Local Government, 2009). The study of Kim (2010) explored the effect of land use planning on regional economic performance using 3 variables: land use regulations on local housing supply and household residential mobility, urban growth boundaries (UGB) that reduces uncertainty and helps farmland owners make informed decision and suburban reactive land use regulations (minimum lot size zoning and permit caps) . Result of Kim (2010) is inconclusive and suggests that the effect of land use planning on regional economic performance is based on context and that there is no one-size-fits-all policy approach. The presence of DRRMP represents LGUs' compliance to Republic Act (RA) 10121 of 2010. The plan is formulated to increase awareness and understanding of the people on DRRM with the aim of increasing their resilience and decreasing their vulnerabilities. Annual disaster drill is another indicator under organization and coordination which is assessed with the actual date of its conduct. Presence of early warning system that integrates professional responders and grassroots organization provides systematic forecast of unwanted events is also an indicator under organization and coordination. This is used primary for detecting crises before damage has been made and for reducing false alarms of possible crisis (Klopotan, Zoroja, & Mesko, 2018). These 3 are expected to have a positive relationship with economic dynamism because it would mean that the LGU is prepared to shield its economy from any form of economic shocks.

Moreover, the indicator relating to resiliency financing is measured by the ratio of DRRMP budget to total LGU budget. Section 21 of RA 10121 Rule 18 of its Implementing Rules and Guidelines and Joint Memorandum Circular of DBM and DILG have provided that local DRRMP budget should be at least 5% of its revenue from general sources (Department



of Budget and Management (DBM) , 2019). Local risk assessments indicator is assessed by the availability of local geohazard maps from DENR and LGU risk profile from local DRRMO. The local geo-hazard maps are provided by the Mines and Geosciences Bureau (MGB), an attached agency of DENR, to LGUs in order to help the latter in the formulation of its programs and policies and implementation of projects which will minimize, if not totally prevent, the loss of lives and properties during natural calamities (Philippine News Agency (PNA), 2019). The 2 indicators for infrastructure resiliency are emergency infrastructure and utilities. For emergency infrastructure, it is measured by the number of available ambulance, fire trucks, clearing equipment, rubber boats, and evacuation infrastructure (both public and private) and presence of drainage systems in LGU Center. This indicator represents the capacity of the locality to extend service by providing emergency vehicle during disaster. For utilities (water, power, generator set, telecom, fuel, alternate route), it is gauged by the presence of the previously mentioned utilities and its distance to LGU. Furthermore, there are 2 indicators that pertain to resiliency of the system. One relates to the number of trained respondents and the other relates to sanitary system. The latter is measured by the presence and distance of sanitary landfill to LGU center, frequency of monthly garbage collection, practice of waste segregation and presence of material recovery facility (MRF). Presence and availability of the aforementioned indicators are needed to reduce economic losses in the presence of natural and man-made disasters.

### **III. METHODOLOGY**

While natural resource endowment is an important factor that drives growth and income, it does not singly determine differences in city competitiveness, economic dynamism and growth. How efficiently these resources are managed and utilized can either be an important propeller or deterrent to economic growth. Efficiency in turn, could be driven by the quality of institution and policies of the local economy while taking into account resource endowment and level of development.

This study primarily endeavors to determine whether the different indicators to gauge the availability of city resources and amenities, and how efficiently they are utilized can significantly explain economic dynamism, growth and prosperity of the cities in the Philippines. To this end, the study uses the data from the annual Cities and Municipalities Competitiveness Index survey conducted by the National Competitiveness Council through the Regional Competitiveness Committees. Specifically, city competitiveness scores are used instead of competitiveness ranks. City competitiveness rank is highly influenced by the performance of other cities in each of the given indicators. Meanwhile, city competitiveness score can truly describe and is reflective of what the city does have and doesn't have, regardless of how the other cities are doing. Hence, to ensure that the performance of a given city in each of the indicator is independent from that of the other cities, competitiveness scores are used. This also ensures that city economic dynamism will be analyzed only using the characteristics and structure of the city itself. In addition, the data is limited to the CMCI survey results for 2017 and 2018 since the pillar for resiliency was measured only starting 2017.

### III.1 The empirical model:

In order to determine whether the composite score for each of the three pillars namely: government efficiency, infrastructure and resiliency of cities significantly promote a dynamic economy, the following model was estimated using panel analysis:

$$ED_{it} = \beta_0 + \beta_1 GE_{it} + \beta_2 IN_{it} + \beta_3 RS_{it} + \varepsilon_i + v_t + \mu_{it}$$

Where:

$ED_{it}$  = Economic Dynamism

$GE_{it}$  = Government Efficiency

$IN_{it}$  = Infrastructure

$RS_{it}$  = Resiliency

$\beta_i$  = parameters/coefficients

$\varepsilon_i$  = city specific time – invariant fixed effects

$v_t$  = period specific city – invariant fixed effects

$\mu_{it}$  = stochastic error term

$i$  = subscript that indicates city

$t$  = subscript that indicates period (in year)

In this study, economic dynamism is deemed the outcome of the interplay of all the other pillars. The analysis is extended at the indicator level to determine which of the indicators of the pillar(s) is(are) strong driver(s) of economic dynamism. Hence, economic dynamism score was regressed against the individual indicator for each of the other three (3) pillars, in turn. This is also to know the importance of the indicator used to generate the competitiveness score of the city in each of the pillar.

### III.2 Method of Estimation:

Panel data of competitiveness scores for the 145 Philippine cities covering the period 2017 and 2018 were used to estimate the empirical model. The use of panel data over cross-section data permits a bigger number of observations and higher degrees of freedom to make inferences. The empirical model was first estimated using pooled OLS. Test for multicollinearity was performed. Then estimation was done using panel analysis such as the Fixed Effects and Random Effects models. To test whether or not the unique errors are correlated with the regressors, the Hausman test was conducted. The result of the Hausmann test indicated that the error terms are indeed correlated with the regressors, hence the fixed effect model is appropriate.

With the results of the fixed effect model, further statistical tests were performed to check on the presence of other econometric issues. The Breusch-Pagan LM test was used to check for the independence of the residuals across entities. The test indicated that there is cross-section dependence problem. Moreover, the modified Wald test was conducted to check for the presence of groupwise heteroscedasticity in the data, and the test indicated that there is groupwise heteroscedasticity. Cross-section dependence and groupwise heteroscedasticity problems may not bias the coefficient estimates but make standard hypothesis tests unreliable. Hence, the Panel-corrected standard error (PCSE) model was

used. PCSE is an appropriate estimation method in the presence of heteroscedasticity and contemporaneous correlation, whether or not there is autocorrelation.

Since the data involves only two periods, serial correlation is no longer suspected. Similarly, due to the limited period, stationarity test cannot be possibly performed.

#### IV. Results and Discussion

Using the results of the CMCI survey for 2017 and 2018, Table 1 presents the performance of Philippine cities along the pillars and indicators set forth in the competitiveness measure. A close examination of the result would indicate that economic dynamism of the majority of Philippine cities has improved in 2018. Particularly, the improvement is seen in terms of local economy growth and structure; cost of living, financial deepening and productivity. It is evident however that in some aspects, most cities have worsened particularly on employment, economy size, safety compliance and cost of doing business.

**Table 1. City Competitiveness Performance on Economic Dynamism and Government Efficiency by Indicator, 2017-2018**

Indicator	Improved (% of Cities)	Worsened (% of Cities)	No Change
<b>Economic Dynamism</b>	<b>64</b>	<b>36</b>	-
Local economy size	14	<b>86</b>	-
Local economy growth	<b>82</b>	17	1
Local economy structure	<b>72</b>	26	2
Safety compliant business	28.96	<b>70.34</b>	0.70
Increase in employment	7	<b>92</b>	1
Cost of living	<b>63</b>	37	-
Cost of doing business	32	<b>68</b>	-
Financial deepening	<b>70.34</b>	28.96	0.70
Productivity	<b>93.79</b>	5.52	0.70
Presence of business and professional organizations	35	<b>63</b>	2
<b>Government Efficiency</b>	<b>89</b>	<b>11</b>	-
Compliance to National Directives	<b>90</b>	8	2
Presence of Investment Promotion Unit	12.5	0.70	<b>86.81*</b>
Business Registration Efficiency	<b>76</b>	23	1
Capacity to Generate Local Resource	35.86	<b>63.45</b>	0.70
Capacity of Health Services	<b>97</b>	3	-
Capacity of School Services	<b>53</b>	46	1
Recognition of Performance	44	<b>54</b>	2
Compliance to Business Permits and Licensing System (BPLS) Standards	43	<b>57</b>	-
Peace and Order	3	<b>96</b>	1
Social Protection	<b>96</b>	2	2

\*LGU attained the maximum score for the indicator in the 2017 CMCI result, and maintained same status in 2018 CMCI survey. Hence, there is no change in the score.

On the other hand, most of the local government units have become more efficient in 2018 where 89 percent of the cities have increased their composite scores for government efficiency. Apparently, this improvement comes from increasing compliance to national directives, efficiency in business registration process, increasing capacity of health and education services and a broader implementation of social protection programs. In addition, around 87 percent of the cities already have their investment and promotion unit in place. Cities are also confronted with challenges particularly in terms of deteriorating peace and order condition, and limited capacity in resource generation.

**Table 2. City Competitiveness Performance on Infrastructure and Resiliency by Indicator, 2017-2018**

Indicator	Improved (% of Cities)	Worsened (% of Cities)	No change
<b>Infrastructure</b>	<b>55</b>	<b>45</b>	<b>-</b>
Road Network	92	6	2
Distance to Ports	10.34	88.96	0.70
Availability of Basic Utilities	15	7	78*
Transportation Vehicles	19.31	79.31	1.38
Education	29	71	-
Health	63	37	-
LGU Investment	54.48	43.45	2.07
Accommodation Capacity	13.79	68.96	17.24
Information Technology Capacity	81.38	18.62	-
Financial Technology Capacity	23.25	75.17	1.38
<b>Resiliency</b>	<b>95</b>	<b>5</b>	<b>-</b>
Land Use Plan	2.78	0.70	96.53*
Disaster Risk Reduction Plan	3	0	97*
Annual Disaster Drill	2	1	97*
Early Warning System	2	0	98*
Budget for DRRMP	89.66	6.21	4.14
Local Risk Assessments	4.86	0.70	94.44*
Emergency Infrastructure	70.34	28.28	1.38
Utilities	98.62	1.38	-
Employed Population	34.48	64.14	1.38
Sanitary System	94.48	5.52	-

\*LGU reached the maximum score for the indicator

Table 2 shows that a little more than half of the cities in the Philippines marked an improved performance in the infrastructure pillar. This improvement can be attributed to better road network, information technology capacity, health and LGU investment. There are likewise numerous challenges to include financial technology capacity, lack of DOT-registered accommodation and transportation vehicles. Distance to port is a challenge of 89 percent of cities, an indicator which most cities find difficult to improve since numerous cities are landlocked.

In terms of resiliency, 95 percent of cities registered a significant improvement in 2018 compared to 2017. A large majority of cities boosts of the presence of sanitary system, emergency infrastructure and utilities. Most importantly, they have as part of their annual

budget, an allocation for disaster risk reduction and management program. Almost all of the Philippine cities do have their respective land use plan, disaster risk reduction plan and early warning system. In addition, they conduct regular disaster drill and risk assessments.

While there is marked improvement in the competitiveness performance of most cities in the Philippines in terms of the composite scores of the 4 pillars namely: economic dynamism, government efficiency, infrastructure and resiliency, it is important to consider what really matters to make a dynamic local economy. This boils down to the question as to what would make a city an investment destination. Putting it differently, how can a city position itself in the radar of investors? Table 3 presents the regression result envisioned to determine how government efficiency, infrastructure and resiliency performance of cities explain economic dynamism.

**Table 3. PCSE Regression Result: Effect of Government Efficiency, Infrastructure, and Resiliency on Economic Dynamism**

Variable	Coefficient
Constant	0.015445
Government Efficiency	0.0645454***
Infrastructure	0.5344047***
Resilience	0.0178425
R-Squared	0.5236
N	290
Number of groups	145
Number of periods	2

It can be gleaned from the above results that government efficiency and infrastructure significantly explain economic dynamism of cities. The positive coefficient indicates that a city with a high score for government efficiency will have high score for economic dynamism. An efficient government promotes economic activity by creating a stable macroeconomic environment that increases the productivity of workers and improve the quality of goods produced. This result is consistent with the findings of Rodrik, Subramanian and Trebbi 2004; Rodriguez-Pose and Zhang, 2019.

Similarly, the coefficient for infrastructure is positive and indicates that higher infrastructure score means a more dynamic local economy. This result is consistent with the findings of Boccanfuso, et al. 2015; Rodriguez-Pose and Zhang 2019; Elnasri, 2014; Munir, Elahi and Khan, 2018. Labor productivity depends on economic infrastructure and the availability of basic utilities like health and education, financial and information technology facilities which in turn will make doing business easy and less costly.

The foregoing result also shows that the effect of resiliency on economic dynamism has not been proven to be statistically significant. This is not to say however, that absence of effect is absolute.

**Table 3. PCSE Regression Result: Economic Dynamism and Indicators of Government Efficiency, Infrastructure, and Resiliency**

Economic Dynamism and Government Efficiency indicators		Economic Dynamism and Infrastructure indicators		Economic Dynamism and Resiliency indicators	
Variable	Coefficient	Variable	Coefficient	Variable	Coefficient
Constant	3.231351***	constant	2.861693***	Constant	0.3342884
compliance to national directives	0.0645518	road network	0.4230566***	Land-use Plan	-0.004996
presence of investment promotion unit	0.0321316	distance to ports	-0.0972301	disaster risk reduction plan	0.1392494
business registration efficiency	-0.4868115***	availability of basic utilities	0.4036714***	annual disaster drill	0.5451067***
capacity to generate local resource	0.6627475***	transportation vehicles	0.0873758	early warning system	0.0162355
capacity of health services	0.9689349	education	0.0842026	budget for DRRMP	0.3560548**
capacity of school services	-0.3507799	health	0.8821412***	local risk assessment	0.2404776
recognition of performance	<b>0.4080199</b>	LGU investment	-0.0369535	emergency infrastructure	1.154578
compliance to BPLS	<b>0.317418***</b>	accommodation capacity	1.059723***	utilities	0.0005227
peace and order	0.6757309***	information technology capacity	0.7368088*	employed population	1.889732**
Social protection	0.7557885*	financial technology capacity	1.993364***	sanitary system	0.2494769***
R-Squared	0.3464	R-Squared	0.6483	R-Squared	0.3859
Wald chi2	30.22	Wald chi2	394.67	Wald chi2	24.28
Prob > chi2	0.0000	Prob > chi2	0.0000	Prob > chi2	0.0000
N	288	N	288	N	288
Number of groups	144	Number of groups	144	Number of groups	144
Number of periods	2	Number of periods	2	Number of periods	2

\*\*\* The variable is significant at 1% level

\*\* The variable is significant at 5% level

\* The variable is significant at 10% level

Note: Marawi City was excluded due to the presence of many zero (0) values in the data for the indicators.

While it was clear that economic dynamism is highly explained by government efficiency and infrastructure, it is imperative to determine which indicators under each pillar significantly explain economic dynamism. Table 3 presents the results of the regression of economic dynamism score against the city score on the individual indicators of each of the other three (3) pillars. Clearly, there are four (4) indicators of government efficiency that are highly significant namely: business registration efficiency, capacity to generate local resource, compliance to BPLS standard, and peace and order. Meanwhile, social protection is significant at 10 percent level. Of these five (5) significant indicators under government efficiency, the effect is positive except for business registration efficiency. The positive coefficient indicates that higher scores for these indicators will result in higher composite score for economic dynamism. Institutional factors are important drivers of economic dynamism. For example, peace and order helps attract investors, while lack of it will make it drive away businesses.

Under infrastructure, five (5) indicators are highly significant drivers and have positive effect on economic dynamism. These are: road network, availability of basic utilities, health facilities, accommodation capacity and financial technology capacity. Better infrastructure helps reduce the cost of business therefore highly promotes economic activity. Sufficient infrastructure and basic utilities make it easier and cheaper for businesses to transport raw materials and products. Moreover, easy access to financial resources encourages entrepreneurial spirit, create jobs and increases income and well-being.

Although the composite score of resiliency was not proven statistically significant in explaining economic dynamism, certain resiliency indicators are highly significant. Specifically, the presence of sanitary system and the conduct of an annual disaster drill are highly significant. Budget for DRRMP and the number of employed population are significant at 5% level.

## **V. Conclusion and Recommendation:**

The CMCI is an annual ranking that is developed to stimulate competition within the Local Government Units of participating Cities and Municipalities in the Philippines. For the past 6 years, the competitiveness index was anchored on three (3) pillars: Government Efficiency, Infrastructure and Economic Dynamism were used and in 2017 the fourth pillar Resiliency was added to objectively and accurately evaluate the rank of the Cities and Municipalities' competitiveness.

This study seeks to determine the drivers of economic dynamism of Philippine cities using the indicators set forth in the CMCI survey. Using panel data analysis, this study concludes that government efficiency and infrastructure facilities are important factors that make the city more competitive and thus making it a potential investment destination.

For the *Government Efficiency*, this is consistent with Edmund Phelps as cited by Department of Trade and Industry Competitiveness Bureau (2018), this pillar is a mixed of the entrepreneurial spirit and financial institutions that channel dynamism hence, this is associated with activities that create stable expansion of business and industries and higher employment. Moreover, *Infrastructure Facilities* is essentially important because of the role of technology choice in determining productive efficiency that provides crucial competitive

edge in the future markets and aid in the decision-making process of entrepreneurs (Du & Douch, 2018).

The two pillars integrate well-established aspects that drive productivity and growth but with a mixed performance across its indicators. Government efficiency emphasizes on how the local policy-makers shape their economic strategies in terms of the capacity to generate local resource, compliance to BPLS standards, peace and order, business registration efficiency and social protection. But there is a need to improve on the efficiency of business registration as this will help encourage investment and to have a sustainable productive expansion. As stated in the study of Canare et al. (2017), this has a positive and significant relationship with business creation.

While infrastructure is what makes productivity sustainable over time, this refers to the availability of basic utilities, health facilities, accommodation capacity, financial technology capacity and road network. These indicators will greatly help connect, expand, and sustain a locality, to be able to provide goods and services.

Since cities significantly differ in characteristics, the local government needs to assess itself along the specific indicators where it is weak and target its efforts on projects and programs to strengthen itself along those aspects while improving or sustaining indicators where they are strong. This study shall also serve as a call to action to the local government and policy-makers to engage in a long-term and holistic leadership building local economic competitiveness as it is crucial in promoting long-term national competitiveness, creating business opportunities and ensuring inclusive and sustainable development.

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