

Economic Decision across Regions of the Philippines

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Abstract

This study determines why Gross Regional Domestic Product per Capita (GRDP) differs across regions in the Philippines vis-à-vis population rate, tertiary graduate rate, and crime rate as factors. Using Minitab, it examines the secondary data sets based on every group from various regions of the country. Findings show that educated human capital converge more in highly developed areas where risks matter less and safety measures exist. This results to a concentrated high GRDP in some. It further reveals that index and non-index crime rate is not a hindrance for a person to move in the area with many opportunities as long as life is not at stake. There were more educated individuals in regions with lower GRDP; however, they practiced and worked in highly developed areas and where law is enforced, eyeing a better condition of life. By implication, it results to concentration of educated labor force in areas with better opportunities.

Keywords: *multivariate analysis, economic disparity, risks taking*

1.0 Introduction

Gross Regional Domestic Product (GRDP) is the aggregate measure of the production of all resident units engaged in production both finished goods and services (Yamarone, 2012). GRDP signals the growth of the economy in the region which ensures sustainability in the productivity. However, there is a wide disparity of GRDP in the areas of the Philippines which make other regions to prosper ahead of others. People usually go to cities to hunt for jobs and eventually stay for good. This study claims that man will attempt to stay and work in mainly urban areas even at a small chance as long as opportunities are there. The study scrutinizes the crime rate, education attainment, and population as assumed

reasons for why there is a wide disparity of the Gross Regional Domestic Product across regions of the Philippines.

Osman and Galang (2011) revealed in their study that human resource is the reason for the difference of the GRDP, the outflow of income of the workforce of the region who is working in other areas is significant with it. This finding supports the study of Cooper and John (2012) that identified reasons for the disparity of the gross domestic product: workforce, population, human capital, and level of technology. According to them, populated regions produce more labor which supplements the educated, and trained workforce tend to yield more production, eventually to the increase of GRDP. Regional imbalances in per capita among provinces were present because human

capital which is primarily formed by educated and trained individuals do not get an adequate income to support the financial need thus forcing them to move into regions which they can compete and improve their purchasing power capability (Fisher, 2006).

Human capital as the factor to which influenced the increase of GRDP was discussed further in the studies of Aghion, Boustan, Hoxby, & Vandenbussche (2009) and Howitt (2010). According to these studies, educated and skilled workers migrate to regions which will raise the marginal productivity of the population. In addition, Mattoo, Neagu, & Özden (2008), these individuals were highly educated. Community, on the other hand, contributes to the expenses and the need for an everyday living, thus, increasing the cycle of the economy. On the other hand, Hoyler, et.al (2014) showed in their study the significant role of professionals working in regions which is significant to its existing GRDP. This happens when highly educated workers migrate, congestion arises from an area of land, housing, cost of living, high standards of living (Faggian & Royuela, 2010). These evident circumstances were present from the knowledge of a person before moving, but despite it, they chased the opportunities as long as they will benefit from the working economy of these regions (Yates & Prescott, 2011). Economic growth is substantially linked with the education of the human capital of any region (Todaro & Smith, 2012). A person equipped with the knowledge and skill will earn in his respective field contributing to the regional economy (Gyimah-Brempong, Paddison & Mitiku, 2006).

An in-depth study was needed to carefully see the pattern of why individuals tend to risk living in more urbanized places without further

assurance of success. Disparities of economic states discussed accordingly by human capital, workforce, and population but none of which include crime rate that could affect the difference of the GRDP. The study of Ojog (2014) showed that there is little evidence that sound economic state will have less crime rate. In the study of Detotto & Otranto (2010), they found that crime will discourage the investments, reduces the competitiveness of the firms, and reallocates the resources creating uncertainty and inefficiency but not necessarily affect the economy at large but it is significant in the increase of crime as economy goes down, thus have direct relation as to the increase of the economy and the crime rate of the region.

In this study, an analysis of all regions of the Philippines through clustering them regarding population, education, and the crime rate is done to see the behavior of the individuals who attempt to gain a sustainable income.

Framework of the Study

The study is based on the Endogenous Growth Theory (2010) of Peter Howitt which focuses on the roles of the human capital in the increase of productivity eventually to the gross domestic product. Johansson, Karlsson, & Stough (2011) stressed in their study that transforming the individual through education, training, and research and development will enhance their skills capability thus increasing their productivity. As production increases, the economy of the region will rise. The study of Howitt (2010) added that an area with a large population has more opportunity to grow because the theory stressed that growth in the economy has nothing to do with external factors but internal. Improvement of the human capital will improve the economy as well.

Figure 1 shows the increase of population along with the potential human capital as the highly educated and skilled individual brings forth the increase

of GRDP of a region. However, this relationship is dictated by the existing crime rate of the area.

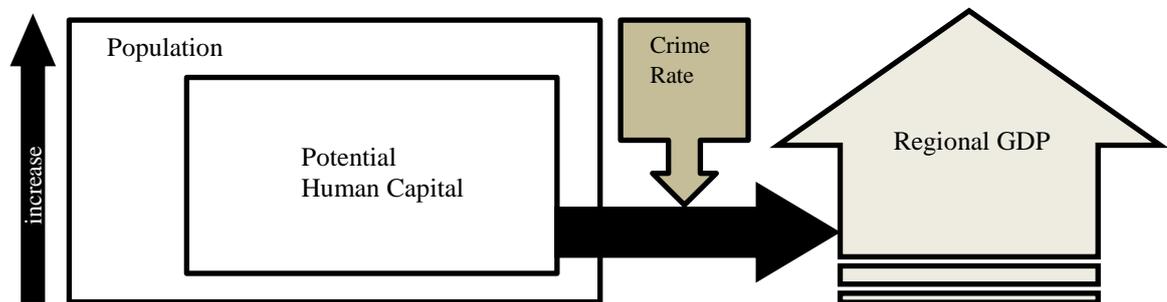


Figure 1. Schematic Diagram of the Framework of the Study

External factors of this study were removed as determinants of the growth of the regional economy; however, the crime rate was considered to see if there is a relative effect in the decision-making of the individual. In this study, the crime rate was both index and non-index crimes. Index offenses are murder, homicide, physical injury and rape while non-index offenses are illegal logging or violation of local ordinances.

Also, Goulas&Zervoyianni (2013) stated that there is an adverse effect of the economy on the crime rate. Supported by the findings of Detotto and Otranto (2010), crime would discourage investment in due course to the reduction of the economy. With this, the educated individual has prior knowledge that when a region has higher crime rate, hesitation to migrate is highly possible. Further, Hagen & Zanker (2008) said that the fear of offense lead an individual to move out because of the security of the area, people tend to be afraid to become a victim.

2.0 Methodology

The study utilizes multivariate analysis, specifically, cluster analysis. Data mining technique is used to gather data from Philippine Statistics Authority for the gross regional domestic product (GRDP) and regional population, from CHED for number of tertiary graduates per region of the Philippines and reports from the crime statistics of the Senate of the Philippines per region covering the period of 2002-2012.

3.0 Results and Discussion

In the persistence of the Philippine leaders to uplift the economic condition of the country for a long time, we remained to be a Third World Country. Sassen (2011) even tagged the Philippines as one of the fastest economies in Asia. Policies were structured and carefully envisioned to attain stability. Along with the implementation across all regions in the country, the vast disparity was evident in the distribution of their GRDP wherein high income generating human capital is concentrated in the particular area as the

dendrogram showing three regions clustered in one with the highest GRDP. People from other regions are moving to

these areas adding to the population and eventually to the GDP (Osman and Galang,2011).

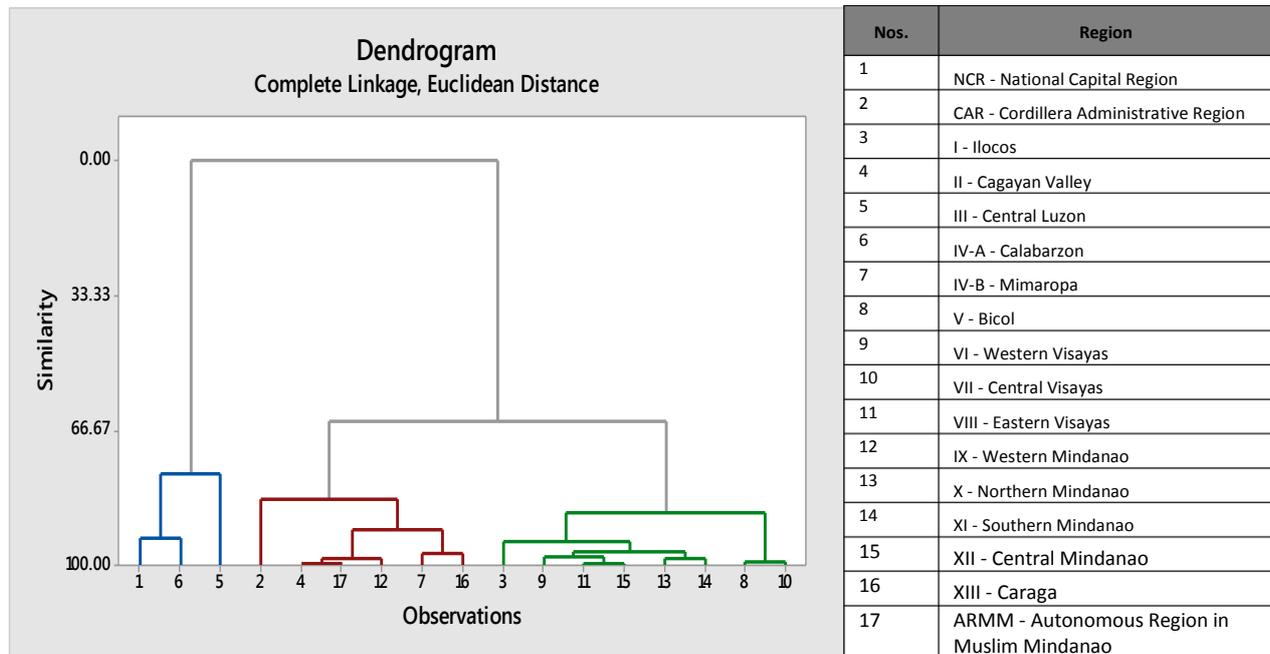


Figure 2. *The Dendrogram of the Linkage of all Regions in the Philippines considering population, tertiary graduate rate, crime rate, and Gross Regional Domestic Product.*

Figure 2 of the study is a dendrogram grouping the regions accordingly to its similarities based on the identified factors of the study. Cluster 1 (blue) includes: NCR, CALABARZON, and Central Luzon; Cluster 2 (red) includes: CAR, Cagayan Valley, ARMM, Western Mindanao, MIMAROPA and CARAGA regions; and lastly cluster 3 (green) includes: Ilocos, Western Visayas, Eastern Visayas, Central Mindanao, Northern Mindanao, Southern Mindanao, Central Visayas and Bicol region.

As reported in the Philippine Statistics Authority (PSA) 2012, regions namely NCR, CALABARZON, and Central Luzon dominated in the employment in the manufacturing agency which is one of the top employers in the country. These areas comprised Cluster 1 where there were evident figures on the association of potential educated human capital and

population in the performance of the GRDP, however, the crime rate in the area is evidently present. There were two contradicting views regarding crime rate and economic growth of a region, those from the criminologists and the economists. Bad economies create more crimes said the criminologist otherwise for the economist. However, Roman (2013) revealed in his study that neither of their views was right at present. In this study, regions of cluster 1 dominated in the GRDP across the Philippines, they also have the largest population. If we look into the patterns of crime rates in these regions, despite the job opportunities present in these areas, there is still the highest crime rate counted with 23 average monthly crimes per 100,000 reported both index and non-index crimes. NCR, CALABARZON, and Central Luzon characterized by thick density

regarding population. When there is substantial population, the area becomes small for all migrants in the regions which

will lead to higher anonymity which will eventually provide the desperate hapless individuals in the area to commit a crime.

Table 1. Cluster Centroids of the Variables across Regions

Variable	Cluster1	Cluster2	Cluster3	Grand centroid
Regional GDP	2397	181	409	679
Population	11534505	2780570	4606707	5184740
Tertiary Graduate Rate	46	37	42	41
Crime Rate	23	17	17	18

Meanwhile, CAR, Cagayan Valley, ARMM, Western Mindanao, MIMAROPA and CARAGA regions were part of the second cluster, wherein they performed last in the economy. The crime rate was not low as expected to be. Looking at the regions part of the group, these were the areas with small crime rate but the highest regarding terrorist attacks among the residents. Regions of this cluster have the largest areas of agriculture which is the primary generating income of the Philippines. This situation directly means that there are more opportunities in the region where fortune seeking individuals can venture; however, these opportunities hindered by the unsolved terrorist conflicts among armed groups in the region. This study showed that Filipinos tend to risks all possible doing so much time they have the probability of success, but at an extent, Filipinos were very hesitant to move into areas with higher probability of getting killed by a terrorist. Goulas & Zervoyianni (2013) stressed in their findings that terrorism has a direct effect on the regions' economy. In this study, the real terrorism in the area provided the individuals to limit their risks to migrate therefore not contributing to the GRDP. Also, the graduates who were the potential generating human capital of the region flung to different parts with equal opportunities available to practice their

acquired knowledge and skills, somewhere safe from existing terror in their respective areas.

Lastly, Cluster 3 comprised of Ilocos, Western Visayas, Eastern Visayas, Central Mindanao, Northern Mindanao, Southern Mindanao, Central Visayas and Bicol region. These areas were the regions considered peaceful according to the reports of Philippines National Police to the Senate not to mention that these sectors were not densely populated thus interest educated human capital from regions with fewer opportunities to work and stayed for good. Not to say that these areas paid attention in the importance of education as a tool for success in life. This situation supports the results of the study (Hagen-Zanker, 2008) which is above the grand centroid. Same thing with Cluster 2 that has low in crime because they will be easily recognized in the community.

Moreover, regardless of how developed the region, education was not affected but this fact gives way that many of the graduates in the suburban flung to areas with high job opportunities manifested with significant development status (Todaro & Smith, 2012). In the result of unemployment, people tend to commit crime because many of them are not doing anything to contribute to the development (Lin, 2008); however, peace and order strategies of the region also

plays primary role to nullify crimes (Bouza, 2013).

Results showed that an educated individual will choose to stay even at risks in highly progressed regions with law enforcers is present to manage stability of the area which will lead to a condensed GRDP in certain areas.

4.0 Conclusion and Recommendation

The concentration of the educated labor force in the regions with great opportunities tends to increase a large variance in the GRDP of the Philippines. Even with the existence of risks, innate to the human being to do what is best to do to improve the life for their respective families left in their homeland.

With the prevailing outlook of the Filipinos, the Philippine government should highly impose economic strategies to maximize the different regions of the country potential for a harbor of macro, small, and micro businesses that will generate income for the community and the region. The government should encourage investment and establish these trades and industries in the various regions in the country. The direction of the region towards progress should be instilled in the minds of the highly educated human capital through clear provincial plans and priorities towards development so that these individuals will stay and help the region towards economic growth.

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