学校编码：**10384**　　　　　分类号_____密级 _____

学号： **15220141154566**　　　　　　**UDC**

厦门大学

硕 士 学 位 论 文

对菲律宾省区和首都马尼拉

犯罪率影响因素的面板数据研究

A Panel Study on the Factors that Influence the

Crime Rate in the Philippine Provinces and Metro Manila

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专 业 名 称 ：　**International Trade**

论文提交日期：　 ２０１６ 年 ５ 月

论 文 答 辩 日 期 ：２０１６ 年 ５ 月

学 位 授 予 日 期 ：　　　年　　　月

答辩委员会主席：

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2016 年 **5** 月

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摘 要

菲律宾作为发展中国家，在某些地区，公民的人身和财产存在安全隐患。由于犯罪行为的持续性和诱因多元性，政府和执法部门打击违法犯罪的工作极具挑战。

本文旨在研究菲律宾在 2010 年至 2014 年 以及 2012 年至 2014 年犯罪率的影响因素。研究范围涵盖菲律宾的 79 个省和一个特别行政区(马尼拉)，希望本文的研究成果可以为菲律宾的政策决策者所用。

此研究采用了二个回归模型。其一，对2010-2014年数据进行含有监狱因素的回归没有警察的因素；其二，对2012-2014年间与警方的因素。八个自变量为: 贫困发生率、人口、城市化率、10-14岁男性青年的人口数、15-19岁男性青年的人口数，菲律宾共和国10630法案与10-14和15-19岁男性青年人口数的两个交叉项以及家庭平均收入。

本文有11个因变量，分别是4个人身犯罪率（谋杀、蓄意谋杀、人身伤害和强奸)，4个财产犯罪率（抢劫、盗窃、偷车和偷牛），总人身犯罪率，总财产犯罪率和总犯罪率。

本研究发现，为深入分析犯罪率的影响因素，必须对每种犯罪行为单独进行分析。否则，我们无法分析不同因素对不同犯罪类型影响作用中的细微差别，研究总犯罪率会掩盖某些影响因素的作用。

第一个回归说明，收入对于谋杀和杀人犯罪率的作用与其。而且，男性青年人口数影响谋杀、人身伤害和盗窃犯罪率。此外，监狱罪犯人数影响杀人、人身伤害、强奸、抢劫和盗窃犯罪率。最后一个回归结果表明，警力对杀人犯罪率有着重要影响，监狱罪犯人数可影响杀人、人身伤害、抢劫和盗窃犯罪率。

本文的回归模型具有稳健性：一是添加了额外的变量如失业率和功能性文盲率来解释平均教育年限, 二是使用滞后项避免反向因果关系的问题。具体四种方法如下: (a) 固定效应面板回归(xtreg) 、(b) 随机效应面部回归、(c) 普通回归 (reg) 和 (d)集群回归去解释每个省数据的序列相关性。

上述研究结果对菲律宾的政策制定有重大参考价值。

关键词：犯罪率; 犯罪的决定因素; 各种犯罪类型犯罪率; 菲律宾省区

Abstract

As a developing country, there are localities in the Philippines where life and property are not secure. Crime exists and persists. These pose a challenge to the political leaders and the police on how to combat crime. Certainly, there are many factors that cause crime.

This paper's objective is to examine the factors that affect the crime rates in the Philippines for the period 2010-2014 as well as for the period 2012-2014. This study covers crime incidences in the 79 provinces and one special administrative region (Metro Manila) of the Philippines and bring it up to date. Hopefully, the findings will be useful for Philippine policy makers.

In this study, there are two regression types. One for the period 2010-2014 without the police factor and another for the period 2012-2014 with the police factor. The eight other independent variables are as follows: (1) poverty incidence, (2) population, (3) urbanization, young male population divided into two segments (4) aged 10-14 and (5) aged 15-19, the juvenile justice law (Philippine Republic Act 10630) as an interaction term for the young men (6) aged 10-14 and (7) aged 15-19 and (8) the average family income.

On the other hand, there are eleven dependent variables: crime against persons (murder, homicide, physical injury and rape), crime against property (robbery, theft, carnapping and cattle rustling), total personal crimes, total property crimes and total crime in sum.

This study found that in order to rigorously analyze the crime incidences, there is a need to look into each index crime. Using total crime, total person crime or total property crime mask nuances of specific crimes. This means that to see the real effects of the factors on the different crime rates, one has to study each index crime closely. As results have shown, looking at them as a whole hides specific effects.

In the first regression, income also plays a role in murder and homicide. In addition, young men have an effect on murder, physical injury and theft. Moreover, the prison population impact homicide, physical injury, rape, robbery and theft. In the second regression, police presence plays a significant role in homicide while jail population has an important role in murder, homicide, physical injury, robbery and theft incidents.

Robustness checks are employed in this study: (1) additional variables were added like unemployment and functional literacy to account for average education, (2) the use of lagged values to account for the reverse causality problem. Four methods are used as follows: (a) panel regression with fixed effects (xtreg), (b) panel regression with random effects. (c) ordinary regression (reg) and (d) clustered regression to account for the serial correlation within each province.

The above findings are a significant contribution to policy making in the Philippines.

Key Words: Crime Rate; Determinants of Crime; Index Crimes; Philippine Provinces

Contents

I.   Introduction

"May ginahasa at pinatay na naman kahapon sa Maynila!" Someone got raped and killed again yesterday in Manila. "May naganap na nakawan sa isang tindahan ng alahas sa Binondo kaninang hapon." There was a robbery that took place in one jewelry store in Chinatown this afternoon. One would usually hear this blast from the speakers of the television set. An observant person will ask: What causes crime? Why do people break the law? What motivates man to trespass his neighbor and his goods? How can crime be minimized? As far as man is concerned, crime has always been there. Because of these concerns, there is a need to maintain order in society, and better understand the causes of crime.

Recently, our country had our national election. Now, our President elect is Mayor Rodrigo Duterte of Davao City. Why was he voted in the first place? He got voted because he is tough against crime. His battle against crime is at the top of his political agenda for the country. He has made Davao, the safest city to live in the Philippines and he wants to do that for the whole country.

Time Asia Magazine calls him "The Punisher". Why you may ask? He is called such because he is very tough on crime against crime. Below is a table that was made by Numbeo Statistics (2016) comparing Davao with Manila.

Table 1. Crime and Safety Comparison Between Davao and Manila

	Davao	Manila
Level of Crime	26.45	67.02
Safety Walking Alone During Daylight	80.53	56.79
Safety Walking Alone During Night	73.42	33.55

Source: Numbeo Statistics

When we look at the crime rate, Davao is only 26.45 but Manila is 67.02. Moreover, when safety comparisons are made, it is a lot safer to walk in Davao during the daylight at 81% as compared to Manila with just 57%. This value

greatly diminishes when night comes, with Davao at 73% as compared to Manila's staggering 34%.

I.I. Background

The researcher decided to study crime in her country (the Philippines) because it is very much of interest among many sectors of society. Based on the data from the Philippine National Police (PNP), total crime from 2010 to 2012 has been decreasing but from 2012 to 2013, it has been rising. From 2013 to 2014, it is on a decline again. Although the crime rate for 2013 and 2014 were significantly higher if it is compared with the previous years. The Philippines, being a third-world country has differences in the quality of life as compared to China and especially Xiamen is. In Xiamen, it is extremely safe. In the Philippines, especially in the capital, one has to be vigilant especially during night time because crime incidence can be relatively high in some poor neighborhoods.

This study is conducted because there is a need to update data and analytics. The period 2010-2014 is studied. 2009 and the previous years is not included because the crime reporting system changed in 2009 making the data series incomparable. In addition, this paper extends the study coverage to 79 provinces and Metro Manila, not just national data.

In this study, there are eight index crimes focused on: crime against persons (murder, homicide, physical injury and rape) and crime against property (robbery, theft, carnapping and cattle rustling).

I.II. Literature Review

Crime affects the quality of life of a country whether directly and indirectly. A strategic question could be: "what are the causes of crime?" Why would a person commit crime?

Barkan (1997) claimed that crime concerns the theological aspect. He explains that during the prehistoric age, humans commit crime because of the following reasons: they were being tested by God, they were being chastised, their actions were being used by God as a caveat to others to follow His precepts or demons were possessing them. He continues the Age of Reason, philosophers like Rene Descartes, John Locke & Jean Jacques Rousseau taught that man had free will and reason to make his daily decisions (rational choice theory). Man was a rational animal, who weighed the pros and cons of a situation and acted according to the choice that would give the best satisfaction and minimum discomfort. In the 1700s, an economist from Italy named Cesare Beccaria agreed with the Enlightenment thinkers but he claimed that punishments must be severe enough to make people think twice about breaking the law (deterrence theory).

In modern age, socialists believe that the place you live, your family and your work are the broad causes of why a person commits crime. In addition, people are less prone to commit crime if they are employed and are contented. Moreover, they claim that the authorities must do their part in making crime unattractive through better social services (Education Scotland).

On the other hand, the nonconformists think that people who break the law do it based on their freedom. He is a rational animal therefore; he is liable for the consequences of his actions. Furthermore, there is a need for clear regulations and stringent sentences in order for crime to decrease (Education Scotland).

Becker (1968) in Buonanno (2003) analyzed crime and its causes, and he argued that an individual would commit crime if the anticipated benefit from the act is more than the benefit he can get from other means. Here it is a matter of the trade-off between costs and benefits. Buonanno (2003) added that "criminal choice is not determined by mental illness or bad attitudes, but it is made on the basis of a maximization problem in which agents have to compare costs and benefits of legal and illegal activities taking in account the probability of being arrested and punished and the expected returns from crime. Criminal decision is determined by an economic analysis of agents."

Gillado and Tan-Cruz (2004) made a regional study about the crime rates in the Philippines. Their research studies the index crime rates for the 13 Philippine regions during the years 1983-2000. In their panel data, they employed the constant coefficient model. They divided crime into three segments: crimes against persons, crime against property and rape. The study found out that with personal crimes, regional gross domestic product per person, rural and urban average income and cohort survival rate in grade school have an inverse relationship with these crimes meanwhile consumer price index have a direct relationship. With regards to property crimes, regional gross domestic product per person, unequal distribution of income, joblessness and cohort survival rate in high school. The first three variables are positively related to crime while the latter is negatively related. Field (1990) in Gillado and Tan-Cruz (2004) claimed that during the period of economic development, there is a surge in property crimes since there is an increase in possessions to be stolen. Furthermore, in rape, a densely populated area and unemployment move in the same direction as crime. They conclude that as an economy has more stability then there will be lesser crime.

Will more people mean that there will be more wrongdoing? More specifically, does more poor people mean that there will be more crime? Is it safer to live in a rural area as compared to an urban one? If people have more money, will it mean that there will be fewer offenses? Does more police presence necessarily mean that a province is more secure than others? Does having more people in prison have an effect on the crime rate in our society?

This paper focuses on ten factors that affect the crime rate in the provinces of the Philippines. The factors studied in this paper are the following: (1) poverty incidence, (2) population, (3) urbanization, young male population divided into two segments (4) aged 10-14 and (5) aged 15-19, the juvenile justice law (Philippine Republic Act 10630) as an interaction term for the young men (6) aged 10-14 and (7) aged 15-19, (8) the average family income, (9) police presence and (10) jail/prison population.

First of all, the high poverty leads to more crimes because it causes the individual to thievery, for example, to be able to sustain himself and survive. Buonanno (2003)

articulated that numerous researches found that those who have less schooling and are from inferior economic status gravitate towards criminality. Marris and Volterra Consulting (2000) said that poverty is a major cause of violence as it is commonly believed. Meanwhile, Morrison (2005) says that both the affluent and the underprivileged are both obsessed to crime. "The progress of civilization will not destroy crime." He pointed further that comparing the most civilized individuals in the known world to the numerous uncivilized people who live in humble abodes, the latter exhibit more respect for each other and one's home. "All that civilization has hitherto done is to change the form in which crime is perpetrated; in substance it remains the same (Morrison 2005)." Wikipedia (2016) indicated that the provinces in the Philippines with extreme poverty are the following: Eastern Samar, Lanao del Sur, Maguindanao, Masbate, Northern Samar, Sarangani, Zamboanga del Norte, Camiguin, Lanao del Norte, North Cotabato, and Western Samar.

Second, the higher the population of a locality, the more crimes will be committed. Braithwaite (1975) supported this view that the rise in crime around the world is caused by the increase in population since the metropolis becomes bigger as the populace grows. He added that the global populace growth is not equally distributed among cities but is focused on big ones. Wu & Wu (2012) backed him up that crime is most prevalent in densely populated areas as there are more potential victims. Joyner (2011) articulated that everyday crime is minimized when there is a higher concentration of people. Moreover, he claimed that more people mean that there is a bigger base of police authorities to cater to the locality. "Therefore, all else being equal a denser city will be a better policed city (Joyner 2011)."

Third, urbanization is a major cause of crimes because the increased mobility of people and higher population density. People are likely to be more exposed to other inhabitants as compared to the rural areas. Rabu (2012) stated that high urbanization can lead to an increase in the crime rate of big cities. Barkan complemented this in Assignment Point (2016) by saying that if the urban and rural areas are contrasted, crime is higher in the former. Moreover, Barkan added that

"violent and property crime rates in our largest cities are three to four times as high as the rates in rural communities (Assignment Point 2016)."

Fourth, Cooter & Ulen (2010) discussed that one of the factors that affect crime is that "a disproportionate amount of criminals are young males." Moreover, they add that individuals under the age of 25 were responsible for more than half of all the crimes in the street. Buonanno (2003) concurred this expressing that many studies found that adolescent males tend to participate in criminal behavior when compared with the whole citizenry. Oliver (2012) in her study found that a rise in percentage among those aged 14 to 25 increased incidents of crime.

Fifth, the juvenile justice law (Philippine Republic Act 10630) is made into an interaction term with the two segments of the young male population aged 10-14 and aged 15-19. This study seeks to find out if the juvenile justice law interacted with the two segments of the male population have an effect on the crime rate in the Philippines. Kabiling (2013) said that "the new law also kept the age of criminal responsibility at 15 but set the minimum age of children committed to the youth care facility at 12." According to the Congress of the Philippines (2013), " the court will determine the initial period of placement of the child within the IJISC which shall not be less than one year."

Sixth, the higher income per person means that there will be less incentive to commit crimes. The Economist (2011) in Northrup and Klaer (2014) hypothesized that crime rates will increase, as people get poorer and more desperate for money. Fleisher (1966) in Buonanno (2003) pointed out that having little income makes a person more prone to break the law because it is harder to earn money via legal means and their chances of getting apprehended is low.

Seventh, it is commonly believed that more police presence means that there is less misbehavior. Becker (1968) and Ehrlich (1973, 1975, 1996) in Buonanno (2003) studied whether the presence of the police, court judgments and intensity of retribution influence the level of criminality. They added that the probability of apprehension and the corresponding punishment are assumed to be carefully taken