

Dog Ownership through the Eyes of a Stray Dog: Property Rights and the Stray Dog Population

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Abstract

Countries differ widely in the number of stray dogs. I investigate, why some countries have virtually no stray dogs and others have stray dog epidemics? Can this variation be explained by political, economic and cultural differences? There is no single factor that explain the variation in the stray dog populations. Rather, several influential factors or a bundle of factors offer a satisfactory explanation. Broadly speaking, quality of political regime, political institutions, economic development and culture effect the size of stray dog population in different countries. However, I argue that property rights have the greatest effect on the stray dog population. Qualitatively I find that countries with secure property rights have virtually no stray dogs. This holds both across countries and within a country when comparing similar countries. I discuss the limitations and advantages of the research.

DEDICATION

To Rojo

My three-legged dog, who in a short period of time that he spent with me, taught me more about myself than anyone else could teach me in a life time.

To a dog

Outside of a dog, a book is a man's best friend.

Inside of a dog it is too dark to read.

- Groucho Marx

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“The concept of ownership is deeply imbedded in our feelings for dogs. They are “our” dogs; we are their masters. To own an exotic breed of dog enhances our status in the same way that our other possessions do. We announce our rank. We may or may not treat our dogs well, but we never consider them beings that should be set free” (Schwartz, 1997, p. 122).

Introduction

Today, dog ownership is a common occurrence all over the world. Dogs live in people’s homes, sleep in their beds, go on vacations, and share personal experiences with their humans. Dogs’ ability to build meaningful relationships with people distinguishes them from other domesticated animals. “A relationship implies mutuality; communication and interchange of emotions in both directions. Humans have been engaging in that interchange with dogs and cats since the end of the last Ice Age” (Duckler, 2002, p.208). Dogs' social nature and ability to collaborate with others allowed people to domesticate dogs, use them in many aspects of their lives and create a large population of stray dogs (Martin et. al., 1984, p. 55). Close relationship with people and agency within a society makes companion animals a subject of a legal system. Under the law “animals are personal property [...] with a very well-defined market value.”(Duckler, 2002, p. 199). In many countries, the law clearly defines companion dogs as private property. Hence, dog owners are granted rights and protections and dog ownership is regulated by property laws. Drawing from the legal definition of companion dog, one may assume that a lost or abandoned dog is private property. In reality, the legal difference between an owned and a stray dog is a gray area in the most countries. Legal scholars argue that while animals are personal property, they are fundamentally different from manufactured goods. On practice, the distinction is not reflected in property laws and goods and animals are treated the same. Dogs are different type of private property in two ways. First, they are able to move freely and multiply without a large capital input. Second, owners value their dogs far more than their actual market value. Since ownership defines the value, stray dogs worth nothing and, thus, have no legal status.

The lack of definitive legal status makes the stray dog population hard to manage. Some societies are better at addressing stray dog problems than others. The primary subject of my research is the current

state of the stray dog population and its trends in the world. My main goal is to answer the following questions: why do some countries have virtually no stray dogs and others have stray dog epidemics? Can the stray dog population size be explained by political, economic and cultural differences? Which specific factors have the greatest influence? Broadly, I am interested in investigating whether a correlation between a size of stray dog population and a concept of ownership exist and how the latter may facilitate a size change of the stray dogs population. My hypothesis is that countries with secure property rights have few, or virtually no, stray dogs. In other words, I argue that secure property rights facilitate establishment of quality companion animal ownership laws and practices that play a key role in reduction of the stray animal population size. The quantitative findings suggest, neither levels of economic development, nor levels of democratization have a significant effect on the stray dogs population in a state. The regression analysis reveals a negative correlation between the stray dog population trends and the levels of property rights protection. It predicts that the higher level of property rights protection the smaller the stray dog population size in a country. A case study of Russia and Slovenia reveals that de jure secure property rights correlates with well-established companion animal laws and stray dog control legislation that correlate with low numbers or no stray dogs. Finally, the analysis of Russian public opinion may suggests that de facto property rights influence companion animal welfare and stray dog control practices on a local level.

The property rights argument has not been proposed before and represents a new approach to the animal welfare debate in two ways. First, it geared to explain the causes of the stray dog issue. Second, it challenges the normative approach to animal welfare. It also advises that animal rights advocates may want to broaden their agenda to include more than initiatives targeted at animal welfare. Specifically, animal advocates should be concerned with the general state of the rule of law in a country if they want to improve conditions in the long-term. There are different perspective on property rights and their security in economics and political science because "property rights lie at the intersection of economics and politics" (Frye, 2004, p.6). Thus, the economic development and regime type cannot be ruled out as the potential explanatory variables for the variation in the stray dog population size. Yet, I argue that property rights security may be its own variable in the stray dog discussion. My research brings a fresh perspective to the animal welfare debate by looking at not just one broad factor, economic development or regime

type, but rather a combination of political, economic, and cultural differences as the main variable in the stray dog problem management. It also suggests that the respect for ownership has an early influence in institutional and economic development.

Literature Review

Dogs and Society

In this chapter I discuss stray dogs throughout history and across different geographic locations. First, the literature on the human-dog relationship and the status of dogs in the human society are examined, followed by a discussion and a definition of stray dogs in a society. The discussion focuses on dog ownership and seeks to establish links between dog ownership and the stray dogs' control. Finally, the current academic research and studies of on the subject of stray dog populations are discussed. Stray dogs are an everyday reality in many countries; they freely roam the street causing health, social and economic problems. Regardless of the geographic location people play a key role in a stray dog's existence. People are the main source of the stray dogs, which makes them a man-made problem that does not disappear on its own. Besides of the health and economic problems associated with stray dogs, they often become victims of animal abuse and cruelty and the main topic of moral and ethical debates in societies. Therefore, the stray dog problem cannot be studied outside socioeconomic contexts of countries.

“The primary motivation for the accumulations in ancient animal collections was political power and individual enjoyment, although ostensibly they server public entertainment and educational purposes as well” (Duckler, 2007, p.205). Evidence of dogs as a symbol of social status and power is found in different cultures throughout human history. Archeological artifacts of “people burying or ritual disposing of dead dogs are found worldwide and have been consistently practiced over about 12,000-14,000 years. D. Morey argues, “This practice directly

reflects the domestic relationship between people and dogs” (Morey, 2006, p.158). In China, the first document mentioning Shih Tzu, a small breed of dogs, is dated back to AD 624. These dogs were kept by many imperial dynasties. Chinese people would not sell or trade them with the West. The special status of Shih Tzu is derived from Buddhist legend that narrates the Buddha was accompanied by a small dog on his journey to enlightenment (Jorgensen, 2013). In medieval Europe dogs reflected owners' social and financial status. “In 1800s, the Netherlands' elite usually owned pedigree dogs for sporting or as pets. These dogs were mostly well fed and groomed. They were their masters' status symbols that demonstrated the nobility's well-being and wealth.” (Sternheim, 2012, p.3). Many historians and legal scholars argue that people “own companion animals for different intellectual reasons than they own other animals” (Duckler, 2007, p. 208). In the nineteenth century among Europe nobles, “dog's well-being became an indicator for their owner's well-being and caused the perception towards animal welfare and its importance to change” (Sternheim, 2012,p.3).

Hughes and Lawson (2011) argue the value of pet consumerism in the Western world drives current motivation for further understanding of dog ownership. Haschman (1994) suggests six reasons for pet ownership: animals as objects in the consumer's environment, animals as ornaments, animals as a status symbol, animals as avocation, animals as equipment, animals as an extension of their owners ego and, most communally, as companions (extension of a family, friend) (p.10). Beverland et al. (2008) identifies two types of ownership motivation, pets as companions to love versus pets as toys, status markers and brands (p. 490). Indeed, in the twenty-first century companion animal ownership has a significant economic value. According to

American Pet Products Association (2010), “Pet industry is worth at 45.5 billion dollars in the US” (Hughes et. al.2010, p.10). In 2010, The European Pet Food Industry reported,

There are 70 million European households that own at least one pet, there are 650 pet food producing companies that provide direct employment to 50,000 and indirect employment to 500, 000 Europeans. Annual sales of pet food products and value of pet related goods and services contribute 13.5 and 10.5 billion of Euros to the European economies respectively. (FEDIAF)

Across countries people own dogs primary for companionship. Legally, dogs are personal property that has an immediate emotional and intellectual value for their owners and economic value for the society. Legal scholars argue that dogs are a special kind of private property. Its main difference from regular private property is a lack of an immediate market value. Duckler (2002) argues,

Many animals have a very well-defined market value; because humans eat cows, the cost of a cow is whatever the free market will bear. Because humans do not eat dogs but instead keep them as companions, the cost of a dog is much more difficult to determine; we tend to treat the value of our meals and the value of our friends very differently. (199)

Others may believe that dogs do have an exact market value; it is the price that is paid for a dog by a person. Indeed, some pure bred and award winning dogs are sold for hundreds and thousands of dollars. On the other hand, some shelter or rescue dogs are worth as little as nothing. Nonetheless, the majority of shelter and rescue dogs have a price that includes the cost of treatment and services provided by a shelter or rescue organizations. In the most cases, an initial price of a dog does not reflect a real value of the dog, which tends to appreciate over time. In economic terms, a real price of a dog is the price at which a dog is bought and sold in the free market. An owner values his or her dog very high, thus, in the eyes of the owner the dog

appreciates. Companion animals' appreciation is evident from amounts of money that are spent on the dogs which is reflected in a size of the pet industry. Hence, companion dogs have a positive economic value for countries. Stray dogs have a negative economic value for countries.

Stray Dogs

“Domestic species owe much of their existence to the interference of humans” (Duckler, 2002, p.208). Dogs are domesticated animals that depend on humans for their survival. People play an essential role in the stray dog population's survival. Stray dogs' life expectancy is 6 to 8 years; it is almost a half of pet dogs' life expectancy (Vita).¹ The second generation of stray dogs are considered to be feral; they have low survival and productivity rates due to poor human handling socialization (Tasker, 2007, p.2). There is no biological difference between stray dogs and owned dogs; they depend on people for resources and have high reproductive capacity. A female dog can produce 4 pups every six months that adds up to more than 5000 dogs in 5 years (Sternheim, 2012, p. 6). However, stray dogs have a different status and value in a society. A definition of a stray dog may vary from country to country and depends on differences in national or local regulations. Within the European Union,

Stray animals is an animal under human care which is not under permanent control or supervision of any natural person or a keeper and which moves freely outside its accommodation, enclosure or outside the household of its keeper, whereas abandoned animal is any animal originally under human care which is not under direct control or supervision of a natural person or a keeper, and the facts established indicate that its keeper abandoned it with the intention of getting rid of it or banishing it.²(Voslářová et al., 2012, p. 99)

¹ Author's translation.

² The definition is taken from the Act No. 246/1992 Coll. on the protection of animals against cruelty, Czech legislation. The Act reflects the European Convention for the Protection of Pet Animals, for which Czech Republic is a signatory state. (Collection of Czech Laws).

In some countries, a dog may be owned but allowed to roam free in the neighborhoods. In other countries, any dog without a human supervision, which is found on the street, is considered to be a stray dog. According to the World Society for the Protection of Animals (WSPA), across countries, dogs are classified as stray by their dependency upon humans. The dependency on humans depends on a degree of human control of over dogs across countries. Therefore, a main feature of the WSAP's dog classification is ownership that determines degree of control over dogs' physical location and reproduction. The ownership plays a key role in stray dog management and control. Without human supervision dogs can still survive and reproduce because human infrastructure provides them with food and shelter. In the table below I summarize the WSPA's classification of dogs.

Table 1: Classification of dogs by their dependency upon humans

Classification	Description
Dogs	
Owned Controlled	Totally dependent upon an owner for care and resources; Generally under close physical control of the owner; Confined to the owner property or under control when in public places; Reproduction usually controlled through sterilization, chemical means or confinement.
Stray Dogs	
Owned Not controlled	Free-roaming dogs; Community or neighborhood dogs; Either entirely free to roam or may be semi restricted at particular times of the day; May or may not be sterilized; Potential for high reproductive capacity and rearing rate.
Abandoned/ unwanted by their owners Not controlled	Were once dependent on an owner for care, Owner is no longer willing to provide resources May or may not fed by other members of the community (food may be delivered intermittently Survive by scavenging (or hunting) Poor survival prospects once there is no longer a caretaker to provide food or shelter
Feral Not controlled	Offspring of stray dogs, Poorly socialized to human handling, Survive by scavenging Poor survival rates Low reproductive capacity

Large numbers of stray dogs have a negative socioeconomic effect on a country. The Ministry of Agriculture and Rural Development of Barbados reported that the ongoing stray animal problem negatively effects health care, veterinary care, agriculture and tourist industry, and the environment of the country. A negative economic impact of the problem is often

underestimated (Trotman, 2010, p. 2). Problems associated with stray dogs can be grouped into six categories, public health, environmental contamination, nuisance factors, and wildlife, damage to property and livestock, and animal welfare (Tasker, 2007, p. 4). Table 2 summarizes and defines these problem.

Table 2: Problems associated with stray dogs

Public Health 1. Zoonosis - Disease transmission 2. Bite incidence	>100 zoonotic disease identified, pathogens transmitted from dog to human -varying degrees of severity -varies with location Dogs may be responsible for bite occurrences -varies from region to region, varies from level of ownership and severity of bites - rabies transmission
Environmental contamination	Deposition of excreta near or in areas inhabited by people Potential genetic contaminators of wild Canidae populations
Nuisance factors	Noise: Barking, howling, aggressive interactions Odor/aesthetics: Territorial urine marking, fecal contamination and deposition of urine during elimination in the environment
Wildlife	Predating smaller wild mammals
Damage to property and livestock	Result from accidents Predation of livestock or game
Animal welfare	Injury resulting from car accidents Injury from aggressive confrontation during competition for limited resources Malnutrition due to limited availability of sustainable food sources Disease susceptibility Inhumane culling methods, stray control measures Persecution/deliberate abuse by members of the community

Historic Background

The Netherlands' experience of successful elimination of stray dogs in its society in the nineteenth century gives a historical perspective on how European countries became stray free societies. According to Sternheim (2012), dog ownership was popular in Holland in 1800; almost every household had dogs. At the beginning of the nineteenth century, there were no official regulations for dog keeping. Dogs were simply allowed to roam free, which resulted in uncontrolled breeding and overpopulation. The rabies outbreaks were common and dealt with by culling of large numbers of dogs. Since many of those dogs were owned, the public pushed for different control practices. The Netherlands' legislation passed the first leash and muzzle laws. Dogs without muzzles and/or supervision were culled. During the same period, some municipal authorities' implemented a dog tax to regulate the number of owned dogs. The tax produced negative effects and the numbers of stray dogs increased in taxed municipalities. Many people who could not afford to pay the tax abandoned their dogs. Sternheim (2012) argues that Holland's high rate of dog ownership and a symbolic status of pet dog in high society was a trigger for change in animal welfare legislation. The first animal protection organization appeared in 1864 in The Hague, followed by the first shelter in 1877. In 1886 anti-animal abused law was introduced. In 1912, a society for protection of working dogs was established. The society informed owners about benefits of good animal care and checked if existing laws were enforced. In 1962, Holland outlawed the use of dogs for work in the animal protection act. In the end of the twentieth century a comprehensive animal law was passed; violation of it is concerned a criminal offense with maximum three year imprisonment and a fine of 16,750 euros (pp.3-4).

The Netherlands' experience demonstrates that ownership plays a pivotal role in the stray dog population control.

Stray Dogs in Academic Literature

In the previous chapter, the definition of stray dogs was established. In this study, I used the following definition, stray dogs are ownerless or owned dogs that are not controlled, roam in populated areas, dependent on people for survival, and have high productivity capacity. People have owned dogs for companionship that implies a close connection between a person and a dog. Ownership based on companionship has significant economic and social value that can help reduce a number of stray dogs in the country. There is not much of academic literature on the stray dog population outside medical field. Nonetheless, several explanations for why some countries have larger stray dog populations than others can be found. First, as the wealth of a country increases the size of the stray dog population within its borders decreases. Second, democracies tend to have a small number of stray dogs. Third, countries with well-regulated dog ownership legislation have fewer stray dogs. Overall, economic development, quality of political institutions, and comprehensive pet ownership laws are the major themes in research of stray dogs. I discuss these major themes in context of three academic articles, Dalla Villa, P. et al. 2010. Free-Roaming Dog Control among OIE-member countries³. *Preventive Veterinary Medicine* 97(1), pp. 58-63; Voslárková, E. Passantino, A.(2012). Stray Dog and Cat Laws and Enforcement in Czech Republic and in Italy. *Ann Ist Super Sanita*, 48(1), pp.97-104; Tasker, L. (2007). Stray Animal Control Practices (Europe). *WSPA and RSPCA*.

³ The member countries of the World Organization for Animal Health.

Dalla Villa et al. (2010) test “the relationship between government perceptions of the “free-roaming dog problem” and its solutions and the United Nations Human Development Index (HDI) of each OIE-member states. The data is collected via the questionnaire developed by the OIE ad hoc group on dog population control” (p.58). The researchers test the hypothesis using statistical analysis. Their study found the following,

Free-roaming dogs (FDRs) were invariably considered to be a problem in medium and low-HDI countries. In contrast, only 31% of high-HDI countries did not consider FRDs to be a problem either locally or nationally. Dog registration was the most frequently reported method used for dog control in high-HDI countries, and the use of this method and the degree of economic development were positively correlated. Dog shelters were more often used in high-HDI countries. (p. 62)

Dalla Villa et al. (2010) study is the only study that test the data from eighty-three countries quantitatively and examines the stray dogs problem on the global scale. Their study confirms that the human development has positive effect on the FRD problem (p.63). However, the study does not explain why HDI may have a positive effects on FRDs management. The next study by Voslárřvá and Passantino (2012) examines Czech Republic and Italy’s stray dog populations and the countries’ approaches to solve the problem. Using qualitative approach, the authors compare the stray animal legislation and its effectiveness in Czech Republic and Italy. They hypothesize, “Historical and social differences (a post-communist eastern country vs. a western country and a founder member of what is now European Union) in views of dog/cat ownership influence the prevalence and the conditions of free-roaming dog/cats in society” (p.98). Their case study analysis reveals that both countries have a large population of stray animals. Relying on the analysis, the authors recommend, “Stray dog population control methods should be based on ethical standpoints and/or practical experiences according to the national/local situation, avoiding animal suffering and killing through, effective preventive programs” (Voslárřvá et al.,

2012, p. 102). They conclude that any animal control strategy has to consider the differences in history, cultural and geopolitical backgrounds. Voslárˇvá et al. (2012) article is one of the recent studies of the stray dog population that examines the social aspects of the problem. The research is an insight into the stray dog population management within is one region. The last I examine Tasker (2007) report that is sponsored by the World Society for Animal Protection. Tasker (2007) argues that the Western concept of ownership has a positive effect on stray dog control legislation. The author examines the dog ownership and stray dog control legislations in 37 countries of Europe and Asia. A quantitative data is gathered via a questionnaire and analyzed using a case study approach. The author's key argument is following:

In Western societies, where the concept of “ownership” predominates, it requires a comprehensive, coordinated and progressive program of owner education, environmental management, compulsory registration and identification, controlled reproduction of pets and the prevention of over production of pets through regulated breeding and selling. (Tasker, 2007, p.2)

The study suggests that countries with low numbers of stray dogs have a comprehensive animal welfare legislations, identification and licensing regulations and animal shelter systems that are effectively due to enforcement of the law.

The academic literature review highlights the importance of companion animals legislations and control practices such as registration and licensing, neutering and spaying of owned dogs, presence of animal shelters. A main limitation of the reviewed research is a lack of theoretical foundation. Also, it is hard to find any reliable data about the size of stray dog population. in reality, the bulk of information on the issue comes from media sources. Moreover, the available literature’s main focus is how to eliminate the existing stray dog population. Some literature touches upon potential causes of large numbers of stray dogs in a society but falls short

in explaining details or theoretical back ground. Generally, developing countries where the stray dog population size is large and the economic and social conditions are poor are in the center of the research analysis. However, more literature acknowledges that stray dogs are a problem in some developed countries. There are many gaps in academic literature on the subject. Mainly, there is a lack of reliable scientific information on a global scale. None of the literature reviewed offers a concrete conclusion about the most influential factor that is responsible to the success of the developed countries and on going failure of the developing countries to tackle the stray dog problem. None of the academic sources have a potential explanation for the variation in the stray dog population in some developed countries.

Theoretical Framework

In this chapter, I attempt to establish a conceptual and theoretical base that may explain the variation in the stray dog population across countries. First, I discuss the dependent variable and how it is conceptualized (operationalized) for quantitative and qualitative analysis. Second, I propose possible independent variables and explain how they may influence the stray dog populations. I define stray dogs as ownerless or owned dogs that are not controlled, roam in populated areas, dependent on people for survival, and have high productivity capacity.

In a society, despite an economic and intellectual value, dog ownership implies physical control over the dog movement and reproduction. I argue that a simple formula, ownership equals control, can be a solution to the stray dog problem. Specifically, a well regulated and protected dog ownership may prevent a stray dog population from growing and decrease its size. A well-established dog ownership includes two parts, a protection of the private property and enforcement of owners' responsibilities. The ownership of a companion dog is encoded in

national or municipal legislation covering “pet ownership or code of practice, animal welfare, stray animal collection and control, euthanasia, animal shelter, dangerous dogs, breeding and sale, registration and licensing, neutering schemes, and owner education programs (Tasker, 2007p.6). A control component of the companion dog ownership produces a reducing effect on a size stray dog population; a value of a pet dog prevents a stray dog population from growing.

In their article, Dalla Villa et al. (2010) emphasize the importance of extensive, effective and humane dog control programs. They argue, “Less expensive and less humane methods of stray dog control: i.e. killing, use of poisoned baits and shooting [...] have little or no impact on population densities” (p. 62). Dog shelters with a limited use of euthanasia are listed as an important but an expensive tool in free-roaming dog control that developing countries cannot afford. As an alternative to the shelters trap/neuter/ release (TNR) systems allow less costly, humane and effective methods of free-roaming dog population control (p.62). Similar conclusion is made in Voslárřvá et al. (2012) case study of “Stray dog and cat laws and enforcement in Czech Republic and in Italy”; the authors argue, “Any program that only concentrates on the ‘end result’ is provisional and does not solve the initial problem. Strategies to control the overpopulation of free-roaming animals include enforcement of laws, owner education and sterilization of pets” (p.103). Current research suggests that humane methods of stray animal control, animal shelters and catch and TNR programs, companion animal legislation enforcement, and educational programs advocacy for responsible ownership are the most effective ways of the stray dogs management in a country. These methods are also expensive and more often used in developed countries.

According to the reviewed literature economic development, political institutions, and ownership might influence numbers of stray dogs in a country. As discussed in Dalla Villa et al. (2010) study, economic development is closely related a country's infrastructure. They argue, "Public sanitation and waste-management systems are often inadequate in less-developed countries, and these probably contribute to the problem by increasing the availability and accessibility of food to free-roaming dog populations" (p.62). While an access to resources does allow stray dogs to survive and reproduce, the stray dogs and their management are the problem of many developed countries. For instant, there is a variation in sizes of stray dog populations within the European Union member states. According to Voslár'vá et al. (2012), the southern states, Italy, Spain and Cyprus, along with the eastern, post-communist, states have large stray dog populations. Due to a large number of stray dogs the United Kingdom's national and local governments began to record the stray dog population dynamic in 2000s. In 2009 "despite the sustained efforts of both animal welfare organizations and local authorities there was an increase" in stray dog numbers. To address the increase English authorities introduced a compulsory micro chipping of all dogs in the UK (p.98). Besides the economic development, Voslár'vá and Passantino's (2012) argue that countries' sociopolitical mentality contributes to the stray dog population management. "In some Eastern European countries, and in Balkans in particular, the need for [the pet animal legislation] is not appreciated and is put aside"(p.103). It is due to the different historic, cultural and geopolitical background of those countries.

The argument that political regime or its legacy may influence the stray dog population in a country seems plausible. Many post-communist countries, Russia, Bulgaria and Romania, have large numbers of stray dogs (Tasker, 2007, p.23). However, in the Soviet Union stray dogs were

not considered a problem. For instance, in Russia a rapid increase in the number of stray dogs occur in mid 1990s and was due to political and economic crises (Danilov et al., 2008, p.1). One may argue that mass pet abandonment was triggered by economic hardship in the post-soviet Russia. I argue that companion dogs abandonment was made possible by the lack of pet ownership regulations. Therefore, the lack of pet ownership laws and regulations were the cause of the stray dog population increase. Private property and its regulations are closely related to the regime type and economic development. However, there are authoritarian regimes where private property is respected and protected even if it held by a very small group. Thus, I examine ownership as a separate factor that may influence the stray dog population in a state.

Considering the academic literature discussed I propose three hypotheses. First, I test relationship between the dependent and independent variables using a simple regression analysis. Specifically, I measure how the value of dependent variable, the stray dog population, changes when one of the independent variable, economic development, democratization, and protection of property rights, is varied while others are kept constant. Second, the most significant independent variable is studied in a case study on cross-national and subnational levels.

Hypothesis 1: The higher the level of economic development of a country, the smaller the size of stray dog population in the country.

Hypothesis 2: The higher the level of democratization of a country, the smaller the size of stray dog population in the country.

Hypothesis 3: The higher the level of protection of property rights, the smaller the size of stray dog population in the country.

Quantitative Analysis

Data & Method

In this section, I test the proposed hypotheses qualitatively. The purpose of the statistical analysis is to identify which independent variable has the most significant effect on the dependent variable and whether the effect is positive or negative. The dependent variable of the research is the stray dog population trend in different countries. The data set is taken from the World Society for Animal Protection (WSAP) report of 2007. The report provides a sample of the 31 countries in Europe and Eurasia and their stray dog problem trend over a 7 year period, 1999 - 2006/07. The stray dog problem trend data was divided into four categories. Each category signifies the trend of the stray dog population reported by the officials and characteristics of stray dog control in the country. The characteristics of the stray dog control include an assessment of the national legislation, registration and licensing, a typical approach to dealing with stray dogs, presence of animal shelters and responsible pet ownership educational programs. Therefore, our coding scheme is the following,

Table 3: The Coding System

Coding Category	Description	Countries
0	Reportedly no stray dogs, comprehensive legislation, well enforced stray dog control	Belgium, Denmark, Finland, Germany, The Netherlands, Norway, Sweden, Switzerland
1	Low numbers of strays, progressive legislation, well enforced stray dog control	Slovenia
2	Relatively large stray dog population, but the size of stray dog population is decreasing, good legislation, stray dog control not always enforced	UK, Ireland
3	Large stray dog population, ongoing problem, general legislation, poorly enforced stray dog control	Bosnia - Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Italy, Lithuania, Malta, Poland, Portugal, Serbia, Spain
4	Large uncontrolled stray dog population, worsening situation, limited or non-existing legislation, poorly enforced or non-existing stray dog control.	Albania, Armenia Azerbaijan Republic, Belarus, Moldova, Ukraine

My choice of the key independent variables, property rights, regime type, and an annual GDP per capita growth, and human rights, is based on the current academic literature. The regime types of the countries given in the data was determined by the Freedom House survey data. The House assigns to “each country a numerical rating from 1 to 7 for both political rights and civil liberties, with 1 representing the most free and 7 the least free” (freedomhouse.org). Thus, 1 is assigned to a country with the democratic regime and 7 to a country with the authoritarian one. The second independent variable, the gross domestic income per capita growth (GDP per capita growth in percentages), measures levels of the economic development and

living standard of the countries. The data for this variable is taken from the World Development Indicators report published by the World Bank. The quantitative data for the human rights was acquired from the Cingranelli-Richards (CIRI) Human Rights dataset. The dataset contains data on “government respect for 15 internationally recognized human rights for 195 countries, annually from 1981- 2010” (p.511). In the project the human rights are coded from 0 to 2, where the value 0 is given to a state with severely limited human rights and 2 to state with virtually unlimited human rights. The quantitative data for the main independent variable, the property rights protection, is taken from the Index of Economic Freedom published by the Heritage Foundation. In the report, “The property rights component is an assessment of the ability of individuals to accumulate private property, secured by clear laws that are fully enforced by the state. It measures the degree to which a country’s laws protect private property rights and the degree to which its government enforces those laws” (heritage.org). The score from 0 to 100 is assigned to measure the quality of property rights and its protection. The value of 0 is private property is outlawed and 100 is private property is fully protected and guaranteed by the government. The multiple regression analysis was performed using STAT 12, the small package statistical analysis software.

Results

Table 4: Ordinary Least Squares (OLS) Regression Analysis of the Stray Dog Problem

	Coefficient (Standard Error)
Property rights	- 0.037 (.01)*
GDP per capita	0.022 (.05)
Human Rights	- 0.257 (.05)
Regime Type	0.007 (.22)
Constant	
Model	0.00
R-squared	0.54
Adj. R-squared	0.46

*p < 0.05

The regression analysis results indicates that my model is reliable and representative of the real world. The property rights protection variable is the only statistically significant variable, with a p-value less than 0.05, and has a negative correlation with the stray dog population trend, with the slope of the line is -0.37. Thus, the higher the property rights protection, the lower the numbers of stray dogs in the country. The results are presented visually in Graph 1. The graph demonstrates that as property rights protection increases that stray dog problem trend decreases, meaning the number of the stray dogs and problem associated with them decreases. The model can be used to predict the stray dog population trends in countries with different levels of the property rights protection. The model predictions are summarized in Table 5.

Graph1: The stray Dog problem and the Property Rights

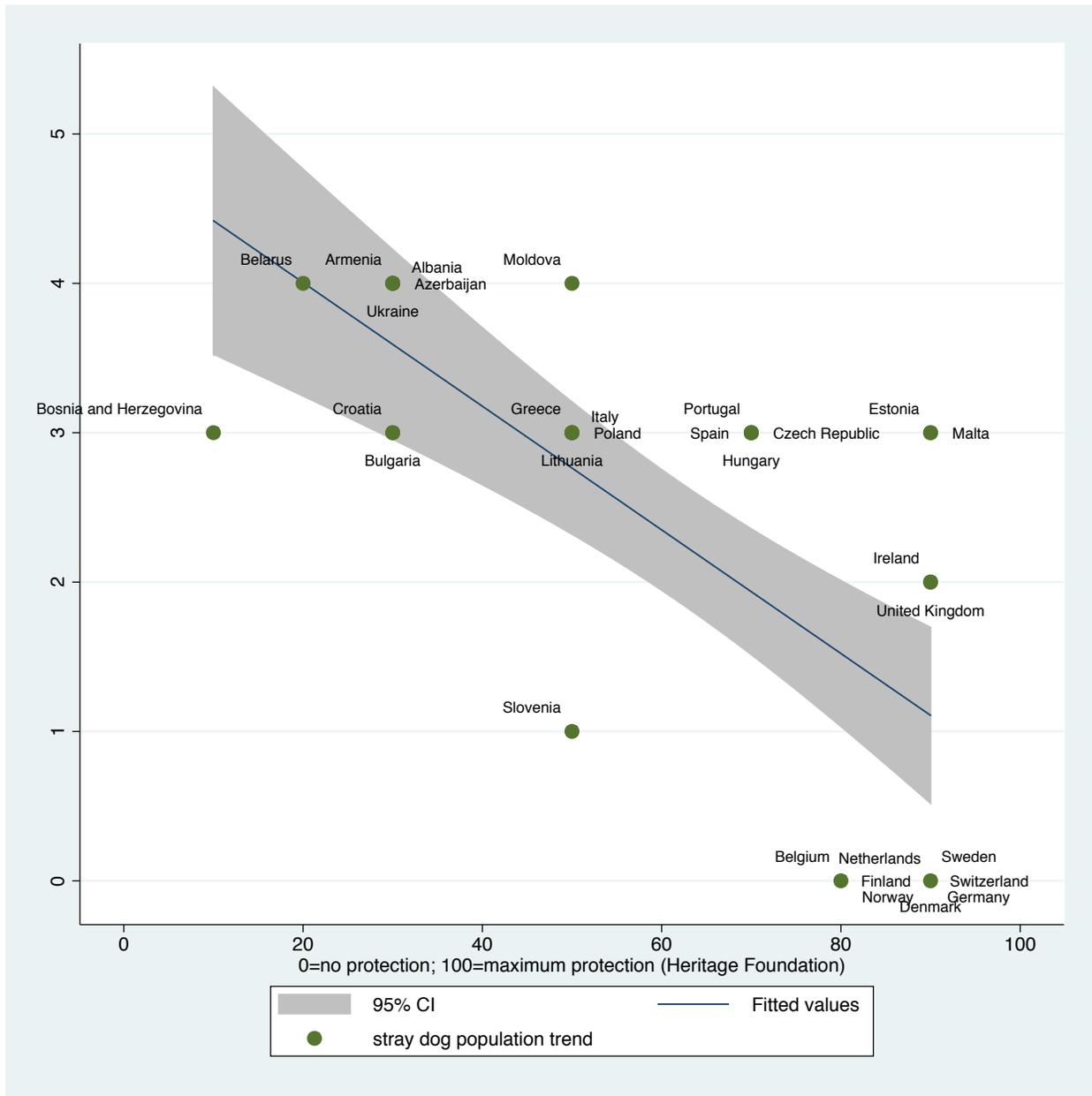


Table 5: The Stray Dog Population Trends and Property Rights Protections

Property Rights Protections 0 = no protection, 100 = max protection	Xb = Stray Dog Population Trends 0 = few to no stray dogs 4 = large, uncontrolled stray dog population (confidence interval)
10	4.1 (3.15-5.24)
20	4.22 (2.44-5.99)
30	3.65 (2.95-4.35)
50	2.69 (2.11-3.27)
70	1.91 (1.41-2.42)
80	1.34 (0.60-2.08)
90	1.13 (0.5-1.75)

Data Analysis

The regression analysis suggests that out of proposed independent variable, property rights have the best explanatory power. The Hypothesis 3 is confirmed. Hypotheses 1 and 2 were not supported. However, factors like democracy and economic development may still be important determinants of the stray dog population size although. They may influence the development of property rights which, in turn, has the greatest effect on the stray dog population. These results should be interpreted with caution as this is only one empirical model with a limited number of control variables and data for a limited number of countries. Nonetheless, property rights are an important part of the explanation for why countries vary so dramatically in the size of their stray dog populations.

Case Study

In order to analyze the proposed hypothesis, the most similar comparative case study is employed. There are four chosen cases, Slovenia, Russia, Two chosen cases, Slovenia and Russia, are similar in terms of Slavic culture, the Communist regime and its legacy, and the post-Soviet transitional period. Two countries differ in terms of economic income and political regime today. However, for the purposes of this research, Slovenia and Russia share enough similarities to establish a sufficient foundation for the case study comparison. The goal of the case study approach is to clarify the mechanism of how the level of property rights protection translates into the size of stray dog population. The case study is organized as follows: first, I describe the variation in the dependent variable and the independent variables in each case. Next, I examine how de jure and de facto protections of property rights may influence the stray dog population. In the Slovenia vs. Russia case study, I argue that the difference in (de jure) property rights explains why Slovenia has fewer stray dogs. In the case study of Russian regions, I research for evidence indicating that (de facto) property rights influence the numbers of stray dogs in the regions.

In light of the proposed case study structure, it is necessary to define what this study deems secure property rights. Frye (2004) argues, "Property rights vary along many dimensions, but three have received special attention: the clarity of allocation, the ease of alienability, and the security from trespass" (p.5) Since dogs are private property, these dimensions are applicable to the dog owners. Secure property rights are the foundation of the efficient companion animal laws in a country. I theorize that the variation in the dog ownership rights influence the size of stray dog population. De jure property rights are measured by the extensiveness of the national animal

welfare laws. De facto property rights are measured by the effectiveness of the local governments and/or private organizations to exercise the law. The case study is structured to gather a sufficient amount of evidence to demonstrate that the standard explanations, economic development and regime type, are not sufficient to explain the variation in the dependent variable. These case comparisons are chosen to provide leverage on understanding how de jure and de facto differences in property rights influence the stray dog population.

Cross National Case Study

Slovenia and Russia

By comparing Slovenia and Russia, I attempt to maximize the variance of the dependent and the key independent variables and control the variance of the alternative independent variables. In the previous chapter, quantitative method showed that only one independent variable, the property rights protection, has a significant effect on the dependent variable, the stray dog population size. Nevertheless, these results have to be interpreted with caution due to limited availability of reliable academic literature and data and personal financial and time constraints to collect empirical data. Hence, in the Slovenia and Russia case study I examine the alternative independent variables, economic development and democratization. The cross national comparison reveals that economic development and the regime type do not answer the research question.

There is a significant variation in the dependent variable between Slovenia and Russia. Historically, Slovenia never had a large stray dog population. Even as a part of Yugoslavia Slovenian officials reported low numbers of stray dogs, which contrasted the stray dog situation in the rest of the Republic (Tasker, 2007, p.26). Modern Slovenia has virtually no stray dogs, but

it is experiencing an increase in the popularity of a companion dog ownership and numbers of owned dogs (Tasker, 2007p.15). In contrast with Slovenia, Russia has a large stray dog population. The number of stray dogs increased dramatically after the collapse of the Soviet Union. There are no national data about the size of the stray dog population in the country. “The amount of [stray] dogs differs depending on the local situation. From studies made in several cities, the dogs’ population density varies from 5 to more than 100 stray dogs per square km” (Danilov et al., 2008, p.2). Reportedly, stray dogs are present in all Russian regions. Russian stray dog population consists of two types of dogs; the human owned dogs that roam unsupervised and not owned dogs that live on the streets. While free-roaming dogs do not form packs, they are a source of uncontrolled breeding. Stray dogs can reproduce freely, and they also form packs. “In some smaller towns there are mainly single stray dogs. Industrial territories of middle & large cities are inhabited by large packs, up to several tens of dogs” (Danilov et al., 2008, p.2).

Can economic and political factors explain why Slovenia have much smaller stray dog population than Russia? To answer the question I look for a significant variation in sociopolitical and economic factors that may influence the size of stray dog population in Slovenia and Russia. Slovenia and Russian are Slavic countries that belonged to the communist block in the last century. Since the countries share similar political history the communist legacy does not explain the variation in the stray dog population in the countries. After the collapse of the Soviet bloc “all previously communist-controlled countries inherited both an economic system that no longer functioned properly and a political struggle for power” (Aslund et al., 1996, p.217). A similarly argument can be made about the economic development factor during the transition period.

Presently, Russia and Slovenia are developed and wealth countries. However, Tasker (2007) argue the nation's income may play a positive role in pet ownership, it does not directly effect the size of stray dog population (p.25). Dalla Villa et al. (2010) argues that economic development is closely related a country's infrastructure. Underdeveloped physical infrastructure provides resources for stray dog survival. Slovenia and Russia do not a significant variation in economic development. Thus, economic development does not provide a sufficient explanation for why these countries vary in the stray dog population size.

Property Rights

For the property rights to have a reducing effect on the stray dog population companions dogs have to be define as private property in legislation or treated like one by legislative and legal systems. In the Slovenia vs. Russia case study I test the legislative component of the hypothesis. Therefore, I examine the national legislations of Slovenia and Russia for laws that may define companion dogs as private property. In particular, I looks at the following laws and regulations:

- A dog ownership license or contract documenting a transaction between a breeder, shelter, rescue and buyer
- An identification and registration systems that may include a card or a passport with an identification number, a microchip, a brand, a tag, and a tattoo
- Laws regulating an owner's responsibilities, animal welfare, abandonment, pet medical care, and leash laws
- Laws protecting owner's rights and ensuring quality, including standards of breeding, sale, and adoption of companion dogs.

According to the economics of welfare, if a legislative system of a state recognizes companion animal as private property the state's legislation will have a preventive safety net geared towards

minimization of property damages and social costs. In the case study I examine the existence of legislations that regulate the return of companion dogs to their owners and minimize possible physical damage to a dog or loss of a dog. The preventive component of the legislation includes,

- Stray collection programs, pet controls, animal shelters and rescues regulate the return of a lost dog to the owner,
- Animal cruelty laws, neutering and spraying regulations, catch-and-release programs, and euthanasia laws are aimed to minimizing risks of damages.

Comprehensive companion animals ownership laws translate into fewer stray dogs. The above list of possible laws, regulations, and programs are repeatedly cited as the most effective solutions to the stray dog problem in literature. Legal disputes and settlements that involve companion animals may be a useful measure for the private property protection.

Slovenian Case

According to the WSPA's data of 2006-2007, Slovenia's legislation covers breeding and selling of companion dogs, registration, animal welfare, pet care, abandonment, animal shelters, and euthanasia. The abandonment of pet animals is outlawed. The registration of companion animals is compulsory and provided at no cost by the government. The primary method of identification is microchipping. Animal shelters are responsible for stray dog collection. Stray animals are caught and kept for 30 days. After the 30 day statutory holding period if dogs become available for adoption. Euthanasia is permitted for dogs that are not re-homed, aggressive, have severe injuries or deceased. A primary method of euthanasia is a lethal injection performed by a veterinarian. Slovenia's official sources report low numbers of stray dogs.

According to L. Tasker (2007) study, Slovenian government started implementing legislation regulating companion animal ownership and preventing increases in a stray dog

population. In 1995 a criminal law was enacted that outlawed animal cruelty. In 1999 the Protection of Animal Act was adopted, which included,

- More specific anti-cruelty article,
- Sale restrictions,
- Abandonment,
- Euthanasia guidelines,
- Owners' responsibilities,
- Animal care guidelines.

In 2002 Animal Shelter Regulations supplemented and expanded the Protection of Animal Act. The Regulations stated that veterinary clinics are no longer responsible for stray dogs. The legislation established,

- Each municipality has to have an animal shelter, which is run by the municipality or a contracted organization. Eight hundred dogs are permitted per shelter.
- Stray dogs are examined by a veterinary doctor within twenty-four hours of admission into the shelter. A dog is vaccinated, treated for parasites, and microchipped. If the dog is already microchipped, an owner is contacted. At the pickup, an owner is charged for boarding and vaccination.⁴
- Stray dogs are held for the period of thirty days, ninety days if an animal is pregnant or nursing puppies. During this period dogs are up for adoption. If not adopted, dogs are euthanized by a veterinary professional who administers a lethal injection.
- The shelters are responsible for neutering their dogs. If a puppy is adopted before the neutering- appropriate age, an adopter receives a voucher allowing neutering a dog free of charge later.⁵
- Adopters are required to sign an adoption agreement stating, an owner has been informed and understand how to provide appropriate animal care and living conditions for a dog by the shelter; it is his/her responsibility to provide appropriate care and living conditions for the dog.

⁴ The cost of boarding was fifteen euros a day in 2007 according to WSAP report.

⁵ Dog owners, who did not acquire their dogs at the shelter, are not required to neuter their dogs by law. An average cost of neutering for a large breed like German Shepherd was two hundred euros in 2007 according to WSAP report.

- If the owner is no longer able to care for the dog, s/he is obligated to return the animal to the shelter.

In 2003 the Compulsory Dog Registration law was supplemented by microchipping system. In Slovenia dogs are microchipped by veterinarians during their first rabies vaccination. The microchipping is free and sponsored by the government. A microchip contains owner and animal information that is recorded in a database maintained by the Ministry of Agriculture. Dog owners are obligated to notify the Ministry in the cases of address or ownership changes within seventy-two hours. Through the microchip system the authorities monitor dog owners' compliance with required vaccinations. In 2005 the Regulation for Pet Animals' Welfare law was introduced. The law regulates ownership, breeding, and sale. It incorporates "five basic animal rights: the right to food and water, the right to life without pain, injury and illnesses (including the right to veterinary services), the right to adequate housing; the right to exhibit its natural behavior (including social contacts with other animals of the same species), and the right to life without fear and suffering"(Stojanovic, 2011: 149).⁶ It improved the 1999 Animal the owners responsibilities of the 1999 Animal Protection Act. Dog abandonment is illegal and classified as misdemeanor, which is punishable by a fine.⁷ It outlines breeding and sale guidelines,

- Breeders and owners allow to breed their dogs only once a year.
- Up to five dogs can be legally owned by one person.
- Sale of pet dogs is prohibited in open markets on the street, door-to-door sale, and public events.

⁶ The five basic animal rights were envisaged by the Farm Animal Welfare Council (FAWC) in 1979. Today, this concept has been international recognized with regard to all animals, which was confirmed in Article 4 of the Universal Declaration on Animal Welfare. For more detail, see the website; <http://www.prijateljzivotinja.hr/index.hr.php?id=1847>, accessed on 18 December 2010 (Stojanovic, 2011: 149).

⁷ Article 46, para 1, items 2 and 3 of the Animal Protection Act of Slovenia. The fine ranges from 1,600 to 42,000 Euros for a legal entity or an independent entrepreneur. A responsible person employed in a legal entity or by an independent entrepreneur may be awarded a fine ranging from 800 to 2,000 Euros. A natural person may be awarded a fine ranging from 400 to 800 Euros (Stojanovic, 2011:149).

- Dogs are not allowed to be given away as prizes and awards.

There are several laws and programs that are ran by the municipal government and non-governmental organizations. The leash law is enforced by municipalities that required dogs to be on the leash at all times in public places. The Ministry of Agriculture actively supports campaigns advocating vaccination and neutering that are held by rural veterinary practitioners. Volunteers, animal welfare organizations, and animal shelters run the responsible pet ownership programs.

Evidence that Slovenia's companion animal legislation is practiced can be found in the case law. Therefore, we look for instances citing Slovenia's animal law in the official courts websites, newspaper articles, and blogs. A court case involving dogs attack in Slovenia is cited on the web site of the National Dog Bite Victims' Group, DogsBite.org. The case was initiated after Dr. Saso Baricevic's four bull mastiffs jumped out of his car and attacked pedestrians, including Stanislav Meglic, on the street in 2006. One of the dogs was shot and three were wounded by the police officers. The dogs were confiscated. In 2009 the court ordered t Baricevich to pay Stanislav Meglic one hundred and twelve thousand euros. The dogs were returned to Dr. Baricevich under following conditions, "Baricevic must erect "dangerous dog" signs on his property; ensure that the dogs stay on his property; ensure that the dogs were walked individually with a specifically defined leash and collar and that the dogs remained "insulated" from visitors" (DogsBites.org).

Two cases, *Krajnc v. Slovenia* and *Pfeiffer v. Slovenia*, are found in the official transcripts of the European Court of Human Rights (ECHR). In both cases the applicants, Krajnc and Pfeiffer, "alleged under Article 6 § 1 of the Convention for the Protection of Human

Rights and Fundamental Freedoms that the length of the proceedings before the domestic courts to which they were a party was excessive. In substance, they also complained about the lack of an effective domestic remedy in respect of the excessive length of the proceedings under Article 13 of the Convention” (ECHR). Both complaints won the cases and were awarded monetary composition. However, they have two different cases involving pet dogs that they presented to the Slovenia courts. The length of the procedures and the courts’ rulings triggered the applicants to complain to the ECHR. *Krajnc v. Slovenia* case stated that on April 2, 1995, a dog jumped on Mr. Borut Krajnc and made him fall while he was riding a motorcycle. Mr. Krajnc sued the dog owner’s insurance company, ZT, seeking approximately one thousand euros for his injuries. In 2000 five hearings of the case took place. At the last hearing the Celje District Court issued a written judgement. The applicant and the ZT insurance dissatisfied with the court decision appealed. The case was remanded to the first-instance court for reexamination. The decision was issued in 2002. Mr. Krajnc who was not satisfied with the court judgment on the cost and expenses appealed to Celje Higher Court. In 2003 the Celje Higher Court decided to increase the applicants’ compensation. Before the Celje Higher Court ruling, Mr. Borut Krajnc initiated a case against the Republic of Slovenia with the ECHR in 2002.

In the *Pfeiffer v. Slovenia* case the facts reveal that Ms. Doris Pfeiffer was bitten by a dog in 1997. In the same year she took her case against the dog owner to the Ljubljana Local Court seeking compensation in the amount of two thousand nine hundred fifty euros. Between 1998 and 2002 the court made six requests to set a date for the hearing and made several unsuccessful attempts to summon the defendant. Finally, the hearing was held without the defendant. In 2003 the court delivered a written judgment upholding Ms. Pfeiffer claim. The applicant was

dissatisfied with the length of the hearing procedure and the outcome. She took her complaint to the ECHR (ECHR).

Slovenia case law suggests that dog owners can be held accountable for the actions of their property. Thus, Slovenia's legal system not only grants and protects the rights of an owner but also enforces the owner's responsibilities that are outline in the legislation. As argued above, the control of a dog is the key component in the reduction of the stray dog population. However, the court cases involving companion dog attacks and bites were not resolved by Slovenian judicial system and were pass to the ECHR. The case law demonstrates that the legislations are enforce but not effectively. Therefore, there is a room for improvement of de fact situation.

Russian Case

Russia has a stray dog epidemic. According to the Legal Center for Animal Protection, the stray dog population size increased in the second half of the nineties due to irresponsible dog ownership practices and the lack of the breeding and sale regulations (Zoozaschita). In today's Russia, for the most part the stray dog population consists of abandoned dogs and their offspring. Russian government does not keep track of the size of stray dog population. Therefore, no information about the size of stray dogs population is available. However, some municipal and regional authorities record numbers of stray dogs in the areas. Presently, Russian legislation (Duma) has not passed any animal welfare regulation. Some animal related laws are codified in the several Federal Codes, the Civil Code, the Criminal Code, and the Code of Administrative Offenses (RF Legislature). Pet ownership, sale and breeding regulations are extremely vague and controlled by the Department of Housing Utilities on the municipal level. The case law demonstrates that although limited the animal related legislation is enforced. According to the

Russian Federation Highest Court statistics, in 2009 one hundred sixty-one person were brought to justice for animal cruelty. In 2010 there was eighty-three convictions based on the article 245, anti-animal cruelty, of the Criminal Code (Echo Moscow). I did not find court cases that would deal with dog ownership issues. Similarly, the stray dog management is a responsibility of the regions. The federal government provides funding for the stray animal control. The regional or municipal officials are free to adopt any methods of the stray dog control. Therefore, methods of stray dogs exterminations varies dramatically. Some regions cull stray by shooting and poisoning and others practice the neuter and release approach and the animal shelters' system.

Public Opinion in Russia

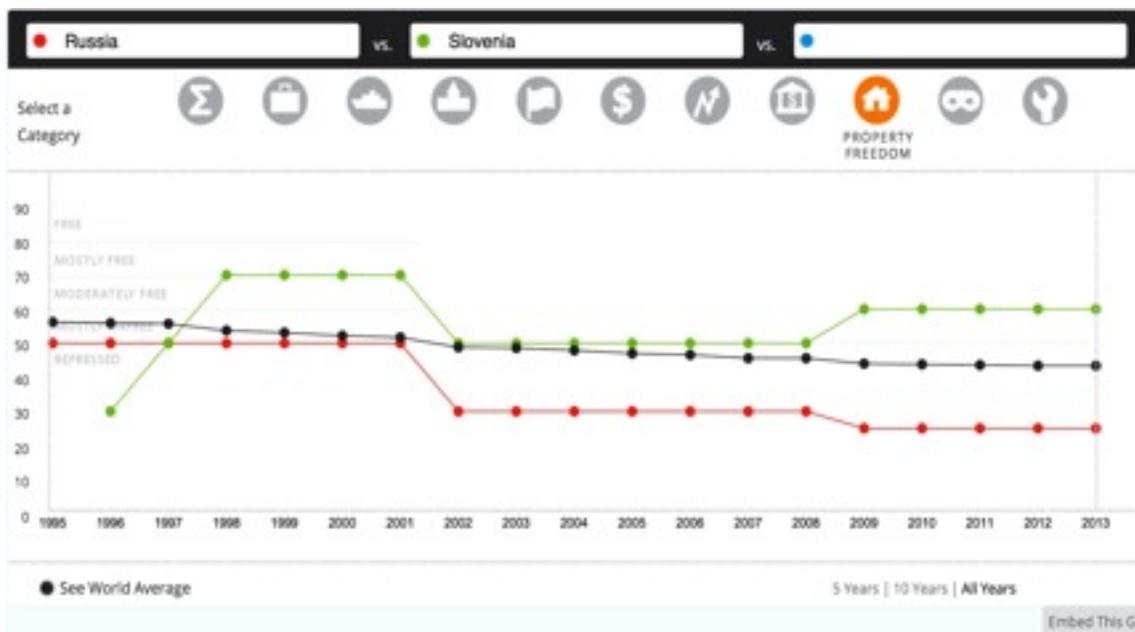
To understand the variation in the regional approaches to the stray dog management, I look at the public opinion data and the governmental response to it. The survey data indicates that Russians care about animal welfare including stray dogs. A national survey of 2006 conducted by the Foundation for Public Opinion found that 70% of Russians love dogs, 20% do not have any feelings and only 8% don't love dogs (FOM, 2006). Another survey conducted by the same organization asked Russians about the importance of animal welfare protection and groups of animals that should be protected. 77% of Russian citizens believe in importance of animal welfare protection, 14% thinks that it is not important. On the question, "Should companion animals be protected from animal cruelty?" 65% of Russians said, "yes", 17% said "no" (FOM, 2005). In a poll administered by Russian Center for Public Opinion Study and Analysis, 82% of Russian citizens believe that animal cruelty cannot be justified by any circumstances (VITSIION, 2005). Overall, the majority of Russian people are against any animal cruelty. Russian society understands the importance of having animal welfare laws. Moreover,

Russian citizens voice their opinion through the democratic channels. Russian government received formal petitions on the issue of stray dogs population and animal welfare legislation. Several anti animal cruelty protests took place in Moscow (Malpas, 2009). Existence of public opinion and social actions that directly address the situation of stray dogs “proves some indication of the breath and depth of concern with the official policy” (Roberts, 2012, p.112). Russian government addressed the public’s concerns with the animal welfare and stray dog control policies poorly. In 2009 a proposition for ‘the responsible animal care’ was put forth. In 2010 President Medvedev created a working group for the legislation. Today, the law has not been passed, it has been substantially modified leaving multiple loopholes.

To summarize, Russia does not have the federal animal welfare legislation; the government does not respond to the public opinion; the court system has a very low conviction rate for the few laws that exist; in addition, there are instances of corruption in the stray dog population management on the local level. All these factors indicated a low quality of dog ownership, which is consistent with overall property rights quality. In the Index of Economic Freedom published by the Heritage Foundation, Russia scores 30 on the overall property freedom for the same period, from 2002 to 2008. The score is interpreted as repressed property rights. Our statistical model predicts that Russia should have a large stray dog population which constitutes an ongoing stray dog problem. It should have a general legislation for animal welfare with a poorly enforced stray dog control.

Slovenia and Russia Comparison

Graph 2: Property Freedom Rating, Russia and Slovenia, 1995-2013 ⁸



The property right quality data for Russia, Slovenia, and the world average over eighteen year period, from 1995 to 2013, is graphed below. The y-axis of the graph represents the property freedom scores from 0 to 100. The scores are into five categories, from 0 to 50, the rights to own property are repressed, from 50 to 60, the property rights is mostly free, from 60 to 70, the property rights is moderately free, from 70 to 80, mostly free, and from 80 to 100, free. Our findings are consistent with our model. In the last five years, Slovenia’s quality of property rights score went up from 50 to 65. The property freedom is ranked as moderately free; “enforcement of property rights is lax and subject to delays; corruption is possible but rare, and the judiciary may be influenced by other branches of government’ (The Heritage Foundation). Our model predicts that a country with the property rights score 65 should have the stray dog population

⁸ 2013 Index of Economic Freedom. The Heritage Foundation. <http://www.heritage.org/index/visualizecountries=russia&type=8#>

trend of 2.17 with the 95% confidence interval between 1.77 and 2.59. Therefore, Slovenia should experience a decrease in the stray dog population size and improvement of animal welfare laws, stray animal control, and the animal law enforcement strategies. In reality, Slovenia's situation is better than predicted. The country has the high level of property rights protections and the comprehensive dog ownership and stray dogs' control legislations. Reportedly, there is no stray dogs in Slovenia.

Table 6: Companion Animal Ownership Laws in Russian and Slovenia

Legislation	Slovenia	Russia
Animals Welfare	Yes, National	No
Abandonment	Yes, National	No
Pet Ownership	Yes, National	No
Pet Care	Yes, National	No
Euthanasia	Yes, National	Yes, National
Strays	Yes, National	No
Stray Collection	No	Yes, National
Animal Shelters	Yes, National	No
Dangerous Dogs	No	No
Breeding	Yes, National	No
Sale	Yes, National	No
Animal Cruelty	Yes, National	Yes, National

In the above section, the Evaluation of Slovenian Animal Law, we described the stages of the development of Slovenian animal law. The bulk of the law was initiated and passed in the first half of the first decade of the twenty-first century. The *de jure* approach demonstrates that Slovenia has one of the most comprehensive companion animals laws and regulations on paper. In practice, the case law reveals the weaknesses of the law enforcement and occasional inefficiency of Slovenian judicial system. Nonetheless, Slovenian authorities report, "Licensing and registration scheme helped to reduce strays" (Tasker, 2007: 14). Municipal "leash laws"

reduce risks of losing dogs and prevent them from becoming stray (Tasker, 2007: 26). People return dogs to shelters if they no longer capable of caring for the animals (Tasker, 2007: 28). The latter success of preventing dogs' abandonment is attributed to animal shelters and the responsible ownership educational programs. The Slovenian case demonstrates physical and intellectual property rights and protection can be successfully applied to companion animals that consequently results in the reduction of the stray dog population. With improvements of Slovenian property rights quality we should see improvements of the animal law enforcement and the judicial system.

Unlike Slovenian property rights, Russia's quality of property rights score when down from 30 to 25 during the same period. The property rights is repressed. "Private property is weakly protected. The court system is so inefficient and corrupt that outside settlement and arbitration is the norm. Property rights are difficult to enforce. Judicial corruption is extensive. Expropriation is common" (The Heritage Foundation). Our model predicts that a country with the property rights score 25 should have the stray dog population trend of 3.59 with the 95% confidence interval between 2.88 and 4.35. Therefore, Russia should experience an uncontrolled stray dog population, limited or non-existing legislation, poorly enforced or non-existing stray dog control. In reality, Russian has no laws regulating dog ownership or methods of stray dogs control. The stray dog population is large in Russia.

Sub Nation Case Study

Regions of Russia

The cross national case study has several limitations. Some political science scholars argue that the former Yugoslav states followed a different reconstruction path after the collapse of the Soviet Union, thus, they avoid these states comparison with other post Communist countries (Aslund et al., 1996, p.217). Consequently, Slovenia and Russia comparison cannot fully rule out that political and economic differences might cause the variation in the stray dog population. Moreover, the European Union membership and more Western European culture of Slovenia may influence the low numbers of stray dogs. In order to address the limitations of cross national case study I study the variation in the numbers of stray dogs within one country. A subnational case study approach allows more accurate qualitative analysis. I examine the correlation between the security of property rights and the stray dog populations trends within Russia. Using the subnational approach I control for economic development and regime type variables. Also, in the analysis of the stray dog population situation within one country the potentially influential variables, history, culture, and geographic location, remain the same.

In the subnational study, I concentrate my attention on *de facto* aspects of property rights protections and its effect on the stray dog populations on practice. I follow the logic that secure property rights have positive influence on the stray dog control practices. In this section I argue, if the variation in the stray dog populations exists then the variation in the levels of property rights protection should also exist and explain the stray dog numbers differences across regions of the Russian Federation. I expect to find the humane methods of the stray dog control and the responsible dog ownership practices. I am looking for the evidence of catch-and-release

programs, animal shelters, dogs' registration and licensing regulations, and leash laws that are implemented and/or practice on the local levels.

The Stray Dog Population and Property Rights in Russian Regions

The cross national case study established that Russian has a large stray dog population and lacks official data about the stray dog numbers. However, some regional governments, municipal administrations, animal shelters, and other organization provide some information about the dynamics and sizes of stray dog populations in the regional or the largest cities. Local newspapers and news programing often cover issues associated with stray dogs and actions that re taken by the municipalities and citizens to address the issue. The media sources also cover social initiatives and educational programs dedicated to stray dogs' awareness and incidents involving stray animals. To analyze the reality of the stray dog situation across Russia, I examine regional media sources for information on the stray dog population trends and the empirical evidence of municipal or private animal control organizations, the humane methods of stray dog collection, animal sanctuaries, shelters, leash laws, and licensing and registration requirements. Availability of reliable information or data is the main limitation of this section of my research. However, Russian media reports are the only source of information that provides any information the the subject.

The Russian Reporter magazine (2009) published an article about the stray dogs in Russia that begins with the following statement,

“Quite understandably, the growing army of homeless dogs in Russian cities causes an average person and be willing to approve any government measures "to limit their number." But, the cruelty does not solve the problem. Again and again, dogs end up on the streets because of dog owners irresponsible behavior that is never

punished.” (Akhmedov, p.1)⁹

The evidence suggests that stray dogs are presents in every region of Russia. There is no concrete data on the variation of stray dog populations in regions. Nonetheless, there is differences in the public and municipal actions taken towards the problem. According to the survey, that study Russian citizens’ attitude towards companion and stray animals, conducted by the Levada Center (2011), 88 % of Russians agreed with the statement, “Do you agree that homeless animals are the result of the irresponsible pet ownership?”, 9% disagreed with the statement, and 4% did not know. In the same poll, people were asked, What method should be used to decrease the stray dog population? 8% of participants answered that stray dogs should be culled, 4% said that they should be caught and released outside cities’ limits; 32 % suggested to sterilization as the method to decrease stray dogs’ numbers; 45% said that animal shelters are the right solution; and 12% could not answer the question.¹⁰ Information gathered from the newspapers’ reports, TV news and the Internet sources is also suggests that the stray dog control practices differ from region to region. On the one hand, in Moscow, St Petersburg, Ekaterinburg, and Premoski krai. the catch- and release programs have been in place for several years showing positive result. On the other hand, in Omsk and Omsk Oblast stray dogs are poisoned or shot. These practices result many death of pet dogs. Citizens of Omsk petitioned to the local government requesting to organize a humane stray dog control and animal shelters that would be funded privately. The petition was denied.

⁹ The authors’ translation.

¹⁰ The authors’ translation.

Animal shelters are one of the most efficient strategies for stray dog population reduction. They are a safety net that facilitate return of animals to original owners and prevent dogs from roaming on the streets. The efficiency of animal shelters is limited by the availability of funds and existence of a companion animal registration system. In case of absences of the registration or licensing animal shelters are an important tool in stray dogs population control. Generally, Animal shelters distribution in the world is limited to the countries with high quality of property rights and low numbers of stray dogs. According to the Business Map of Russia, there are animal shelters operation in twenty-one Russian cities that are located in twenty-one regions. The data on the animal shelters and vet clinics for some regions of Russian is summarized in the table below,

Table 8: Animal Shelters and Vet Clinics in Russia ¹¹

Federal Subject	City	Veterinarian Clinics	Number of Animal Shelters
Leningradskaya Oblast	St. Petersburg	154	15
Primorie Krai	Vladivostok	26	14
Moskovskaya Oblast	Moscow	218	7
Perm Krai	Perm	36	4
Bashkortostan Republic	Ufa	21	3
Buryatia Republic	Ulan-Ude		2
Samarskaya Oblast	Samara, Togliatti	35, 19	2
Omskaya Oblast	Omsk	51	2
Tatarstan Republic	Kazan	25	2
Tulskaya Oblast	Tula	17	1
Khanty-Mansi Autonomous Okrug	Surgut		1
Ekaterinburgskaya Oblast	Ekaterinburg	29	1
Volgogradskaya Oblast	Volgograd	36	1
Khabarovsk Krai	Khabarovsk	22	1
Saratovskaya Oblast	Saratov	15	1
Chelyabinskaya Oblast	Magnitogorsk	15	1
Krasnodarsky Krai	Krasnodar, Sochi	19, 12	1
Rostovskaya Oblast	Rostov on Don	34	1

¹¹ Business Map of Russia provide physical location, contact information, products and services of business, companies, and organization in Russia. It s an internet -based self - service for the business communities in Russia. The registration is free. The organizations are provided with registering and marketing tools. The project is founded by the independent internet information catalogue, Business Catalogue, which business mission is to provide accurate and reliable information of the business and for the business and facilitate cross regional net working. <http://www.bizkatalog.ru/11-internet/1111-bizneskartarossiimxkrreuekonomichjeskajageografijastranynaodnomsajtje.html>.

Empirical evidence indicates that there is a variation in the property rights protection across regions (subjects) of Russian Federation. The roots of the variations in property rights protection and economic growth of the regions go as far back as the collapse of the Soviet Union. Kathryn Stoner Weiss argues that, “The post-Soviet Russian state’s inability to do little to improve the lives of average people is [...] due to its basic inability to convey its authority and ensure the implementation of its policies in the Russian provinces [...] Policymaking authority devolved quickly and completely from center to periphery through the 1990s”(Stoner-Weiss, 2006:4). The decentralization of Russian State persisted during Putin’s era in 2000s. New anti corruption, anti money laundering legislations and the constitutional changes geared towards limiting political powers of regional authorities, “The central state has a dominating presence on paper in a wide variety of policy areas, but it often lacks power in practice” (Stoner-Weiss, 2006:6). In his study of “Inequality, Property Rights Protections, and Economic Growth in Transition Economies: Theory and Russian Evidence” C. regions Sonin finds a variation in the level of public protection of private property in forty-seven regions of Russia. His regression analysis confirms the research hypothesis, “The higher is the level of property rights protection, the higher is the growth rate of real income per capita” (Sonin,1999:21). Both studies highlight the importance regional governments in designing and implementing economic policies and argue that initial establishment and enforcement of uniform economic and social policies is essential to economic growth.

Despite the evidence of the variation of the stray dog populations and quality of property rights protection, it is very difficult to conclude that there is a correlation between these two variables. The study suggests that people’s opinions and attitudes towards dogs and dog

ownership may influence positive changes in the animal control and establishment of animal shelters. A meaningful connection between the stray dog population and the quality of property rights can not be established based on the subnational case study. However, I found no evidence suggesting that the connection does not exist. There is a potential for more detailed empirical study. In the future research I would like to conduct an empirical study within one country. A detailed, on the ground study would allow to investigate how *de facto* property rights protections may influence the stray dog population trends on the local level. The presented sub-national case is inconclusive due to the lack of credible information, financial resources and time for a field research. The field research would allow to gather imperial regional data on the stray dog population dynamics, the stray dog control practices and companion dog ownership laws that is not available at this time.

Conclusion

People love and value dogs for their unconditional love, loyalty and companionship. Companion dogs are not just beloved pets; they contribute to domestic economies by driving pet food, accessory, and pet health care industries that employ millions of people all over the world. Companion dogs are valuable personal property that should be protected under the private property laws that are reflected by the companion animal and stray dog control legislations. I argue that comprehensive laws regulating companion animals' ownership produce a reducing effect on the stray dog population size within a country. Higher values of a dog under the law leads to less stray dogs. My argument is motivated by the fact that some societies are better at addressing stray dog problems than others. The variation in the stray dog population sizes across

countries is the main target of my research. I found that the level of property rights protection is the driving force behind the stray dog population size.

Property rights guarantee the exclusiveness of the ownership. In the case of dog ownership, secure property rights protect dog owners from property damages, but also implies the owners' full control over their property. Therefore, dog registration and licensing, humane dog control practices and animal shelters are established to protect dog owners rights. These regulations play a key role in the stray dog population management and reduction of its size. The stray dog population is a relatively new topic in political science and economics. For the most part, current academic research focuses the development of effective policies and regulation and fails to establish the origin of the problem. Nonetheless, there are some research that investigates the causes of the variation in the stray dog population across countries. These studies examine economic development and socioeconomic differences as potential explanation for the issue. None of the sources develop a theoretical foundation. Generally, there is not enough reliable data and academic literature for the undergraduate level research. In spite of obvious limitations, my research opens new research opportunities in two areas, private property and public policy management. It reiterates recent findings that stray dogs are the problem in the developing and developed countries. It contributes to the debate on the animal rights and offers a radically new approach for animal welfare improvement.

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