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The Influence of Financial Institutions and Residential Lending on Neighborhood Crime

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ABSTRACT

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This research aimed to bridge a gap in the literature between banks, mortgage investment, and neighborhood crime. Specifically, the current research uses the political economy approach to social disorganization theory (Bursik 1989) as a theoretical frame to understand the role of external investment on neighborhood levels of crime. This research was guided by several research questions that are derived from the prior literature on banks, mortgage lending and crime. The primary research question was: How do banks affect neighborhood levels of crime? And secondly, how does residential lending affect crime?

These questions are investigated by combining several sources of available data. Crime data for 2012, 2008, and 2006 from Norfolk and Virginia Beach, Virginia were acquired from the respective police departments. The data consisted of crimes known to the police and the addresses of the general locations where the crimes occurred. The mortgage lending data was from the Federal Financial Institutions Examination Council website, which was established by the Home Mortgage Disclosure Act. The third source of data was gathered from the *Polk City Directories*, which had the addresses of the banks. Lastly, the 2000 Census was used to create several control variables such as

scales for residential instability and socioeconomic disadvantage that are included in the analyses.

Negative binominal regression, with the inclusion of spatial lags for the crime and mortgage variables, was the method of analysis. Negative binominal regression is commonly used in criminological research when the dependent variable is a count rather than a rate. Spatial analysis was included because it has emerged as an important component of understanding neighborhood characteristics and levels of crime.

The findings indicated that banks and lending do have an effect on neighborhood levels of crime. It was theorized that banks, either having one in the neighborhood or one nearby, would have a positive effect on neighborhoods. However the results indicate that banks are associated with increases in violent crime and acts of vandalism. For residential lending the findings support prior research that increases in loan dollars to neighborhoods is associated with decreases in violent crime.

This dissertation is dedicated to those I have lost while on this journey;
to Paul, to Mim and to Papa.

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TABLE OF CONTENTS

Page

LIST OF TABLES ix

LIST OF FIGURES xi

Chapter

I. INTRODUCTION 1

II. SOCIAL DISORGANIZATION AND THE ROLE OF INSTITUTIONS 9
DEVELOPMENT OF SOCIAL DISORGANIZATION THEORY 9
CRITIQUES OF SOCIAL DISORGANIZATION THEORY 14
REVITALIZATION AND RECONCEPTUALIZATION OF SOCIAL DISORGANIZATION 17
THE ROLE OF INSTITUTIONS AND ORGANIZATIONS IN SOCIAL DISORGANIZATION THEORY 20
CONFLICT AND POLITICAL ECONOMY IN SOCIAL DISORGANIZATION 24
THEORETICAL IMPORTANCE OF BANKS IN NEIGHBORHOODS 26

III. REVIEW OF THE LITERATURE 28
THE RELATIONSHIP BETWEEN INSTITUTIONS AND CRIME 28
EMPIRICAL LITERATURE ON INSTITUTIONS 28
FINANCIAL INSTITUTIONS 34
BANKS AND THE IMPORTANCE OF HOMEOWNERSHIP AND MORTGAGE INVESTMENT 35
BANKS AND NEIGHBORHOOD CRIME 43
HYPOTHESES 44

IV. METHODS AND DATA 48
DATA 48
DEPENDENT AND INDEPENDENT VARIABLES 51
CONTROL VARIABLES 53
ANALYTIC STRATEGY 54

V. RESULTS 56
DATA DESCRIPTION 56
HYPOTHESIS 1 60
HYPOTHESIS 2 74
HYPOTHESES 3 AND 4 83
TOTAL LOANS 84
FHA/VA LOANS 89

Page

CONVENTIONAL LOANS 93
REFINANCING LOANS 96
HOME IMPROVEMENT LOANS 101
STRUCTURAL EQUATION MODEL TO TEST FOR RECIPROCAL CAUSATION 103
EXTENDED ANALYSES 105

VI. IMPLICATIONS AND CONCLUSION 112
DO BANKS MATTER? 113
DOES LENDING MATTER? 116
LIMITATIONS AND FUTURE DIRECTIONS 118

REFERENCES 123

APPENDICES
A. FIGURES 136
B. TABLES 139

VITA 165

LIST OF TABLES

Table Page

1. Descriptives of Variables for Norfolk Census Tracts 57

2. H1; 2009 Bank Locations and 2009 Total Loans 62

3. H1; 2009 Bank Locations and 2009 Conventional Home Loans 66

4. H1a; Local Banks 2009 and 2009 Total Loans 71

5. H2; 2009 Bank Locations and 2012 Violent Crime 76

6. H2; 2009 Bank Locations and 2012 Property Crime 78

7. H2; 2009 Bank Locations and 2012 Vandalism Crimes 80

8. H2a; 2009 Local Banks and 2012 Violent Crime 82

9. H3 and H4; Violent Crimes 2012, Total Loan Dollars and Bank Locations 2009 87

10. H3 and H4; Violent Crimes 2012, Refinancing Loan Dollars and Bank Locations 2009 98

11. H1; Extended Analyses: Residential Loans 2009, Banks 2009 and Interaction Term 108

12. Extended Analyses: Investment and Reinvestment Loans 2009 and Violent Crime 2012 111

Appendix Table Page

1. H1; 2009 Bank Locations and 2009 VA/FHA Home Loans 140

2. H1; 2009 Bank Locations and 2009 Refinancing Loans 141

3. H1; 2009 Bank Locations and 2009 Home Improvement Loans 142

4. H1a; 2009 Local Bank and 2009 VA/FHA Home Loans 143

5. H1a; 2009 Local Banks and 2009 Conventional Home Loans 144

6. H1a; 2009 Local Banks and 2009 Refinancing Loans 145

7. H1a; 2009 Local Banks and 2009 Home Improvement Loans 146

8. H2a; 2009 Local Bank and 2012 Property Crime 147

9. H2a; 2009 Local Bank and 2012 Vandalism Crime 148

10. H3 and H4; Property Crimes 2012, Total Loan Dollars, and Bank Locations 2009 149

11. H3 and H4; Vandalism Crimes 2012, Total Loan Dollars, and Bank Locations 2009 150

12. H3; Violent Crimes 2012, FHA/VA Loan Dollars, and Bank Locations 2009 151

13. H4; Violent Crimes 2012, FHA/VA Loan Dollars, and Bank Locations 2009 152

14. H3 and H4; Property Crimes 2012, FHA/VA Loan Dollars, and Bank Locations 2009 153

15. H3; Vandalism Crimes 2012 and FHA/VA Loan Dollars 2009 154

16. H4; Vandalism Crimes 2012, FHA/VA Loan Dollars, and Bank Locations 2009 155

17. H3 and H4; Violent Crimes 2012, Conventional Loan Dollars, and Bank Locations 2009 156

18. H3 and H4; Property Crimes 2012, Conventional Loan Dollars, and Bank Locations 2009 157

19. H3 and H4; Vandalism Crimes 2012, Conventional Loan Dollars, and Bank Locations 2009 158

20. H3 and H4; Property Crimes 2012, Refinancing Loan Dollars, and Bank Locations 2009 159

21. H3 and H4; Vandalism Crimes 2012, Refinancing Loan Dollars, and Bank Locations 2009 160

22. H3 and H4; Violent Crimes 2012, Home Improvement Loan Dollars, and Bank Locations 2009 161

23. H3 and H4; Property Crimes 2012, Home Improvement Loan Dollars, and Bank Locations 2009 162

24. H3; Vandalism Crimes 2012 and Home Improvement Loan Dollars 2009 163

25. H4; Vandalism Crimes 2012, Home Improvement Loan Dollars, and Bank Locations 2009 164

LIST OF FIGURES

Figure Page

1. Theoretical Model 46

2. Norfolk and Virginia Beach by Concentrated Disadvantage 60

Appendix Figure

1. Structural Equation Model for Violent Crime and Total Loan Dollars 137

2. Structural Equation Model for Acts of Vandalism and Total Loan Dollars 138

CHAPTER I

INTRODUCTION

The investigation of a neighborhood's role in crime has long been of interest to criminologists. Reiss suggested that examining the community is important at a very intuitive level because "our sense of personal safety and potential victimization by crime is shaped less by knowledge of specific criminals than it is by knowledge of dangerous and safe places and communities" (1986:1). Shaw and McKay's (1942) social disorganization theory is an eminent theory that examines criminal behavior at the neighborhood level. Although this theory dominated criminology for decades, interest waned in the 1960s, but then was renewed in the 1980s. Developments in both areas of theory and research methodologies since then have substantially improved our ability to understand the effects of the neighborhood context on crime.

Though there have been several important developments in social disorganization theory, one of the most interesting is the impact of social institutions on neighborhoods. Social institutions have an important role in the neighborhood structure, stability, and resources. Sampson (2002) suggested that institutions that are viewed as legitimate and supported are necessary to community life and social control. Further, Triplett, Gainey, and Sun (2003) have suggested that social institutions, expressed by organizations, can play a part in managing behavior through their role in the provision of social control and support. Existing literature on the role of organizations within social disorganization theory has focused on a variety of organizations, most often alcohol outlets, and more recently schools and churches (Kautt and Roncek 2007; Lee and Bartkowski 2004;

Regnerus 2003; Roncek and Bell 1981; Roncek and LoBosco 1983; Triplett, White and Gainey 2013).

The role of depository banks (from here on referred to as banks) as an organization within the neighborhood is largely absent from the literature of social disorganization theory. Banks play an important role in the everyday lives of their customers and can potentially have an important impact on the neighborhoods within which they are located. Recent research conducted by Slocum, Rengifo, Choi, and Herrmann (2013) has found that the presence of institutions that link neighborhoods to outside resources are significantly associated with reduced levels of violent and property crimes in their area. Banks are one example of organizations that can bring outside resources into a neighborhood. A bank can infuse outside resources into a neighborhood through residential lending, such as home mortgage loans, refinancing, and home improvement loans. Recently, Vélez and colleagues (see Vélez 2009; Vélez, Lyons, and Boursaw 2012; Vélez and Richardson 2012) have used the political economy approach of social disorganization theory to examine the relationship between residential lending and neighborhood crime. Vélez and colleagues conceptualized residential lending as a form of external investment into neighborhoods.

Today, home loans such as mortgages, refinancing, and home improvement loans do not all originate from depository banks as they once did. An aspect that is unique to the United States mortgage market is the sizeable presence of a secondary market. Coles and Hardt (2000) suggested that roughly half of all U.S. residential mortgages are approved by mortgage bankers, who have little to no funds to grant loans themselves.

They then sell the mortgages to the secondary market for profit. In addition, mortgage brokers and online vendors offer financing opportunities for home purchases.

Although over half of US mortgages originate from mortgage banks, banks hold a vital role in the acquisition of home loans. In the process of applying for home loans, numerous sources of information are needed for loan qualification and approval. Rose's (2011) research in Virginia has suggested that credit scores, household income and expenses, and outstanding debts are among the most requested loan approval materials. Personal assets such as statements for checking and savings accounts, investments, and the value of life insurance policies and other valuable possessions, however, are also often requested (Mortgage Bankers Association 2013).

In addition to simply having a bank account, researchers suggest two other ways in which banks are important to loan acquisition asset accumulation and the accumulation of soft information. In one study of banking and asset accumulation, Carney and Gale (2001) found that nearly 20 percent of US households were without bank accounts. Further, the authors found that not having a checking account was negatively and significantly related to asset accumulation such as home and vehicle ownership. Ergungor (2010) has found that having a bank branch near low to moderate-income neighborhoods was positively related to mortgage origination. Further, these positive effects were stronger for bank branches that are closer to these neighborhoods. Ergungor (2010) has suggested that the accumulation of "soft information" on potential borrowers offers useful information for lenders. Soft information includes factors that are not included in credit and risk scoring, such as spending habits, overdraft occurrences, and bill payment history.

Although residential lending is seen as an infusion of financial resources from outside of the neighborhood, the impact can differ, depending on the type of lending. Immergluck and Smith (2004) found that, in Chicago between the late 1990s and 2002, subprime loans resulted in foreclosures 20 times more often than prime mortgage loans did. Other research has found that neighborhoods that have high rates of subprime-mortgage foreclosure also have increased public order crimes, larcenies, burglaries, drug violations, and incidents of disorderly conduct (Teasedale, Clark, and Hinkle 2012). Alternatively, research on the prime lending market has found that the infusion of resources into neighborhoods in the form of home loans results in significant reductions in crime (Peterson and Krivo 2009a, 2009b; Squires and Kubrin 2006; Vélez 2009; Vélez et al. 2012; Vélez and Richardson 2012).

The current research drew on the political economy approach to test social disorganization theory and examined the role of neighborhood institutions, specifically banks, on crime. In light of the findings discussed above, it was theorized that the presence of banks would be beneficial to the neighborhoods in which they are located and nearby, and that this will work through residential lending. This is an important contribution to the literature because banks are organizations that have rarely been included in previous research. Banks have been included as secondary independent variables (Small and McDermott 2006) and as intervening variables in analyses between payday lenders and crime (Kubrin, Squires, Graves, and Ousey 2011); however, banks have not been the focus of any analyses relating to crime. Existing research that has examined the impact of residential lending has focused mainly on homicide and other violent crimes, and less on property crime.

A further shortcoming of the existing literature is the way that mortgage lending has been defined and measured. Previous literature has only looked at mortgages or the three forms of investment combined (Peterson and Krivo 2009a, 2009b; Squires and Kubrin 2006; Vélez 2009; Vélez et al. 2012; Vélez and Richardson 2012), so the separation of forms of investment could be a substantial contribution to the field. These are two limitations that are overcome in this research, which include crimes of vandalism and separates the different forms of residential lending.

This research will be guided by several research questions that are derived from the prior literature on banks, residential lending, and crime. The primary research question is: How do banks affect neighborhood levels of crime? This question has only briefly been covered in financial and criminological literature (see Fairchild and Rai 2011; Garmaise and Moskowitz 2004). Several additional questions are included that are intended to further the understanding of the relationship between banks and crime. One question that has not been addressed in the previous literature is what effect locally operated banks have on neighborhood levels of crime? Another question guiding the research aims to bridge a gap in the literature of the role of banks in residential lending. That is, how does having a bank in or nearby a neighborhood impact levels of residential lending? Further, do locally owned banks affect neighborhood residential lending investment differently than banks owned not locally?

The third question brings the previous questions to the main concern of neighborhood crime, asking how do banking investments affect neighborhood crime? A further question will address another gap in the literature by asking if different forms of

banking investment, such as mortgages, refinancing, and home improvement loans, have different effects on neighborhood crime?

These questions will be investigated by combining several sources of available data. Crime data from Norfolk and Virginia Beach, Virginia, were acquired from the respective police departments. The data consisted of crimes known to the police and the block locations where the crime occurred. The crime data were categorized into three types of crime for analysis: violent crime, property crime, and acts of vandalism. The residential lending data were from the Federal Financial Institutions Examination Council website, which was established by the Home Mortgage Disclosure Act. Data on mortgage lending, refinancing, and home improvement loans for each census tract included in Norfolk and Virginia Beach were collected from this source. The third source of data was the *Polk City Directories* for the cities of Norfolk and Virginia Beach in 2011, 2009 and 2007. They were used to collect the addresses of the banks. Lastly, the 2000 U.S. census was used to create several control variables that were included in the analyses.

The methods that were used to examine the data were negative binominal regressions, with the inclusion of spatial lags. Negative binominal regression is commonly used in criminological research when the dependent variable is a count rather than a rate. Poisson-based regression models such as negative binominal regression are better suited for counts of events because "they are built on assumptions about error distributions that are consistent with the nature of event counts" (Osgood 2000:21). Additionally, spatial analysis has emerged as an important component of understanding neighborhood characteristics and levels of crime. Heitgerd and Bursik (1987) were some

of the first to investigate spatial influence on neighborhood levels of delinquency, finding that neighborhood delinquency was influenced by the delinquency of the neighborhoods that surround it. Years later, Morenoff, Sampson, and Raudenbush (2001) increased the popularity of the investigation into spatial analysis by expanding on the methodologies that can examine spatial effects.

The next chapter discusses the theoretical perspective that was used to understand the influence of banks and residential lending on crime. An historical overview of the creation and development of social disorganization theory is provided, including the addition of the political economy perspective and the more recent expansion of the role that social institutions can play in neighborhoods. The second chapter concludes with theoretical reasoning of how banking is related to residential lending and, more importantly, crime.

The third chapter reviews the empirical literature on social institutions, banks, residential lending, and crime. The empirical literature starts with the impact of two important institutions, education and religion, as expressed by schools and churches, and their impact on neighborhood crime. The primary focus of the review of the empirical literature is on the role of financial institutions, the importance of homeownership and the effect of residential lending on neighborhood crime. The chapter concludes with an introduction of the hypotheses that are tested. The fourth chapter covers the data, variables, and methods that will be used to conduct this research. Lastly, an overview of the use and importance of spatial analysis in community research, and negative binomial regression in crime research is given. The fifth chapter describes the data used and the

results of the hypotheses testing. The final chapter summarizes the findings and discusses the implications, limitations and directions for future research.

CHAPTER II

SOCIAL DISORGANIZATION AND THE ROLE OF INSTITUTIONS

A neighborhood is greater than the sum of its parts. A neighborhood is an evolving and changing entity, with numerous components that work together in its functioning. Shaw and McKay's (1942) social disorganization theory embodies this idea. Despite a decline in interest between 1960-1980, social disorganization theory has been influential in the field of criminology since its inception. Shaw and McKay's (1942) social disorganization theory was developed from the concepts of urban and human ecology and the work of the Chicago School. The development of social disorganization theory was arguably influenced by the change in urbanization that sociologists at the University of Chicago were witnessing (see Park and Burgess 1925; Thomas and Znaniecki 1918-1920). The development of the theory and its revitalization has been closely associated with the social contexts in which they were positioned. In this chapter the origins of social disorganization theory are discussed, and the critiques of this theory are covered. Further, overviews of important theoretical advances that have occurred since its development are provided, including the role of institutions. Lastly, the political economy approach of social disorganization theory is introduced.

DEVELOPMENT OF SOCIAL DISORGANIZATION THEORY

The first years of the 20th century saw many changes in the ways of life for people in the United States. The U.S. entered into the First World War in 1917, creating a demand for laborers as white males were assembled for the war effort (Massey 2007). In order to meet the demand, women, minorities, and non-white immigrants were allowed to

enter the labor force. This was a substantial development for women, who to this point were not a major part of the industrial work force. In addition, it caused a considerable migration of African Americans from rural to urban industrial areas (Pfohl 1994). Further, advances in the technology available to industry and agriculture created a need for a more substantial managerial class.

With the end of the First World War, soldiers returned home creating another economic shift. This shift resulted in the unemployment of those who had migrated to sustain the economy in the soldier's absence. Most of the workers who had migrated lived in urban areas near one another, resulting in declining living conditions and slums that were physically close but socially distant from more advantaged areas (Pfohl 1994).

At the beginning of the 20th century then, cities were greatly expanded by population growth and migration. The growth they experienced was rapid, and citizens often fell victim to crimes and other problems that had not been of concern in small, communal, rural living. Chicago was one of the many cities that experienced this unprecedented growth, and it was in this context that social disorganization theory was created.

Thomas and Znaniecki (1918-1920) were the first sociologists at the University of Chicago to coin the term social disorganization, which they defined as the diminished impact of prevailing social rules on individuals. Social disorganization is the term that they applied to their content analysis of personal documents from Polish immigrants who were struggling and confused by the rapid change in growing U.S. industrial cities. In their content analysis the theme that became evident was that the rules and norms that governed behavior before no longer applied in their new situation. According to Pfohl

(1994), it is important to note that in this conception, social disorganization was not attempting to explain criminal behavior, but instead to understand the social experience of the recent immigrants. Thomas and Znaniecki's conceptualization of social disorganization was the start of the long history of the theory.

University of Chicago sociologist Park applied the concept of social disorganization to an ecological model to the city. Borrowing terms from plant ecology, the model was used for analysis of the urban development of Chicago, examining the relationships between people and where they lived (Park 1925). A central theme of this work was that large cities develop and expand in similar ways in their physical, social and cultural aspects (Morris 1958). In the field of plant ecology it was believed there was an interdependent relationship between different plants and living organisms located near each other, and that the invasion of other species could offset the balance. In ecology it was thought that if a new species invaded the area, there would be competition, followed by efforts by the existing species to exert dominance, concluding with a new form of interdependent symbiosis (Pfohl 1994). Park and Burgess (1925) applied this process of invasion to urban development, but instead of a new species, it was technology, immigration, and urbanization that were invading the existing symbiotic relationships of the city.

Burgess (1925) postulated the growth of cities occurred in concentric circles from the center of the city outward, as expansion was needed. In Burgess' (1925) model of the city, the center of the city, zone I, contains the businesses and industry, and the area outside of that, zone II, is constantly experiencing transition between housing and the infiltration of business. This area is referred to as the zone of transition, and this constant

influx of business and industry results in undesirable living conditions. This zone often contains the slum areas of the city, and depending on the industries in the area unpleasant conditions may be present, such as noise, odors, and dirt. The area outside of the zone of transition is zone III, then IV, and V; the conditions become more desirable as one continues to move away from the center of the city. The third zone is typically home to members of the working class, zone IV to residential homes for those who are more economically secure, and zone V contains those who have the ability to commute to work from the suburbs (Shaw and McKay 1942).

Shaw and McKay (1942) observed that during the period of growth in Chicago many other neighborhood characteristics were associated with population changes in neighborhoods. For example, neighborhoods that had a large proportion of families who received public assistance were also areas where the population had recently decreased. Also, these neighborhoods had a high level of physical deterioration to the buildings and housing, as seen in the zone of transition. Further investigation of the zone of transition found that it was characterized by a lower economic status, high rates of population mobility, and high levels of population heterogeneity. The reverse was also found. In neighborhoods that had a low percent of families who received public assistance, the population had recently increased, and there was little physical deterioration, as seen on the fringes of large cities.

Shaw and McKay (1942) applied the concept of concentric zones of the city to the understanding of crime and delinquent behavior. The data they used to examine this relationship included juveniles who had been brought to the court, committed to juvenile detention, and who had worked with police probation offices. The extensive data

collected covered the time span of 33 years. Shaw and McKay (1942) mapped the addresses of each of juvenile, by hand, on large maps of Chicago. A central finding from the mapping of juvenile arrests was that delinquency was highest in the inner areas of the city. Specifically, zone II had the highest rate of delinquents, though they were generally arrested in zone I. In addition, rates of delinquency decreased the farther away from the center of the city one moved. Finally, Shaw and McKay (1942) found that delinquency rates remained stable over time and through changes in population.

Focusing their attention on the zone of transition, Shaw and McKay (1942) found it to be distinctive in various ways. First was the high rate of poverty. Due to the zone in transition's undesirable setting, the constant invasion of business and industry, and poorly maintained buildings and structures, only the poorest of the poor lived there. Those who were financially able to move out of this area did so, resulting in high levels of social mobility. All of the rapid change that resulted was the second distinctive characteristic of the zone in transition. People were constantly moving in and out of the area, so there was little residential stability. Everyone was trying to get out of the area, viewing their stay as temporary (Shaw and McKay 1942). Population heterogeneity was the third distinctive characteristic of the zone in transition. Those who were the poorest were also usually of a minority status, creating a situation where there was a large population of different minorities in disadvantaged neighborhoods. These three community characteristics resulted in what Shaw and McKay (1942) viewed as neighborhoods that were socially disorganized. However, as will be discussed below, Shaw and McKay never defined the term "social disorganization" in their original work.

Shaw and McKay's theory of social disorganization experienced wide acceptance until the 1960s, when three changes occurred. First, new explanations of criminal behavior were emerging. New theoretical developments shifted the focus back to the micro level of analysis, and soon social disorganization theory was viewed as trivial to criminology (Bursik 1988; Cullen and Agnew 2011). Second, the social context had changed. The concerns of immigration, urbanization, and industrialization that led to the creation of the theory were no longer in the spotlight. Finally, important critiques of the theory had emerged. These critiques promoted the theory's wane in popularity but also pointed to areas where there was a need for further theoretical development.

CRITIQUES OF SOCIAL DISORGANIZATION THEORY

Despite its popularity, social disorganization theory received substantial criticism, leading many to dismiss the theory and even question if it should have been considered a theory in the first place. For example, Davidson (1981:85) suggested social disorganization "should been seen as a descriptive convenience rather than a model of criminogenic behavior." While there are a number of criticisms, four are critical to understanding the developments that more recent theorists have contributed.

First, one of the principle criticisms of social disorganization theory was that Shaw and McKay proposed a mixed model (Kornhauser 1978). Their early conceptualization of the theory suggested that disorganization contributed to weak social controls, which in turn allowed for delinquent subcultures to develop and facilitate criminal activity (Kornhauser 1978; Shaw and McKay 1942). Kornhauser (1978) argued that social disorganization theory could be a pure control model and should remove the inclusion of delinquent subcultures as she viewed it as a weakness of the theory. The

inclusion of subcultures resulted in a related critique she made, which was that the theory ignored other relationships in the social organization of the slum. Kornhauser (1978) argued that social disorganization theory could be strengthened if the theorists had expanded their scope of interest to include the relationships between family and the community structural context as well.

A second substantial criticism made by several critics (Bursik 1988; Kornhauser 1978) is a lack of definition for "social disorganization." Indeed, Shaw and McKay (1942) never formally defined social disorganization; the meaning of this term was only implied. The lack of definition has resulted in confusion over their use of the term. It has been pointed out that at times it is difficult to separate the causes of social disorganization from the effects of social disorganization (Bursik 1988). Others have argued that since the cause and effects were so interrelated the lack of definition created a tautology (Kornhauser 1978; Bursik 1988). This confusion led to research that further exacerbated the misunderstanding, such as research conducted by Lander (1954) who defined delinquency as social disorganization. Further, as Sampson and Groves (1989) pointed out, no one had directly tested the intervening variables between community structure and crime.

A third area of criticism was the assumption of consensus that is implied in the conceptualization of social disorganization theory. Bursik (1988) pointed out that if social disorganization is defined as the inability of a community to achieve agreed upon goals, there is an assumption that all of the residents of the community agree on the goals. This is problematic because this assumption has never been tested, and there is little

consensus on less serious offenses. Burisk (1988) argued however that serious crime is a condition with which no one wants to live.

A further normative assumption implicit in the social disorganization model is the notion of a "natural" housing market. Bursik (1988) argued that Shaw and McKay never acknowledged that neighborhoods and citizens could be influenced by mechanisms other than the housing market, which research has suggested is not a natural process (Skogan 1986; Suttles 1972). Additional research by Skogan (1986) has found several mechanisms outside of the community that can impact neighborhoods, including "disinvestment, demolition and construction, demagoguery, and deindustrialization" (206-207).

Beyond these concerns of conceptualizations and assumptions, Bursik (1988) noted that social disorganization theory has received criticisms on methodological grounds as well. For example, Shaw and Mckay's (1942) original work and subsequent tests of social disorganization theory have relied solely on official records of delinquent and criminal acts (Bursik 1988). Reliance on official records is problematic because of the potential for systematic bias, and the exclusion of unreported or undocumented crimes. Further, the use of cross-sectional data encumbers understanding of the changing nature of the community that is intrinsic to the theory. Bursik wrote:

> Since it is impossible to study change in such a design, cross-sectional studies must assume that local communities are not undergoing a redefinition of their role in the ecological system, i.e., the spatial distribution of crime and delinquency rates is relatively stable (1988:524).

The assumption of stability is contradictory to the theory. The assumption of change makes tests of the theory complicated and easier said than done.

In the period since these critiques, social disorganization theory underwent substantial reworking. The revisions of the theory sought to address many of the key critiques.

REVITALIZATION AND RECONCEPTUALIZATION OF SOCIAL DISORGANIZATION

Despite dismissal by much of the criminological community by the 1960s, a few researchers continued to utilize social disorganization theory. According to Cullen and Agnew (2011), the revitalization of social disorganization theory came in the 1980s, when characteristics of the community were "discovered" once again as important in understanding criminal behavior. A number of works were instrumental in the revitalization of the theory. Research by Blau and Blau (1982) in the early 1980s highlighted findings that rates of violence were higher in urban areas that suffered from social inequality, demonstrating the significant impact that macro-level analysis can have. Several years later, Sampson (1986) conducted research on the effects of formal and informal social control, using a macro-level of analysis. From his analysis of almost 200 large cities in 1980, he concluded that communities differed in their ability to exert informal social control, further supporting the renewal of social disorganization (Sampson 1986).

Three years later, perhaps the most significant work in the development of social disorganization theory was published by Sampson and Groves (1989). It refined Shaw and McKay's (1942) theory, and offered solutions to many of the theory's shortcomings.

Sampson and Groves (1989) employed the approach of the systemic model advanced by Kasarda and Janowitz (1974; Janowitz 1951) to develop the theory. According to Kasarda and Janowitz (1974), the systemic model asserts that the community is a complex web of friendships and kinships, as well as formal and informal associations that are part of family and social life. From the systemic model the causes and effects of social disorganization were clarified. In addition, one of the most important contributions Sampson and Groves (1989) made was the development of a way to directly test the theory. To measure levels of community disorganization, they examined informal local friendships, the community's ability to supervise and control teenage groups, and levels of participation in formal or voluntary local organizations.

Using data from the British Crime Survey, Sampson and Groves (1989) found significant support for Shaw and McKay's original theory. Several independent variables were found to be associated with the key components of community disorganization. The variable of residential stability was found to be positively and significantly associated with local friendship networks. An increase in the independent variable of social economic status increased participation in community organizations, and decreased the presence of unsupervised groups of teens. Further, they found that in communities where there was a lack of local friendship networks, low participation in community organizations, and the presence of unsupervised teenagers, there were also significantly higher rates of crime and delinquency. In their findings, they briefly suggested that in high crime areas, resident fear of crime might inhibit local friendships and community organization participation. They proposed that since people are afraid of crime, that they may additionally be afraid to venture outside of their home and socialize with members

of the community. This vital piece in social disorganization literature reconceptualized the theory and clarified both the definition and measurement of social disorganization. It led to a renewed interest in developing and testing social disorganization theory.

Theorists Bursik and Grasmick (1993) further reconceptualized and redefined aspects of social disorganization theory. Bursik and Grasmick enhanced the definitions of essential components of the theory, such as neighborhoods, social control, and crime. In their work, neighborhoods were conceptualized as having three definitive aspects: location, a collective social life, and a tradition of identity and stability over time. This definition of a neighborhood moved beyond the use of the government-designated census tract data that social disorganization theory has been criticized for using, and began to unearth the difficulty of defining a community (Bursik and Grasmick 1993). Bursik and Grasmik (1993) then defined social control as "the effort of the community to regulate itself and the behavior of residents and visitors to the neighborhood to achieve this specific goal" (15) of living in a relatively crime free area. Finally in their discussion of crime, they focused on crimes that are considered mala in se, such as rape and murder. By focusing on mala in se crimes, they resolved earlier concerns of assumed consensus.

Perhaps most importantly, Bursik and Grasmick (1993) also included an explicit recognition of the levels of social order developed by Hunter (1985) in their model of neighborhood crime. According to Hunter, there are three levels of social order and control: private, parochial and public, present in the community. Hunter (1985) postulated that the most intimate social bond is the private level, which consists of close personal ties of friendship and family connections. These relationships are rarely confined to spatial closeness, often overlapping into the other levels of social order and

control. The second level is the parochial, which consists of less intimate and personal friendships, acquaintances, and neighbor relationships. Bursik and Grasmick (1993) suggested that control at this level reveals a community's ability to supervise the behaviors of other members in the neighborhood.

Finally, Hunter (1985) acknowledged the public level of social order and control. It is the least intimate social order and is predominately manifested in formal agencies. Hunter (1985) suggested that the public level of control is present in the interaction of strangers, but can permeate private and parochial levels as well. Bursik and Grasmick proposed that the public level of social control can refer to a community's ability to "influence political and economic decision making" (1993:17) and attain goods and services located outside of the neighborhood to assist in crime control efforts. The addition of the public level is particularly important because, until this point, it had been largely ignored in the social disorganization literature.

There have been several other significant developments in social disorganization theory (see Coleman 1988; Sampson, Raudenbush and Earls 1997; Warner and Rountree 1997) but one in particular is of interest for the current research. In the next section the increasing attention to the role of institutions and neighborhood-based organization is discussed.

THE ROLE OF INSTITUTIONS AND ORGANIZATIONS IN SOCIAL DISORGANIZATION THEORY

Prior theory and research on social disorganization theory has focused largely on social ties within the community. However, more recently research in the area of social disorganization theory has been framed around the role of institutions, how they shape

communities, and their effects on crime rates. In his 2010 presidential address to the American Society of Criminology, Rosenfeld called for a shift in the field to focus on "the big picture," or back to macrocriminology. One of the focal points of Rosenfeld's argument was his focus on the importance of social institutions as a key variable in macrosocial analysis. Citing the classic work of Talcott Parsons, Rosenfeld suggested that for societies to exist over time they need to meet four criteria: "1) adapt to the physical environment, 2) mobilize resources to achieve collective goals, 3) integrate the subparts of the society around common values and 4) maintain members' allegiance to the basic normative patterns" (2011:11). Social institutions operate to achieve these goals and sustain society. Rosenfeld (2011) suggested that no institution, be it the economy, political system, or educational system, functions in a vacuum, but rather that they are interdependent in nature. In fact, institutions rely upon one another in order to function properly. Rosenfeld further argued that investigation of institutions will display how organizations, which are manifestations of social institutions, should work, while the examination of these organizations display how institutions operate in reality (2011:12).

The importance of institutions in community research is not a new development, but rather a new focus in criminological research. For example, Shaw and McKay viewed the failure of institutions, such as education and family, to fulfill the needs of impoverished residents as the ultimate failure of a community (Kornhauser 1978). In addition, community researchers often included the role of institutions in definitions of human ecology in the late 1950s. McKenzie (1942), as cited by Morris (1958), stated:

> Knowledge of ecological processes...is basic to all social sciences, as social and political institutions have a spatial base, and arise and function in response to

> changing conditions of environment and competition. Institutional stability is largely dependent on the stability of space relations (1958:6).

Although institutions have often been considered an important component of understanding human behavior and neighborhoods, they have not been the focus of study.

Recent criminological research has argued that institutions within a neighborhood that are viewed as legitimate and government supported are essential to community life (Sampson 2002). Triplett et al. (2003) suggested that institutions, such as the family and the economy, are able to manage behavior in the course of their functioning because of their provision of social control and support. They further contend that institutions vary in their control of and influence on the community, based on their strength. Combining the investigative perspective of Rosenfeld (2011), with the ideas of Triplett et al. (2003), a strong social institution is demonstrated through organizations that are stable, have ample resources, clear understandings of roles and expected behavior, and are connected with other organizations and institutions. Conversely, weak institutions can be identified by organizations that are unstable, lack connections with other institutions, and have limited resources. Often weak institutions are in neighborhoods that have a high percentage of poor residents, high mobility rates, and are racially and ethnically heterogeneous. Further, not only do such neighborhoods have difficulty maintaining existing institutions, but they also struggle in attracting and establishing new organizations to improve institution strength (Triplett et al. 2003).

Triplett et al. (2003) suggested several reasons why organizations, specifically strong ones, are imperative to neighborhoods and communities. First, they can be important for the role that they play in fostering social ties and networks within

neighborhoods, as they often connect community neighbors. Further organizations can bring resources into a neighborhood, such as social capital and social support, which are vital in the punishment of deviant behavior within a community. Second, social institutions fill a role through organizations in the process of informal social control, which can be reduced in weak and disorganized neighborhoods (Triplett et al. 2003). Lastly, organizations can assist in the development of social and human capital for the residents of the neighborhood.

Relating to the earlier discussion of Hunter's (1985) levels of social order, institutions are involved at all three levels. For example, the institution of family operates most commonly at the private level, while religion, which may be expressed by the institution of churches or other groups, can simultaneously occupy the parochial, private, and public levels. However, not all organizations have the capacity for the more intimate levels of social control, and most operate primarily at the public level of social control.

Organizations can have a substantial influence on the neighborhoods in which they are located. Most discussions of organizations assume that they have an interest in the well being of the neighborhood, but this assumption could be mistaken. Organizations can have damaging effects as well. As suggested in the original conceptualization of social disorganization, people and neighborhoods are not always capable of or responsible for designating who and what becomes part of their community. This is especially true when considering the influence of organizations from outside of the neighborhoods. In order to allow for further understanding of the power institutions have in neighborhoods, the theory needs to expand to account for influences and

decisions made outside of the community. To alleviate this problem, Bursik (1989) suggested the integration of a conflict perspective in the analysis of neighborhood crime, often referred to as the political economy perspective.

CONFLICT AND POLITICAL ECONOMY IN SOCIAL DISORGANIZATION

The traditional conceptualization of social disorganization theory follows a consensus model. The consensus model of society and law posits that members of a society come together to create the norms and rules of a society in order to benefit the greater good. This model argues that there is a shared belief in what is considered right and wrong, good and evil, what is important, and what is acceptable in a society for the majority of issues and concerns (Bernard, Snipes, and Gerould 2010). The assumption of consensus is highlighted in the definition of social disorganization as a characteristic of a community that is "unable to realize its values." This implies that all members in the community hold or agree on similar values.

Conversely, the conflict view does not believe that society is organized to benefit the greater good, but for the benefit of the rich, wealthy, and powerful. The conflict model holds that values are determined by interest, and that what is considered right and wrong is conceived in the view of personal gains and losses (Bernard et al. 2010). Law and society created under this model benefits those who hold enough power to control the government and state, by allowing them to pursue their self-interest without interruption by the state (Bernard et al. 2010).

Bursik (1989) suggested the need for integration of a conflict model to account for decisions that impact neighborhoods, but are made outside of its confines by non-members. He argued that, as classically conceptualized, the neighborhood is a 'natural

area', which developed from invasion and succession, and open market housing. Bursik (1989) then suggested that this may have been accurate in the context in which the original work was created but that after the conclusion of WWII neighborhoods and communities have largely been intentionally planned. The allocation of land, incentives to builders, zoning, and the growth of bureaucracies have all played a role in the decreased power of neighborhoods to defend their interests.

In a test of this idea, Bursik (1989) used neighborhoods across Chicago in order to examine changes in delinquency in areas that had recently built public housing. Bursik (1989) found that the neighborhood's ability to resist is what determined in which neighborhoods new public housing was built in, not open market characteristics. Further, the development of public housing resulted in increases in instability, which has traditionally been associated with higher rates of social disorganization and therefore delinquency. Bursik argued this was evidence that "political dynamics can directly affect the level of social disorganization in a community, thereby indirectly affecting the level of delinquency" (1989:117).

This development created new interest in the social disorganization theory, and is crucial to the understanding of the role that organizations–especially those outside the neighborhood–can play in neighborhood dynamics and crime rates. Bearing in mind that not all elements of a neighborhood are determined by residents, careful consideration should be paid to all components of the neighborhood. One organization that has the potential to influence neighborhoods from outside of their boundaries and has been missing from the literature on the role of institutions in neighborhoods is banks.

THEORETICAL IMPORTANCE OF BANKS IN NEIGHBORHOODS

Social disorganization has recently expanded its theoretical scope to include social institutions and the organizations that express them to see how they affect the neighborhoods they are in and are nearby. Banks and other financial institutions are largely absent from the social disorganization literature. However, banks and other financial institutions should be included in the literature because they play an important role in society and the everyday lives of their customers. Further, because of the gap in the literature, it is unknown if banks have positive or negative effects on neighborhoods.

There are two lines of thinking and research relating the importance of banking to the neighborhood context. First is that banking has been found to be associated with asset accumulation, specifically homeownership (Carney and Gale 2000; Fellowes and Mabanta 2008). Less than 3 percent of unbanked households in the United States own their home, highlighting the vital relationship between being banked and homeownership. Social disorganization theory has long related homeownership with residential stability and thus to lower levels of neighborhood crime.

Second, research has connected the presence of bank branches in neighborhoods to access to loans and mortgage lending (Ergungor 2010; Ergungor and Moulton 2011) because of asset accumulation and the collection of "soft information." Further, the Community Reinvestment Act that was implemented in 1977 requires banks that have branches in low to moderate-income areas to meet the credit needs of the nearby community (Squires and Kubrin 2006). Ergungor (2010) has suggested that from this regulation it would be expected that neighborhoods that contain banks would have higher levels of residential lending.

Additionally, Vélez (2009) identified three ways in which bank residential loans for home improvement, re-financing, mortgages etc., can improve neighborhoods in ways that prevent or reduce crime. First, investment from financial institutions can reduce signs of physical disorder that are present in the neighborhood. Second, investment has the potential to increase the access to resources outside of the neighborhood, such as external investments. The third way Vélez suggested that investment can be beneficial to neighborhoods is by enhancing the appeal to local businesses and thus creating employment. She stated that, "Neighborhoods that receive few bank loans are unable to build new housing, repair dilapidated housing, recruit new home buyers, sustain existing businesses, or attract new businesses" (2009:155). The conditions listed by Vélez can be prevented and amended by financial resources, and are vital for neighborhood conditions that deter crime.

The inclusion of social institutions into social disorganization theory is an important theoretical development. Theoretically there are reasons that banks should be examined in the neighborhood context; however, they have rarely been included in prior research. The empirical literature on the role of institutions has focused on alcohol outlets, schools and churches in neighborhoods, which is where we start the next chapter. Testing of the theoretical connections between banking and neighborhoods are then covered. Additionally, the existing literature on homeownership, residential lending, and crime is covered. The last component of the third chapter is the hypotheses that are drawn from the theoretical perspective and empirical literature.

CHAPTER III

REVIEW OF THE LITERATURE

THE RELATIONSHIP BETWEEN INSTITUTIONS AND CRIME

Social institutions and organizations have long been incorporated as important mechanisms of neighborhood social control in the social disorganization literature. Yet, as Triplett and colleagues (2003) have stressed, this link has not received much attention in the empirical literature. Theoretically, it is hypothesized that institutions can reduce levels of neighborhood crime by promoting prosocial attitudes and behaviors, and by augmenting private, parochial, and public levels of control (Bursik & Grasmick 1993; Hunter 1985; Slocum et al. 2013; Wilson 1996). Further, research by Small (2006) suggested that some institutions also possess a role as resource broker in lower income areas. According to this line of thinking organizations have ties to other organizations and connect their clients with resources available from other organizations. Schools, churches, and alcohol outlets are organizations that have received attention in the literature, but recently the kinds of community organizations examined has been expanding.

EMPIRICAL LITERATURE ON INSTITUTIONS

Schools, second only to families, are one of the most important institutions for the socialization of children. This is only one of the many reasons that schools have traditionally been viewed in a positive light; however, research in recent decades on the effect schools have on the neighborhoods they are located within has presented a new perspective. In the early 1980s, researcher Dennis Roncek and several colleagues started

to investigate the effects of schools on neighborhood levels of crime. In their initial work, Roncek and LoBosco (1983) found that in San Diego's residential areas that contained a public high school, there were higher rates of crime than those that were not adjacent to a school. Two years later, Roncek and Faggiani (1985) replicated the study in a different city to see if the San Diego findings had generalizability. Conducting the replication in Cleveland, Ohio, similar findings were reached. Neighborhoods that were within a city block of a public high school were victim to higher rates of crime.

More recent research has continued to find a consistent relationship between high schools and higher levels of neighborhood crime (see Astor, Benbenishty, and Meyer 2004; Gouvis-Roman 2004; Murray and Swatt 2013; Willits, Broidy, and Denman 2013). Recently, however, attention has begun to expand the empirical literature to include middle and elementary schools. Kautt and Roncek (2007) focused on burglaries in Cleveland in the years 1989-1991. Their findings were inconsistent with previous research. Specifically, they did not find a significant relationship between high schools and higher levels of crime. However, they did discover a relationship between elementary schools and increased probabilities of burglaries, and they found that higher enrollment was significantly related to the probability of burglary.

Several years later, with the new interest in spatial analysis, these relationships were tested again. Murray and Swatt (2013) examined the effect of public and private high, middle, and elementary schools located within or adjacent to residential areas and the crimes of residential burglary, motor vehicle theft, and felony assault. Murray and Swatt (2013) found that blocks that contained a school had more motor vehicle thefts and felony assaults during school hours. However, in contrast, these findings were not

consistent for residential areas adjacent to block groups that contained a school. A few years later, Willits and colleagues (2013) found support for the positive relationship between schools and neighborhood crime, independent of demographic and structural controls. Further, they found that different schools were associated with higher levels of different crimes. Willits et al. (2013) found that high schools were related to increased rates of aggravated assaults, larceny, and narcotic-related crimes. Neighborhoods containing middle schools were also found to have higher rates of narcotic crimes. Lastly, they found that areas near elementary schools had lower rates of property crimes. Willits and colleagues (2013) linked their findings to one of the basic components of social disorganization theory, unsupervised teens. Shaw and McKay (1942) suggested that the presence of unsupervised teens was a symptom of social disorganization and contributed to higher levels of neighborhood crime. Willits et al. (2013) proposed that high schools and middle schools promoted social disorganization because of the increase in the number of unsupervised teens.

The social institution of education, as studied by schools, has been found to be both beneficial and damaging to neighborhoods. The institution of religion, as expressed through the organization of the church, has also received theoretical and empirical attention, but again the findings have been mixed.

Traditionally the institution of religion has been assumed to be related to lower levels of criminality. Similar to schools, both participation in religious life and churches have been theorized to influence socialization, conformity to social norms for their patrons, and ultimately lead to reductions in crime. Further, as suggested by Kinney and Winter (2006), churches are often viewed as playing a substantial role in neighborhood

stability. Empirical evidence however has not found steady confirmation for these predictions. Examinations of these organizations at the neighborhood level have found differences in their effect depending on participation, denomination, and location.

For example, Lee and Bartkowski (2004) found that religious civic participation at the county level was associated with decreases in juvenile and adult homicide rates. Regnerus (2003) also found a relationship between religious participation and decreased rates of theft and minor delinquency for juveniles. Further, he found that the proportion of the community that was identified as adherents to conservative Protestant beliefs was strongly, significantly, and negatively associated to both of forms of juvenile delinquency. However, research conducted by Ellison, Burr, and McCall (2003) reached somewhat contradictory findings. In their work they found that the percent of conservative Protestant was positively related to homicide rates in metropolitan statistical areas (MSAs). This finding was not found to be true for non-southern MSAs. These findings highlight the importance of regional and social context.

These and similar works have found that participation in religious organizations can be associated with lower county levels of crime. Research that examined the impact of churches located within smaller residential areas, however, has had substantially different results.

Research conducted by Desmond, Kikuchi, and Morgan (2010) examined the relationship of different church congregations and neighborhood crime rates. In their work they focused on select violent and property crimes in Indianapolis at the block group level from 2000 to 2005. Six categories of congregations were developed, including evangelical Protestant, mainline Protestant, black Protestant, Catholic, other

affiliations, and civically engaged congregations. The authors borrowed from Tolbert, Lyson, and Irwin (1998) in identifying civically engaged congregations, defining them by congregations, which had more volunteer association memberships than average. They found that areas that had more evangelical Protestant organizations had significantly higher rates of robbery, assault, and aggravated assault. None of the other religious denominations included in the analysis were related to increased levels of violent crimes. The findings for property crimes were less clear-cut. Vehicle theft was higher in block groups that contained evangelical, mainline, and Black Protestant congregations. Church locations were not associated with residential burglary. However, church locations were associated with commercial burglary, which increased with the presence of all types of Protestant congregations, but was reduced by the presence of civically-engaged religious organizations. Lastly, rates of larceny were found to increase in block groups that contained evangelical and mainline Protestant churches, and decrease in areas that were home to civically engaged churches.

Research by Triplett, White, and Gainey (2013) confirmed many of these findings. Specifically, they found that the presence of churches, both evangelical and non-evangelical, in block groups was associated with increased levels of street crimes and domestic assaults. Both sets of authors highlighted the importance of nonresidential commercial use of land as possible explanations of their results. Though the research on church placement and neighborhood crime is limited, so far it is consistent.

Research on the impact of bars on neighborhoods has also found relatively consistent findings. Roncek was once again at the forefront of this area of research. Roncek and Bell (1981) found that having bars located within city blocks of Cleveland

was associated with increased levels of crime. In a replication of his previous work, Roncek and Maier (1991) reexamined the relationship between bars and crime in Cleveland between 1979 and 1981. Their work reaffirmed the findings of Roncek and Bell (1981), which found that every type of crime that was included in the analysis was found to be higher in city blocks that contained bars, compared to blocks without such establishments.

More recent research regarding the influence of bars on levels of crime has continued to further develop the understanding of this relationship. Nielsen and Martinez (2003) analyzed this relationship in the racially and culturally diverse city of Miami. In their work they found that the availability of alcohol was strongly associated with overall violent crime as well as rates of aggravated assault and robbery. Further, work by Murray and Roncek (2008) found that having at least one bar in a block resulted in an increase in the expected number of aggravated assaults. Their analysis also included establishments that sold alcohol, which were found to have even stronger impact on the number of aggravated assaults. Expanding on these findings, Pridemore and Grubesic (2012) reexamined this relationship in Cincinnati, Ohio. Their findings confirmed previous research on the presence of bars and increased rates of assault. However, they further found that the effects of bars were tempered by higher levels of community organization.

In addition to the research that focused on specific organizations there have been a few studies that incorporated several kinds of organizations. Peterson, Krivo, and Harris (2000) collected information on residential centers, libraries, employment institutions, and bars to examine their effect on crime within census tracts. Their findings

suggested that bars were positively and significantly related to violent crime rates. In their preliminary analysis, none of the other organizations were found to significantly affect neighborhood crime. Upon further investigation, however, they discovered that recreation centers were related to decreased levels of violent crime, but only in areas of extreme economic deprivation. They suggested that recreation centers might be more indicative of services and controls than the count of libraries and employment institutions.

Following this blueprint, Slocum and colleagues (2013) studied several community organizations and their impact on crime in the south Bronx. They found that organizations that provided resources, bridging organizations, organizations that served at-risk populations, and organizations that supported child and family well-being, were associated with lower levels of violent and property crimes. Their finding of primary interest in relation to this research is that institutions that link or bridge communities to outside resources were associated with reduced levels of violent and property crimes. Slocum et al. (2013) suggested that bridging institutions could reduce crime through increased social networks and levels of parochial control. As further discussed below, banks are an institution that could be viewed as a bridge between communities and outside resources.

FINANCIAL INSTITUTIONS

Financial institutions play a vital role in everyday life for persons of all walks of life. In addition to handling personal and business finances, they also offer opportunities for home, business, and personal loans. There are several types of financial institutions, but banks are the most common and frequently used, and will be the focus of this

research. However, not all communities have equal access to these organizations. Research has found that residents in lower income neighborhoods in urban areas have fewer banks available to them (Pollard 1996; Small and McDermont 2006). Further, access to and presence of banks has been found to be associated with loan acquisition and lower rates of mortgage default and crime (Ergunor 2012; Ergunor and Moulton 2011; Garmaise and Moskowitz 2006).

BANKS AND THE IMPORTANCE OF HOMEOWNERSHIP AND MORTGAGE INVESTMENT

There are several lines of research relating the importance of banking to the neighborhood context. First, a concern for the unbanked is that banking has been found to be associated with asset accumulation, specifically homeownership. The 2011 FDIC National Survey of Unbanked and Underbanked Households (Burhouse and Osaki 2012) found that over 78 percent of household respondents who had a bank account and did not use any alternative financial services owned their home, while less than 3 percent of unbanked households own their home. Low levels of homeownership have been associated with social mobility and instability within neighborhoods and communities (Sampson, Raudenbush, & Earls, 1997; Shaw & McKay, 1942), which social disorganization theorists have long related to increased levels of neighborhood crime.

Second, research has connected the presence of bank branches in neighborhoods to access to loans of a variety of types including mortgage lending. Ergungor (2010) examined the relationship between presence of bank branches in low-income neighborhoods and credit availability to the poor. His findings suggested that having a bank in the neighborhood allowed for the collection of "soft" information about the

neighborhood and residents, which improved access to mortgage loans. Ergungor's (2010) research in Ohio has shown that the presence of a bank branch within a low to moderate-income neighborhood was positively associated with mortgage origination. Additionally, research has consistently found that loans that originate from banks were less likely to default compared to loans originated through brokers or companies (see Alexander, Grimshaw, McQueen, and Slade 2002; Laderman and Reid 2008; Moulton 2010).

In a working paper by Ergungor and Moulton (2011) the impact of banks on mortgage loans was further clarified in three ways that are important to the research here. First, this work confirmed previous works and found that mortgages that were originated from a bank were less likely to default than mortgages from nonbanks. Second, their work found that in Ohio an increase in bank access in low to moderate-income neighborhoods was associated with an increased probability of borrowers choosing a bank for their mortgage. Lastly, they found that smaller banks (those that have less than ten billion in assets), which were likely to be locally owned, were better at predicting mortgage success and creditworthiness. Ergungor and Moulton (2011) suggested that banks that had a branch in the area were better informed about the economics of the area to which they were lending.

The unbanked are less likely to own their home, indicating the close and important relationship that exists between banking and homeownership. Research and political rhetoric have suggested that homeownership is related to several positive social, psychological and financial outcomes (Shlay 2006). Specifically, the owning of one's home is one of the key sources of wealth accumulation in the United States (Turner and

Skidmore 1999; Williams, Nesiba, and Mcconnell 2005). Alternatively, low homeownership has been associated with social mobility and instability within neighborhoods and communities (Sampson et al., 1997; Shaw & McKay, 1942), which social disorganization theorists have long related to neighborhood crime.

Homeownership has been found to increase neighborhood stability and play a critical role in community organization (Squires and Kubrin 2006). At the community level, research has found that homeowners are more committed to their neighborhoods, more likely to participate in community activities or volunteering (Rhoe, Van Zandt, and McCarthy 2002; White and Schollaert 1985), and more involved in local elections compared to renters (McCabe 2013). Rhoe and colleagues (2002) proposed that purchasing a home in a particular area can be viewed as an indication of long-term commitment to a community. In fact, homeowners have been found to stay in their residence four times as long on average as renters do (Rhoe et al. 2002). In addition to increases in stability, increased rates of homeownership have been associated with increased property values (Rhoe et al. 2002; Shlay 2006).

Additionally, research conducted in the Netherlands has found that homeownership was positively related to feelings of neighborhood safety and satisfaction (Brounen, Cox, and Neuteboom 2012). Research conducted by Alba and colleagues (1994) also found a substantial relationship between homeownership and crime rates across neighborhoods in the state of New Jersey. According to their findings neighborhoods where homeowners resided experienced 250 less violent crimes and 350 less property crimes per 100,000 persons (1994:412), compared to similar renters' neighborhoods. Further, using data on the 100 largest cities in the United States, White

(2001) found that the percentage of homeowners in higher-income cities was associated with a decrease in murder rates. However, the rate of homeownership was associated with increased rates of burglary in lower-income cities (White 2001:338).

At the individual level, research has found that homeownership was associated with lower rates of unemployment, higher wages (Shaly 2006), and increased psychological and physical health (Rhoe et al. 2002). Further, research on the effect of homeownership on children has uncovered additional positive effects. These findings are especially salient for the children for low-income homeowners. Generally, the children of homeowners performed better in school and were more likely to graduate, had lower rates of teenage pregnancy, higher levels of earnings as adults, and were more likely to become homeowners themselves (Boehm and Schlottman 1999, 2002; Green and White 1997). Additionally, homeownership has been linked with decreased behavioral problems in the children of homeowners (Haurin, Parcel, and Haurin 2002).

The theoretical importance from a social disorganization perspective of homeownership for neighborhood crime reduction is empirically supported. However, in order to achieve homeownership potential buyers need access to mortgages and financial resources. Research investigating the relationship between mortgage investment and neighborhood crime is relatively new. Several researchers, however, have suggested that the investigation of bank loans is important in our understanding of crime as the actions of banks play an influential role in the viability of a neighborhood (Garmaise and Moskowitz 2006; Squires and O'Connor 2001). Neighborhoods where residents obtain loans had opportunities to build new housing, repair old housing, sustain businesses, and

attract new business owners and homebuyers, while neighborhoods where residents were unable to attain home loans struggled with these goals (Vélez 2009:155).

Squires and Kubrin (2006) were the first to look for a relationship between neighborhood crime and levels of mortgage lending. The authors utilized the 2000 Home Mortgage Disclosure Act (HDMA) reports, the 2000 census, and Seattle crime data that were aggregated to the census tract level. Focusing on mortgages for the purchase of single family homes, they discovered that higher rates of mortgage lending were associated with decreased rates of violent and property crime. Their findings remained significant even after controlling for factors that have been long found to be associated with neighborhood crime, such as disadvantage and residential mobility.

Peterson and Kivro (2009b) conducted similar analyses to further investigate the importance that racial and ethnic segregation play in understanding the relationship between home lending and neighborhood crime. Using data from National Neighborhood Crime Study and the HDMA reports, they were able to compare similar neighborhoods across the United States. In their analysis they included residential lending as a total of the conventional and FHA/VA mortgage loans, home improvement, and refinancing loans. In their analyses they found that residential lending reduced the difference between rates of violent crime between white, black, and Latino neighborhoods. Research conducted by Saporu and colleagues (2011) reaffirmed the differential benefits of residential lending in racial and ethnic neighborhoods. Overall, similar to previous work, residential lending was found to be related to lower rates of violent and property crime across all neighborhoods. However, the benefit of residential lending was greater in minority neighborhoods, and higher levels of investment were

found to be more beneficial to these neighborhoods as well (Saporu, Patton, Krivo, and Peterson 2011).

Research conducted by María Vélez further highlights the importance of residential loans in neighborhood crime rates. In her first work on the topic, Vélez (2009) examined the impact of bank investment on homicide rates in racially and ethnically different Chicago neighborhoods between 1993 and 1995. In this work she conceptualized residential lending as a form of decision-making that was external to the neighborhood, suggestive of the political economy aspect of social disorganization theory. She conducted this research using HDMA reports, Chicago homicide data, and 1990 census data, all aggregated to the census tract level, which was used to define a neighborhood. Residential lending was conceptualized in the same way as discussed above. Similar to previous findings (Peterson and Krivo 2009a; 2009b; Squires and O'Connor 2001), Vélez found that predominately white census tracts received substantially larger amounts of home loan dollars than African American and Latino census tracts. On average census tracts that were predominantly white received $12 million in home loans a year, compared to $1.5 million and $3 million for African American and Latino census tracts respectively.

Vélez (2009) discovered that neighborhoods that received outside investment from banks, in the form of home loans, had lower rates of homicide. More specifically, for each additional million a neighborhood received in home loans the homicide rate decreased three percent, holding all other variables constant. Or, in an average Chicago neighborhood, an additional one million in home loans resulted in one less homicide every three years. To explain these findings she suggested that:

> Infusions of bank capital give tools to neighborhoods to control crime: either informally through neighbor interactions, by providing resources to fix up housing and other buildings, or by expanding local economic opportunities (Vélez 2009:165).

Regarding minority neighborhoods, Vélez (2009) found residential lending was associated with a decrease in lethal violence. Minority neighborhoods in Chicago had substantially higher homicide rates than average, and residential lending reduced this disparity in both African American and Latino neighborhoods.

Vélez and Richardson (2012) aimed to further understand the role of home loans on homicide in Chicago. A vital improvement from previous works was the inclusion of spatial analysis. Including spatial analysis allows researchers to discover how nearby neighborhoods are affecting one another. In these analyses this would mean that high rates of residential lending in a neighborhood would not only benefit that neighborhood, but those surrounding it at well. This research utilized data similar to Vélez (2009) and census tracts as a proxy for neighborhoods; however, neighborhoods were categorized by their homicide rate rather than their racial and ethnic composition. Chicago neighborhoods were categorized as below-average, above-average or average homicide rates. Neighborhoods that had a homicide rate below average received the most home loan dollars, followed by average, and neighborhoods that had above average homicide rates received the least residential loans.

The results of Vélez and Richardson's research (2012) supported previous research findings. The influx of home loan dollars into neighborhoods was associated with a reduction in rates of homicide. More specifically, while holding all other variables

constant, a one standard deviation increase in home loan dollars resulted in a predicted 11.5 percent decrease in the homicide rate. Further, the homicide rate of a neighborhood further decreased if it was embedded in other neighborhoods that were receiving home loans. These findings support the prediction of political economy theory that outside influences play a role in neighborhoods. In both Vélez (2009) and Vélez and Richardson (2012), however, the authors mentioned the potential for a reciprocal relationship where prior rates of crime were influencing the amount of home loans a neighborhood received, as other research has suggested (see White 2001).

Vélez et al. (2012) explored this possibility in their research on residential lending and violent crime in Seattle. Their study utilized longitudinal data from 1981-2007 on violent crime in Seattle, residential lending and census data from 1980, 1990, 2000, and the 2005-2009 American Community Survey. Their findings outlined the substantial increase in homeownership since the 1980s. In 1980, the average neighborhood in Seattle received 200,000 dollars in residential lending, but by 1990 this had increased to almost 600,000 dollars. By 2000 residential lending was almost two million a year in the average neighborhood.

Vélez et al. (2012) further affirmed previous findings that suggested that residential lending reduces neighborhood rates of violent crime. However, in contrast to previous research they found that the effect of residential lending on violent crime was similar across racial, ethnic, and economic lines. Further, they also examined the importance of time lags in the understanding of this relationship. In this work, they tested lags up to five years in length, and found that lending levels longer than two years prior were statistically non-significant. The time lags suggested for the relationship

between residential lending and neighborhood crime are one and two years. Using the one and two year lags, no evidence of violent crime predicting mortgage lending was found.

While the literature on the effect of mortgage and home loans is limited, it is growing. However, research on banks, which play a crucial role in loan acquisition, present a considerable gap in the criminological literature.

BANKS AND NEIGHBORHOOD CRIME

There is a growing literature on the wrongdoing of banks (see Kirk 2012; Nguyen and Pontell 2010); however, the effect of banks on neighborhoods and their levels of crime is substantially more limited. Research conducted by Garmaise and Moskowitz (2004) found that banking transactions were reasonably localized, meaning that residents banked near their home. Further, they found that banking did have an effect on the neighborhood within which it is located. Specifically, Garmaise and Moskowitz (2004) found that when there was a decrease in banking competition, due to bank mergers, there was a decrease in banking quality, and higher interest banking loans. All of these were associated with an increase in property crimes in the surrounding area.

Fairchild and Rai (2011) conducted a case study on the Latino Community Credit Union established in North Carolina. They examined the potential effects of new financial institutions for an underserved minority. In their work they found that the presence of a bank in the neighborhood reduced robberies and increased property values in the area. Within one year of the opening of the credit union, police data suggested that reports of robberies against Latinos had dropped almost 23 percent in the area. In fact, in

four of the five cities that Latino Community Credit Unions were founded experienced decreased rates of robberies after their opening (Fairchild and Rai 2011).

Slocum et al. (2013) found that organizations that connected communities with outside resources were associated with reduced rates of crime. One of the categories of organizations that were included in this group was focused on economic development. Although the article does not specify what organizations were included in the category of economic development, it is likely that banks could fit into this group. This finding lends additional support for further investigation into the effect of financial institutions on crime.

There is some empirical evidence that suggests that banks could have a different effect on neighborhood crime. Lee, Gainey, and Triplett (2014) found that neighborhoods that contain or are near banks have higher rates of violent and property crime. This research however, did not examine the potential for an interaction between banks and neighborhood disadvantage, which the existing literature would suggest is possible. Although these findings are contradictory to the small amount of literature that exists, it further exemplifies why further investigation into banks and crime is needed.

HYPOTHESES

From the prior literature and the questions that are guiding this research, several hypotheses have been developed. The research by Ergungor (2010) found that access to nearby financial institutions had a positive effect on the availability lending for residents of lower income neighborhoods. His findings indicated that having a bank branch nearby allowed for the collection of information on the neighborhood and its residents. From these findings, it is hypothesized that

H1: Neighborhoods that have a bank nearby will receive greater levels of institutional investment.

H1a: Neighborhoods that have a locally operated bank nearby will result in greater investment from lending institutions.

Garmaise and Moskowitz (2006) found that banking was an activity that was relatively localized, and that a lack of banking competition was associated with increased occurrences of property crimes. Using this research, the second set of hypotheses was developed.

H2: Having a bank nearby will result in lower levels of neighborhood crime.

H2a: Neighborhoods that have a locally operated bank nearby will experience lower levels of crime.

The existing literature has found that the amount of mortgage lending a neighborhood receives decreases violent and property crimes experienced. However, although Vélez and Richardson (2012) suggested that home improvement and refinancing loans might differently impact neighborhoods and the amount of crimes they experience, previous literature has not examined different forms of lending.

H3: Neighborhoods with greater levels of investment will benefit from lower levels of neighborhood crime.

The fourth hypothesis brings the components of the previous hypotheses and findings into a complete model to understand the impact of prior levels of crime, having a bank nearby, and mortgage investment on current levels of neighborhood crime.

> *H4: Any effect of banks on crime in an neighborhood will be mediated through residential loans.*

Figure 1. Theoretical Model

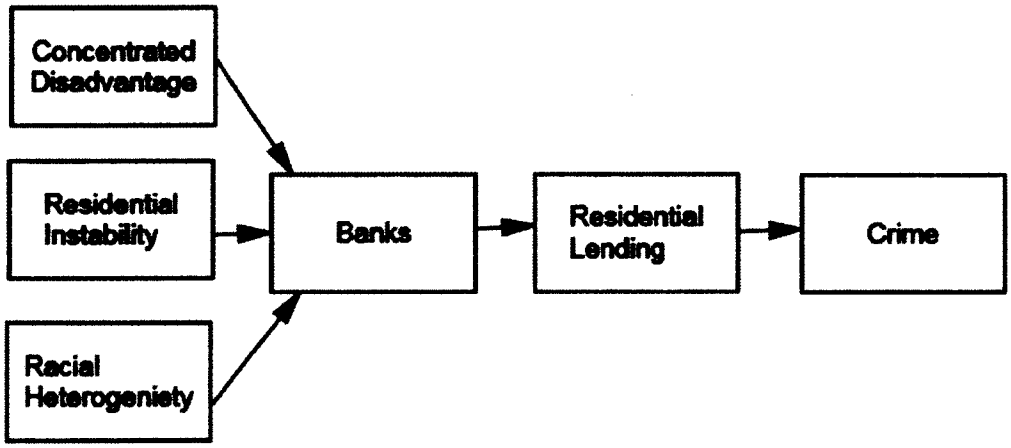


Figure 1 displays the theoretical model suggested from the prior literature, which will be tested in hypothesis 4. It was hypothesized that the neighborhood characteristics of concentrated disadvantage, residential instability, and racial heterogeneity will affect where banks are located. Further, it was hypothesized that the effect of banks on neighborhood levels of crime would work through residential lending. Why? It was theorized that banks affected levels of residential lending because of their role in asset accumulation and the collection of soft information. Soft information includes factors that are not included in credit and risk scoring, such as spending habits, overdraft

occurrences, and bill payment history. The infusion of resources into neighborhoods in the form of mortgage, refinancing, and home improvement loans can increase social ties, organizational participation, residential stability, and social control in the neighborhood by increasing homeownership. Mortgages are vital to homeownership, as most people do not have enough cash on hand to make such a substantial purchase. Though not all mortgages are originated through banks, they do play a crucial role in loan acquisition.

First, research has consistently found that mortgages that were originated from depository banks were less likely to fall into default (Ergungor and Moulton 2011). As discussed above, mortgage foreclosure has been found to be associated with higher rates of crime, even when controlling for other neighborhood characteristics (Teasdale et al. 2012). Second, having access to a bank increases asset accumulation, which is needed for loan application. Finally, refinancing loans can be viewed as a recommitment to the neighborhood, and home improvement loans can reduce the disorder present in the neighborhood.

CHAPTER IV

METHODS AND DATA

As covered in the previous chapter, there is a growing body of knowledge on the role of institutions on neighborhoods and crime. However, the existing literature rarely examined banks and their relationship to neighborhood crime. Beyond the contribution of focusing on banks, the current study expands the existing literature on banks and neighborhood crime in an additional three ways.

First, the use of the cities of Norfolk and Virginia Beach offered a test of the relationship between banks and crime in two additional contexts. So far the existing literature has only focused on a limited number of cities, mostly larger ones, particularly Chicago (Vélez 2009; Vélez and Richardson 2012) and Seattle (Squires and Kubrin 2006; Vélez et al. 2012). The research that has focused on more than one city has only included cities that had populations over 300,000 (Peterson and Krivo 2009a). Second, past research has emphasized homicide and violent crimes. Three types of crimes, violent, property and vandalism, are investigated in the analysis that follows to see if residential lending has effects on crimes other than violent ones. Third, rather than using a combined measure of lending, the current research will use both a combined measure of lending and disaggregated measures of mortgage, refinancing, and home improvement loans.

DATA

The data for the analyses was collected from five sources. The data that was used in the construction of the crime variables was provided by the Norfolk and Virginia

Beach Police Departments. The data from the police departments was comprised of crimes known to the police and the location where the crime occurred at the block level. The crime data utilized in this research was for the years of 2008, 2010, and 2012.

The second source of data was the mortgage data available through the Home Mortgage Disclosure Act. This act became permanent in 1988 and requires most U.S. financial institutions to gather and publically disclose information regarding home loan applications in urban areas. Financial institutions that are required to report include banks, credit unions, and savings institutions that have total assets more than $39 million, and for-profit mortgage lenders who have assets greater than $10 million (Federal Financial Institutions Examination Council 2010; Squires and Kubrin 2006; Squires and O'Connor 2001). The Federal Financial Institutions Examination Council produces annual reports from the reporting institutions that are organized by the census tract location of the property the loan is for.

Presently, data as recent as 2011 are obtainable online at the Federal Financial Institutions Examination Council (FFIEC) website. The reports for the 2007, 2009, 2010, and 2011 loans purchased by census tract were used for data collection. Although this data has been widely used for analysis of the discriminatory practice of redlining, there is concern over the lack of information that is provided. More specifically, information regarding the borrower's credit record is not included, which has resulted in concern for conclusions that can be drawn about racial discrimination in lending practices (Benston 1997; Squires and O'Connor 2001). This study however looked at neighborhood level differences in lending, not individual differences. Due to the aggregate focus on neighborhoods the data was well suited for the purposes of this study.

The third source of data is the *Polk City Directories* for the cities of Norfolk and Virginia Beach in 2007, 2009, and 2011. The *Polk City Directories* are produced by the Polk Company, which uses local phonebooks to create comprehensive reports of businesses and residents each year for over 1,000 cities across the United States. This source was used to collect the names and addresses of banks in Norfolk and Virginia Beach. It is possible that not every bank that was present in Norfolk and Virginia Beach in 2007, 2009, and 2011 was listed in the directories. However, in order to conduct business they need to be found, so it is probable that most banks are in the directory and thus their use should not cause serious bias in the data.

The final source of data was from the 2000 Census. Data from this resource was used to create several control variables included in the analyses.

Following the existing literature on the investment of financial institutions the unit of analysis for this research was census tracts (see Peterson and Krivo 2009a, 2009b; Squires and O'Connor 2001; Vélez 2009; Vélez and Richardson 2012; Vélez et al. 2012). Bursik and Grasmick (1993) and many other researchers have highlighted the difficulty of defining and designating neighborhoods. Specifically, census designations are sometimes viewed as problematic because natural and artificial barriers, such as rivers and major roads, influence them. Using census tracts, it is possible that the designations are not meaningful within the city and community. Recently, however, Hipp (2013) has suggested the use of census tracts as representations for neighborhoods was beneficial because they have been used frequently in research, and because when the Census Bureau initially developed designations they were thought to be homogeneous neighborhoods.

Though there are smaller census designations, census tracts are utilized because the mortgage data being used was organized by the 2000 tract designations.

The city of Norfolk contains 84 census tracts and Virginia Beach contains 87. Following previous research by Vélez (2009) and Vélez and Richardson (2012), the sample used for this study was limited to census tracts that had at least a population of 100 people. Other tracts were excluded from the analysis because they included military bases or were tourist areas. These tracts were excluded because they had fluid populations that change often and include nonresidents. In Norfolk, this resulted in the exclusion of three census tracts, two for having a navy base, and one for having a population less than 100. In Virginia Beach this resulted in the exclusion of four census tracts, one for the naval air station, and three for being high tourist areas. The three census tracts excluded from Virginia Beach for tourism have lots of people but most of them are not residents. In 2008, Virginia Beach had nearly 2.5 million visitors who stayed overnight, ranging from 120,000 visitors a month in the off-season, to 357,000 in the peak months (Yochum and Agarwal 2009). This large, but temporary population results in extremely high rates of crime, and was excluded for that reason.

Accounting for these exceptions, the analyses included 81 tracts in Norfolk with a minimum population of 350, a max of 7,502, and an average population of 2,602, and 83 tracts in Virginia Beach with a minimum population of 1,055, a maximum of 9,527, and an average population of 4,821.

DEPENDENT AND INDEPENDENT VARIABLES

The occurrence of vandalism and composite measures for violent and property crimes served as the primary dependent variables. The first variable was the number of

acts of vandalism for 2008, 2010, and 2012. The composite measures for *violent crime* and *property crime* used were conceptualized by prior research, specifically, Vélez et al. (2012) and Slocum et al. (2013), respectively. The measure of *violent crime* included the number of homicides, rapes, robberies, and aggravated assaults for 2008, 2010, and 2012. The measure of *property crime* was composed of the count of burglaries, larcenies, and motor vehicle thefts for the years of 2008, 2010, and 2012. They were geocoded using the block addresses for the general location of each crime event and then aggregated to the census tract level.

The primary independent variables for the study were residential lending variables that were measured by total dollar amount in thousands of home mortgages originated in each census tract, as several researchers have before (Peterson and Kivro 2009a; 2009b; Saporu et al. 2011). In order to build upon the existing work, the composite measure of *total loan dollars* was then disaggregated, which is something that previous research has not been able to do. Vélez and Richardson (2012) suggest in a footnote that these different types of loans could have different effects on neighborhoods and their levels of crime. Therefore *FHA/VA home loan dollars*, which included loans insured by various agencies of the federal government, *conventional home loan dollars*, *refinancing loan dollars,* and *home improvement loan dollars* were included. The lending variables were also used as dependent variables in the testing of three of the hypotheses listed above.

The presence of institutions was examined at the census tract level, by using the addresses of banks from the *Polk City Directories.* The inclusion of banks in census tracts allows for examination into the role of institutional presence of financial organizations. The addresses of banks were geocoded and aggregated to the census tract

level to create the independent variable of *number of banks*. The *dichotomy of local banks* was determined by online searches to see where the bank's headquarters was located and a dummy variable was created. Banks that had their headquarters in Norfolk or Virginia Beach were considered to have local ownership. Bank locations were geocoded using the census Tiger Line file street map, and then aggregated to the census tract level in the Arc GIS statistical program.

CONTROL VARIABLES

The control variables for the analyses were collected from the 2000 Census. Following the previous literature, two indexes were created to measure *concentrated disadvantage* and *residential instability*. Taken from Peterson, Krivo and Harris, the measure of *concentrated disadvantage* included (1) the percent of the tract that were in poverty, (2) percentage of single headed households, (3) the percent of the population 16 and older that were unemployed, and (4) percent of the population 16 and older that were employed in professional or managerial occupations (reverse coded) (2000:41). To control for racial heterogeneity, the plan was to measure the *percent black* of the tract. However, there was substantial multicollinearity between the *percent black* of the tract and *concentrated disadvantage*. As a result the *percent black* of the tract was included in the scale for *concentrated disadvantage*. *Concentrated Disadvantage* had a Crohnbach's alpha of 0.81. The measure of *residential instability* was taken from Peterson and Krivo (2009a; 2009b), who created a scale that included the percent of residents over five years of age that lived somewhere different five years prior, and the percent of renter-occupied dwellings. For the scale of residential instability, the Cronbach's alpha was 0.82. Lastly, *city* was included as a dichotomous variable to examine if there was any difference

between Norfolk and Virginia Beach that was not accounted for by the included neighborhood control variables.

ANALYTIC STRATEGY

Spatial analysis was used to further understand the relationships between the variables. Research conducted by Heitgerd and Bursik (1987) was one of the first to suggest that delinquency in one neighborhood was influenced by levels of delinquency in adjoining neighborhoods. Peterson and Krivo (2009a) described the borders of neighborhoods as permeable, and as being affected by the characteristics and events of nearby communities. In their work they have found considerable support for the importance of studying spatial influences. Additional research has repeatedly found spatial effects on neighborhood levels of crime (see Kubrin and Weitzer 2003; Mears and Bhati 2006; Peterson and Krivo 2009a, 2009b). In addition, Vélez and Richardson (2012) posited that it was likely that mortgage lending also has a spatial effect, as the neighborhood and the neighborhoods that surround it are considered in lending requests. Their work confirmed the notion that finding that mortgage lending was not just beneficial for the neighborhood that received it, but for the surrounding neighborhoods as well.

Following prior literature, to include the impact of nearby tracts the spatial lag for the variables of *total loan dollars,* the disaggregated lending variables, *the number of banks, dichotomy of local banks,* and the crime variables of *vandalism, property crime and violent crime* were constructed by use of the queen criterion for the autocorrelation weighing factor. Anselin (2002) explained queen criterion as the inclusion of neighborhoods that share boundaries and vertices with the neighborhood in question.

This criterion is used to include all neighborhoods that surround a particular neighborhood, as being on the edge of boundaries or vertices may have important characteristics such as major roads or intersections.

Negative binominal regression is commonly used in criminological research when the dependent variable is a count rather than a rate. Poisson-based regression models such as negative binominal regression are better suited for counts of events than linear regression. This is because their assumptions are more closely aligned with the nature of events, such as only including discrete and positive integers (Osgood 2000). Further, negative binomial regression is less restrictive than Poisson regressions, and is able to accurately represent data with high zero counts (Land, McCall, and Nagin 1996). In line with prior literature, and for the reasons outlined above, negative binominal regression is employed as the main method of analysis in examining banks, lending, and crime.

The final stage of analysis tests for the possibility of reciprocal causation, which has been suggested as a possibility by previous research (Vélez 2009; Vélez and Richardson 2012). Through some research in Seattle, Vélez et al. (2012) found that there was no statistically significant relationship between prior levels of neighborhood crime and the amount of mortgage investment received, it is possible that such a relationship does exist. The last stage of analysis used structural equation modeling to test for such a relationship.

CHAPTER V

RESULTS

DATA DESCRIPTION

Table 1 shows the minimum, maximum, mean, and total for all of the variables included in the study for Norfolk and Virginia Beach census tracts included in the analyses. For Norfolk's banking variables, there were a total of 65 banks in the included census tracts in 2009, 51 of the census tracts included did not have a bank, while several tracts had multiple bank locations. Further, 12 census tracts had a locally owned bank within their boundaries. Overall the census tracts included for Norfolk in the analyses received almost 700 million dollars in home loans in 2009. The majority of that residential investment was in the form of refinancing loans, followed by FHA/VA loans. Less than 100 million of the loan dollars received were from conventional and home improvement loans.

For Virginia Beach, there were a total of 103 banks in the census tracts included in the analyses. Forty-two of the Virginia Beach census tracts, which is about half, did not have banks within their boundaries. Further, 20 census tracts have at least one locally owned bank. Overall the census tracts included for Virginia Beach included in the analyses received over 1.9 billion dollars in home loans in 2009. The majority of that residential investment was in the form of refinancing loans, followed by FHA/VA loans. As in Norfolk, the least amount of loan dollars received were from conventional and home improvement loans.

Table 1. Descriptives of Variables for Norfolk Census Tracts

	Norfolk N = 81				Virginia Beach N = 83			
	Minimum	Maximum	Mean	Total	Minimum	Maximum	Mean	Total
Banks 2009	0	17	0.80	65	0	8	1.24	103
Dichotomy of Local Banks 2009	0	1	0.15	12	0	1	0.24	20
Total Loan Dollars	0	33,573,000	8,637,000	699,618,000	0	73,371,000	23,999,000	1,991,982,000
FHA/VA Loan Dollars	0	9,184,000	2,458,000	199,083,000	0	9,771,000	3,847,000	319,330,000
Conventional Loan Dollars	0	5,086,000	645,000	52,219,000	0	9,572,000	1,990,000	165,248,000
Refinancing Loan Dollars	0	21,031,000	5,455,000	441,894,000	0	67,900,000	17,896,000	1,492,848,000
Home Improvement Loan Dollars	0	600,000	79,000	6,422,000	0	965,000	175,000	14,556,000
Violent Crimes 2012	0	51	9.32	755	0	59	9.37	778
Property Crimes 2012	6	396	71.09	5,758	18	509	121.87	10,115
Vandalism Crimes 2012	3	166	42.30	3,426	3	150	41.72	3,463
Concentrated Disadvantage	-1.40	3.55	0.42	-	-1.44	1.59	-0.37	-
Residential Instability	-1.74	2.14	0.17	-	-1.63	2.68	-0.21	-
Population	350	7,502	2,602	210,735	1,055	9,527	4,821	400,174

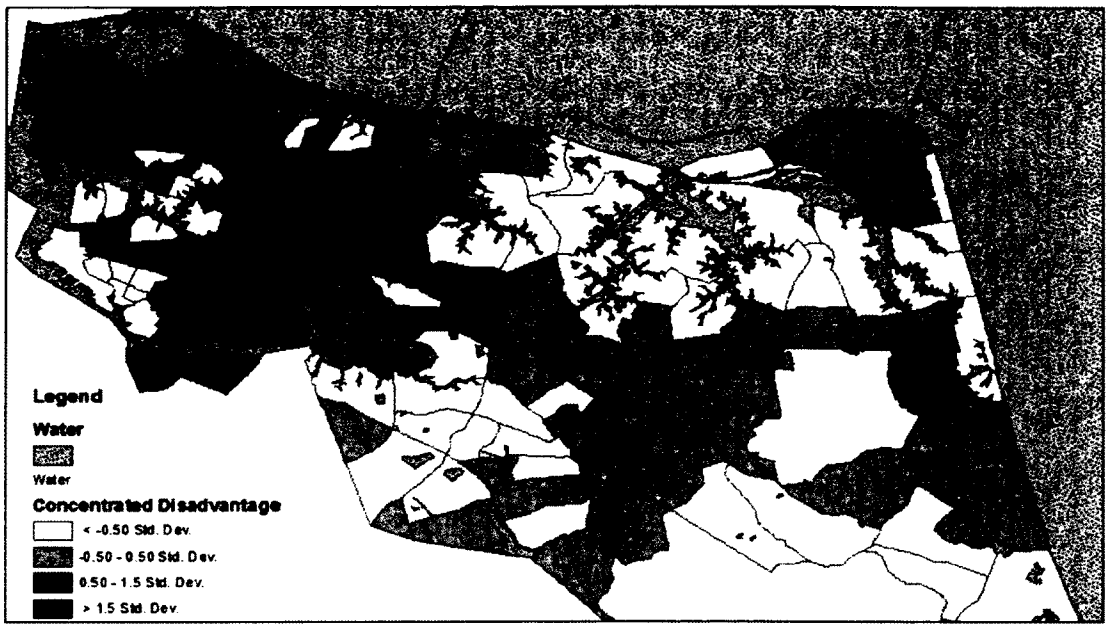
Looking at the crime variables for Norfolk, most census tracts included in the analyses reported violent crimes, and all reported property and vandalism crimes. More specifically, only 10 census tracts did not report a violent crime in 2012, while on average census tracts reported about 9 violent crimes. All census tracts included in the analyses reported property crimes, with the minimum of 6 reported and a maximum of almost 400, showing there was a wide range in the number of property crimes reported to the police. At 71, he average number of property crimes reported was substantially lower than the maximum. Additionally, all census tracts included in the analyses reported acts of vandalism, with the minimum being 3 for a tract and the maximum being one 166. The average was 42 acts of vandalism reported per census tract.

Looking at the crime variables, most census tracts in Virginia Beach included in the analyses reported violent crimes, and all reported property and vandalism crimes. More specifically, only 5 census tracts did not report a violent crime in 2012, while on average census tracts reported about 9 violent crimes, which was similar to Norfolk. All census tracts included in the analyses reported property crimes, with the minimum reported being 18 and the maximum being 509, showing there was a wide range in the number of property crimes reported to the police. The average number of property crimes reported by a census tract was substantially higher than Norfolk's at approximately 122. Additionally, all census tracts included in the analyses reported acts of vandalism, with the minimum being 3 for a tract, which was the same as Norfolk. The maximum number of reported acts of vandalism was 150, which was less than was reported in Norfolk. The average was 42 acts of vandalisms reported per census tract, which was also the same as Norfolk.

The social disorganization variables of concentrated disadvantage and residential instability are scales that range from negative to positive values, with a mean of zero. Negative values on these variables indicate a lack of their presence. Of the tracts included for Norfolk about one-third had negative levels of residential instability, or in other words, were less unstable. While the majority, approximately two-thirds, had positive levels of residential instability or were unstable. For concentrated disadvantage, less than half of the tracts included had negative levels, or were less disadvantaged on the measures included in this scale. The remaining tracts had positive indications of concentrated disadvantage, with the maximum being over 3.5, which would be high levels of concentrated disadvantage. The mean for Norfolk was positive, indicating that on average tracts were disadvantaged.

Of the tracts included for Virginia Beach about two-thirds had negative levels of residential instability, which was the opposite of the findings for Norfolk, indicating that tracts in Virginia Beach tracts were more stable. For concentrated disadvantage, almost 80 percent of the tracts included had negative levels, or were less disadvantaged on the measures included in the scale. The remaining tracts had positive indications of concentrated disadvantage, with the maximum being over just over 1.5, which was substantially lower than Norfolk. The mean was negative, indicating that on average tracts were less disadvantaged. Figure 2 visualizes concentrated disadvantage for the cities of Norfolk and Virginia Beach.

Figure 2. Norfolk and Virginia Beach by Concentrated Disadvantage



As outlined above, the two cities in this research had substantial differences in their lending and social disorganization characteristics. Norfolk's census tracts had high levels of concentrated disadvantage and residential instability compared to Virginia Beach census tracts. Because of these differences, for each analysis the two cities were examined together first, and if the variable for city was significant when added into the final model, then Norfolk and Virginia Beach were analyzed separately.

HYPOTHESIS 1

H1: Neighborhoods that have a bank nearby will receive greater levels of institutional investment

The results shown in Tables 2 and 3, and Appendix Tables 1 through 3, display the findings regarding the first hypothesis that having a bank nearby increases levels of

institutional investment. There are a number of important findings. First, the data do not support this hypothesis and, in fact, the opposite was found. Having a bank in the census tract or nearby decreases the loan dollars received when one of these variables was significant. Second, interestingly for all of the analyses of bank locations and loan dollars, except for FHA/VA loans, there was a significant difference between Norfolk and Virginia Beach. The analyses confirm that Virginia Beach census tracts consistently received more loan dollars than Norfolk. Finally, the variable for residential instability had varying effects, depending on the loan type. For total, refinancing, and home improvement loans, increases in instability were associated with decreases in loan dollars received. However, increases in residential instability were associated with the increases in conventional loan dollars that a census tract received. Overall, the analyses indicate that banks do appear to have some effect on lending, though census tract characteristics appear to be most important, both independently and in terms of shaping the effects of the presence of banks.

Table 2 displays the results from the negative binomial models predicting 2009 total residential lending. In model 1, the main independent variable of the number of banks in each census tract in 2009, and the spatial lag of lending and banks were examined. The analysis shows that the spatial lag of total loans was significant in a positive direction, indicating that census tracts receiving residential loans results in more loans for the tracts surrounding. This is consistent with previous findings indicating that residential loans have benefits beyond their own neighborhood (Peterson and Krivo 2009). The number of banks and spatial lag of banks in 2009 were not statistically significant.

Table 2. H1; 2009 Bank Locations and 2009 Total Loans

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	10.16 (0.19)***	10.02 (0.19)***	10.00 (0.20)***	8.89 (0.38)***	9.18 (0.39)***	10.31 (0.29)***	10.15 (0.28)***
Spatial Lag of Total Loans 2009	-3.49E-005 (6.91E-006) ***	-2.39E-005 (7.44E-006) ***	-1.24E-006 (1.18E-005)	1.16E-005 (1.45E-005)	1.07E-005 (1.43E-005)	-3.41E-005 (2.01E-005)+	-2.87E-005 (1.82E-005)
Number of Banks 2009	0.06 (0.05)	0.03 (0.05)	0.03 (0.05)	0.02 (0.06)	-0.02 (0.06)	0.07 (0.07)	0.04 (0.07)
Spatial Lag of Banks 2009	-0.03 (0.09)	-0.12 (0.09)	-0.12 (0.09)	-0.12 (0.11)	-0.26 (0.11)*	-0.02 (0.12)	-0.03 (0.12)
Disadvantage	-	-0.43 (0.11)***	-0.36 (0.11)***	-	-0.45 (0.12)***	-	-0.09 (0.26)
Instability	-	-0.20 (0.10)+	-0.18 (10)+	-	-0.06 (0.15)	-	-0.34 (0.15)*
City	-	-	-0.72 (0.26)**	-	-	-	

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

The second model included the theoretically relevant variables of concentrated disadvantage and residential instability. In this model it was found that in addition to the spatial lag of total lending that was significant in the first model, concentrated disadvantage ($p < .001$), and residential instability ($p < .10$) were statically significant. The findings indicated each standard deviation increase in concentrated disadvantage resulted in a predicted 35 percent decrease ($e^{-.43} = 0.65$) in residential lending. For residential instability, a one standard deviation increase in instability was associated with a predicted 18 percent decrease ($e^{-.20} = 0.82$) in total residential loans received by a census tract. The third model added in a control for city, which was statistically significant ($p < .01$), signifying that if a census tract was in the city of Norfolk the total loan dollars decreased by a predicted 51 percent ($e^{-.72} = 0.49$).

Since the control for city was significant when looking at the two cities together, the next step is to look at the two cities separately. In the first model for Norfolk total lending, none of the variables were significant. When the social disorganization variables were added in the second model the spatial lag of banks in 2009 became significant ($p < .05$). The results for the spatial lag of banks indicate a predicted decrease in total loans by 23 percent ($e^{-.26} = 0.77$), and for concentrated disadvantage a standard deviation increase was associated with a 36 percent decrease ($e^{-.45} = 0.64$).

In the first Virginia Beach model the spatial lag for lending was significant ($p<.10$). However, it is in a negative direction, indicating that census tracts receiving residential loans resulted in fewer loans for the surrounding tracts. This was the opposite of what the model that included both cities found. In the second model, when the social disorganization variables were included, the spatial lag of total lending was no longer

significant. Residential instability was significant ($p < .05$), indicating that a one standard deviation increase in instability was associated with a predicted reduction in total lending of 29 percent ($e^{-.34} = 0.71$).

The next step in the analysis was to examine the different kinds of loans disaggregated to examine if banks had different effects on each kind. Looking at home purchasing loans acquired through the Veterans Administration and Federal Housing Administration (VA/FHA) the analysis indicated that only the variable concentrated disadvantage was statistically significant. As shown in Appendix Table 1, in the second model, concentrated disadvantaged was associated with a 20 percent decrease ($e^{-.22} = 0.80$) in VA/FHA loan dollars received by a census tract. In the third model, city was controlled for but was not statistically significant, the variable of disadvantage was significant ($p < .10$) and was associated with a decrease of 17 percent ($e^{-.19}=0.83$) in VA/FHA loan dollars received.

The analysis for conventional home loans and bank locations in 2009 is presented in Table 3. The first model for the two cities indicated that only the spatial lag of conventional loans was significant. In the second model, the social disorganization variables were included. The addition of these variables changed the spatial lag of bank locations to be significant ($p < .10$). The results indicated a 14 percent decrease ($e^{-.16} = 0.86$) in conventional loan dollars received if there was a bank in a census tract nearby. Further, the variables for the spatial lag of conventional loans, concentrated disadvantage and instability were significant. The findings indicated that for a standard deviation increase in concentrated disadvantage there was a reduction of 58 percent ($e^{-.88} = 0.42$) of conventional loan dollars received. An increase in residential instability,

however, was associated with an increase of conventional loan dollars of 23 percent ($e^{.21} = 1.23$). The third model included the control for city, which reduced the effect of the spatial lag of lending to non-significant. The remaining variables that were significant in the second model were still significant in the same direction, and the control for city was significant, indicating that Norfolk received 53 percent less ($e^{.75} = 0.47$) in conventional loan dollars.

An examination of Norfolk and Virginia Beach separately indicated that there were significant differences between them. For Norfolk, in the first model none of the variables were significant, then with the addition of the social disorganization variables in the second model, the spatial lag of bank locations, concentrated disadvantage, and instability were statistically significant ($p < .001$). The significant finding of the spatial lag of banks indicated that having a bank in a census tract nearby was associated with a decrease of 39 percent ($e^{-.50} = 0.61$), which was similar to what was found looking at the two cities together.

This change suggests the idea of an interaction effect, which could be driving the results for the two cities combined. Further, a standard deviation increase in concentrated disadvantage suggested a 60 percent decrease ($e^{-.92} = 0.40$) in conventional loan dollars received and an increase of one standard deviation increase in residential instability was associated with a predicted increase of 86 percent ($e^{.62} = 1.86$) of conventional loan dollars. In the Virginia Beach models, the only variable significant in either of the models was concentrated disadvantage, suggesting that an increase of one standard deviation resulted in a predicted 58 percent decrease ($e^{-.88} = 0.42$) in conventional loan dollars received.

Table 3. H1; 2009 Bank Locations and 2009 Conventional Home Loans

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	7.41 (0.15)***	7.48 (0.17)***	7.65 (0.18)***	6.31 (0.25)***	7.01 (0.29)***	7.64 (0.23)***	7.26 (0.23)***
Spatial Lag of Conventional Loans 2009	0.00 (6.52E-005)***	0.00 (7.29E-005)***	-9.94E-005 (9.83E-005)	0.00 (0.00)	-2.64E-005 (0.00)	0.00 (0.00)	0.00 (0.00)
Number of Banks 2009	0.04 (0.04)	-0.01 (0.04)	-0.02 (0.04)	0.00 (0.05)	-0.09 (0.05)	-0.03 (0.06)	-0.08 (0.07)
Spatial Lag of Banks 2009	0.08 (0.08)	-0.16 (0.08)+	-0.21 (0.08)*	-0.14 (0.09)	-0.50 (0.11)***	0.11 (0.12)	0.08 (0.12)
Disadvantage	-	-0.88 (0.10)***	-0.79 (0.10)***	-	-0.92 (0.11)***	-	-0.88 (0.24)***
Instability	-	0.21 (0.10)*	0.24 (0.10)*	-	0.62 (0.14)***	-	-0.08 (0.15)
City	-	-	-0.75 (0.25)**	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

The analyses for refinancing loans are available in Appendix Table 2. In the first model for the two cities, only the spatial lag for refinancing loans was significant. In the second model, the social disorganization variables were added and were found to be statistically significant. There was a decrease of 37 percent ($e^{-.46} = 0.63$) for each standard deviation increase in concentrated disadvantage and of 24 percent ($e^{-.28} = 0.76$) for a standard deviation increase in instability. The third model includes the control for city, which was significant, suggesting a 56 percent decrease ($e^{-.81} = 0.44$) in refinancing loan dollars received if a census tract was in Norfolk. Further, the inclusion of city changes the spatial lag of banks to significant ($p < .10$), suggesting a 13 percent decrease ($e^{-.14} = 0.87$) in refinancing loans received if there was a bank in a census track nearby.

Looking at Norfolk alone, the first model did not contain any significant variables. In the second model, the spatial lag of banks was significant ($p < .05$), as is concentrated disadvantage ($p < .001$). Having a bank in a nearby census track resulted in a 22 percent decrease ($e^{-.25} = 0.78$) in refinancing loan dollars received, and a decrease of 35 percent ($e^{-.43} = 0.65$) for each standard deviation increase in concentrated disadvantage.

The analyses for Virginia Beach produced different results from Norfolk. In the first model, the spatial lag of refinancing loans was statistically significant ($p < .05$). However, it is in a negative direction, suggesting that if a census tract received home refinancing loans, surround neighborhoods would receive less home refinancing loan dollars. In the second model, the addition of the social disorganization variables slightly reduced the impact of the spatial lag of refinancing loans. However, it was still significant ($p < .10$). Further, residential instability was significant, suggesting that a

standard deviation increase in instability was associated with a 33 percent reduction ($e^{-.40} = 0.67$) in refinancing loan dollars received.

The analyses for home improvement loans and bank locations are in Appendix Table 3. Analyzing the two cities together, the first model had no significant variables. In the second model the social disorganization variables were both statistically significant, and the addition of these changed the spatial lag of home improvement loans to significant. For home improvement loans, a standard deviation increase in concentrated disadvantage suggested a 46 percent decrease ($e^{-.62} = .54$) and a standard deviation increase in residential instability was associated with a 23 percent decrease ($e^{-.27} = 0.77$). The third model added the control for city, and this variable and the same variables from model 2 were significant. The control for city indicated that Norfolk census tracts were associated with a 47 percent decrease ($e^{-.64} = 0.53$) in home improvement loan dollars received.

Looking at the cities separately, there were small differences in the variables that were found to be significant between the two cities and the analyses above. As has been seen previously, in the first Norfolk model none of the variables were statistically significant, but when the theoretically relevant social disorganization variables were included, the spatial lag of bank location became significant at the $p < .001$ level. The results indicated that a 37 percent decrease ($e^{-.46} = 0.63$) in home improvement dollar loans received by census tracts that have a bank in a nearby census tract. Further, an increase of one standard deviation in concentrated disadvantage was associated with a 53 percent decrease ($e^{-.78} = 0.46$) in home improvement loan dollars received. However in the Virginia Beach models, only residential instability was statistically associated with

home improvement lending. In the second model an increase in residential instability suggested a 38 percent decrease ($e^{-.49} = 0.62$) in home improvement loan dollars received.

H1a: Having a locally operated bank nearby will result in greater investment from lending institutions

The analyses shown in Table 4 and Appendix Tables 4 through 7 display the results of the test of hypothesis 1a, and show an interesting pattern of results. Similar to hypothesis 1, this hypothesis was not supported by the findings. The variables for local banks were sometimes found to be significant in the first model. However, when the social disorganization variables were included the effects of the local banks were no longer statistically significant. The findings for the effects of concentrated disadvantage and residential instability were consistent with what was found in the analyses for hypothesis 1. Overall, in terms of lending, whether the bank was locally owned was not found to be important, although census tract characteristics were.

The findings of the negative binomial regressions to analyze total loan dollars as predicted by 2009 local banks are found in Table 4. Looking at the two cities together, the first model included the spatial lag of total loans, the dichotomous variable for local banks and the spatial lag of this variable. As in the models from the first hypothesis, the spatial lag of total loan dollars was significant, indicating that census tracts receiving residential loans affected surrounding tracts' loan acquisition. The second model included the variables of concentrated disadvantage and instability, which were both significant. These findings indicated that a standard deviation increase in disadvantage was associated with a decrease of 34 percent ($e^{-.41} = 0.66$) in total loan dollars received, and a decrease of 19 percent ($e^{-.21} = 0.81$) with an increase in residential instability. The

third model included the control variable for city. It was significant ($p < .01$), indicating that a decrease in total loan dollars if the census tract was in Norfolk, and supporting further analyses.

Looking at model 1 for Norfolk, none of the variables were statically significant. The second model included concentrated disadvantage and residential instability. Again increases in disadvantage were associated with decreases in the total loans that a census tract received. The Virginia Beach models followed the same process, and in the first model only the spatial lag for total lending was significant. In Virginia Beach, having a locally operated bank in your census tract did not have a statistically significant impact on total loan dollars. The second model indicated that residential instability was associated with a 28 percent decrease ($e^{-.33} = 0.72$) in total loan dollars received.

As found with VA/FHA in the first hypothesis' analyses, only concentrated disadvantage was statistically significant ($p < .10$) in any of the models. In the second model, Appendix Table 4, concentrated disadvantaged resulted in a predicted 18 percent decrease ($e^{-.20} = 0.82$) in VA/FHA loan dollars received. The third model included the control for city, which was not statistically significant.

Table 4. H1a; Local Banks 2009 and 2009 Total Loans

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	10.13 (0.19)***	9.98 (0.19)***	9.95 (0.20)***	8.71 (0.39)***	8.92 (0.40)***	10.42 (0.27)***	10.21 (0.26)***
Spatial Lag of Total Loans 2009	-3.49E-005 (6.93E-006)***	-2.39E-005 (7.46E-006)***	-1.10E-006 (0.18E-005)	1.19E-005 (1.44E-005)	1.10E-005 (1.44E-005)	-3.66E-005 (2.00E-005)+	-2.99E-005 (1.81E-005)+
Dichotomy of Local Banks 2009	0.26 (0.20)	0.15 (0.20)	0.19 (0.20)	0.38 (0.31)	0.27 (0.33)	0.14 (0.26)	0.07 (0.26)
Spatial Lag of Local Banks 2009	0.01 (0.45)	-0.46 (0.46)	-0.50 (0.46)	0.05 (0.74)	-0.51 (077)	-0.19 (0.37)	-0.18 (0.37)
Disadvantage	-	-0.41 (0.11)***	-0.34 (0.11)***	-	-0.36 (0.12)**	-	-0.12 (0.27)
Instability	-	-0.21 (0.10)*	-0.20 (0.10)*	-	-0.12 (0.15)	-	-0.33 (0.16)*
City	-	-	-0.72 (0.26)**	-	-	-	-

+p <.10. *p <.05. **p <.01. ***p <.001.

The results for conventional home loans, as predicted by 2009 local bank locations, are displayed in Appendix Table 5. In the first model of the two cities together, the spatial lag of conventional home loans and the dichotomy for local banks was significant ($p < .05$). There was a 56 percent increase ($e^{.45} = 1.56$) in conventional loan dollars received if a census tract had a locally operated bank in its boundaries. The second model included concentrated disadvantage and residential instability, which reduced the effect of local banks to no longer be significant. In line with the findings of the first hypothesis regarding conventional home loans, an increase in concentrated disadvantage was associated with a decrease in loan dollars received, while increases in instability were associated with increases in loan dollars received. The third model included the control for city, which was significant and negated the effect of the spatial lag of conventional lending. In this model the variables for concentrated disadvantage and residential stability remained significant and in their aforementioned directions.

Looking at Norfolk alone, in the first model having a local bank was statistically ($p < .05$) associated with a doubling ($e^{.71} = 2.04$) in conventional loan dollars received. However, in the second model, when the social disorganization variables were included, this effect was no longer significant, and instead the spatial lag of locally operated banks was significant ($p < .10$). The findings indicated that having a locally operated bank in a census tract nearby was associated with a 69 percent reduction ($e^{-1.17} = 0.31$) in conventional loan dollars received. Further, as discussed above, an increase in concentrated disadvantage was associated with a decrease in loan dollars received, while increases in instability were associated with increases in loan dollars received. In the

analyses for Virginia Beach the variables for local banks were not significant; only the control for concentrated disadvantage.

The results for refinancing loans as predicted by locally owned banks are displayed in Appendix Table 6. Throughout the analyses, none of the locally operated banks variables were significant. The social disorganization variables were statistically significant, and the results were very close to those of hypothesis 1 for refinancing loans.

Appendix Table 7 displays the results for home improvement loans as predicted by locally operated bank locations in 2009. However, these results should be interpreted with caution due to the small amount of home improvement loans received in the time period under examination. In the first model the spatial lag of local banks was significant ($p < .01$), indicating that if there was a locally operated bank in a census tract nearby there was a predicted tripling in the amount of home improvement loan dollars received. In the additional models of the two cities together, the social disorganization variables were included and the locally operated bank variables were no longer significant. The remaining variables aligned with the findings of home improvement loans discussed above.

In the Norfolk specific analyses, in the first model the dichotomous variable for locally operated banks was significant ($p < .10$). In this model, having a locally operated bank in a census tract was associated with an 83 percent increase ($e^{.61} = 1.83$) in home improvement loan dollars received. The inclusion of the social disorganization variables in the second model reduced the effect. However, the spatial lag of locally operated banks became significant ($p < .05$) with their addition. The presence of a locally operated bank in a nearby census tract was associated with a decrease of 94 percent ($e^{-2.75} = 0.06$)

of home improvement loan dollars received. Further, in the second Norfolk model concentrated disadvantage was significant; however residential instability was not. In the Virginia Beach models, none of the locally operated bank variables were statistically significant, and in the second model residential instability was found to be associated with a decrease in refinancing loan dollars.

HYPOTHESIS 2

H2: Having a bank nearby will result in lower levels of neighborhood crime

The results of the analyses testing hypothesis 2 are displayed in Tables 5 through 7. Several different findings come from these analyses. First, this hypothesis was not supported, and in fact, having a bank nearby resulted in an increase in two crime types, violence and vandalism. Second, for the three different types of crime, population was statistically significant across all models, indicating that increases in population were associated with increases in crime. Finally, consistent with previous literature, social disorganization variables were found to be important but varied by crime type. For violent crimes and acts of vandalism, increases in concentrated disadvantage and residential instability were associated with increases in these crimes. For property crimes, only residential instability was significant in the final model, indicating that increases in residential instability were associated with increases in property crime.

Table 5 shows the results of the negative binomial regression analyses for violent crimes in 2012, as predicted by bank locations in 2009. For the analyses of the second hypothesis the first model included the spatial lag of the dependent variable, the number and spatial lag of banks in 2009, and the control for population. In the first model, for the cities together, only population size was statistically significant, which indicated that as

the population increased the number of violent crimes increased as well. In the second model the theoretically relevant social disorganization variables were added, both of which were statistically significant. With the inclusion of disadvantage and instability, the number of banks became significant ($p < .05$), indicating that each additional bank results in a predicted 10 percent ($e^{.10} = 1.10$) increase in the number of violent crimes in the census tract, which was opposite of the hypothesized direction. This model further indicated that a standard deviation increase in disadvantage was associated with a 52 percent ($e^{.42} = 1.52$) increase in violent crimes, and a standard deviation increase in instability was predicted to increase the number of violent crimes by 23 percent ($e^{.21} = 1.23$). The third model included the control variable for city, which was not statistically significant, and did not change the significance of any of the other variables included in the model.

Table 5. H2; 2009 Bank Locations and 2012 Violent Crime

	Both Cities N = 164		
	Model 1	Model 2	Model 3
Intercept	1.29 (0.26)***	1.09 (0.27)***	0.87 (0.34)*
Spatial Lag of Violent Crime 2012	0.02 (0.02)	-0.00 (0.02)	-0.00 (0.02)
Number of Banks 2009	0.05 (0.04)	0.10 (0.04)*	0.10 (0.04)*
Spatial Lag of Banks 2009	0.03 (0.08)	0.07 (0.08)	0.08 (0.09)
Population	0.00 (4.47E-005)***	0.00 (4.49E-005)***	0.00 (5.22E-005)***
Disadvantage	-	0.42 (0.10)***	0.38 (0.11)***
Instability	-	0.21 (0.10)*	0.21 (0.10)*
City	-	-	0.21 (0.21)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

The change in the coefficient for number of banks upon the entry of the social disorganization variables suggested the possibility of a slight suppression effect (Thompson and Levine 1997). Subsequent analyses were conducted to explore this finding. First was the creation of an interaction term between the number of banks and concentrated disadvantage; however, once included in analyses the interaction term was not significant. Second, as suggested by Thompson and Levine, correlations between these variables were examined. However, this was not found to be of concern.

Table 6 displays the analyses of property crime in 2012, as predicted by bank locations in 2009. In the first model for both cities the population was statistically significant, which indicated that as the population increased it was predicted that the

number of property crimes would increase too. Additionally, the spatial lag of bank locations was also significant ($p < .10$), indicating that if a census tract had a bank in a nearby census tract there was an expected 16 percent increase ($e^{.15} = 1.16$) in property crimes. In the second model, the social disorganization variables were included, and contrary to the findings for violent crime, of these only residential instability was statistically significant ($p < .05$). With a standard deviation increase in instability there was a predicted 22 percent increase ($e^{.20} = 1.22$) in property crimes the census tract reported. Further, the inclusion of the theoretical variables reduced the effect of the spatial lag of banks to be non-significant. The third model included the control for city, and, as with violent crimes, there was no statistical difference between the cities.

Table 6. H2; 2009 Bank Locations and 2012 Property Crime

	Both Cities N = 164		
	Model 1	Model 2	Model 3
Intercept	3.53 (0.24)***	3.50 (0.26)***	3.85 (0.40)***
Spatial Lag of Property Crime 2012	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Number of Banks 2009	0.04 (0.04)	0.05 (0.04)	0.05 (0.04)
Spatial Lag of Local Banks 2009	0.15 (0.08)+	0.11 (0.08)	0.10 (0.08)
Population	0.00 (4.44E-005)***	0.00 (4.48E-005)***	0.00 (4.98E-005)***
Disadvantage	-	0.02 (0.10)	0.06 (0.10)
Instability	-	0.20 (0.09)*	0.20 (0.09)*
City	-	-	-0.27 (0.23)

+p <.10. *p <.05. **p <.01. ***p <.001.

The results for the analyses of vandalism crimes in 2012 as predicted by bank locations in 2009 are presented in Table 7. In the first model for both cities the population was statistically significant, which indicated that as the population increased it was predicted that the number of vandalism crimes would too. In the second model, concentrated disadvantage and residential instability were added, which were both significant. Their inclusion changed the effect of the number of banks to be statistically significant (p < .10), when it was not before. This is evidence of a suppression effect as discussed above. In the second model the addition of a bank in a census tract was

associated with an 8 percent increase ($e^{.08} = 1.08$) in the number of acts of vandalism that census tract has reported. Further, for acts of vandalism, an increase of one standard deviation in concentrated disadvantage ($p < .05$) resulted in a predicted 27 percent increase ($e^{.24} = 1.27$) and an increase in instability ($p < .10$) was associated with a 20 percent increase ($e^{.19} = 1.20$). The third model included the control for city, which was significant ($p < .10$) and indicated a 41 percent increase ($e^{.34} = 1.41$) in reported acts of vandalism if the census tract was in Norfolk.

Table 7. H2; 2009 Bank Locations and 2012 Vandalism Crimes

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	2.02 (0.31)***	2.88 (0.31)***	2.56 (0.36)***	2.46 (0.48)***	2.41 (0.47)***	2.65 (0.47)*	3.04 (0.49)***
Spatial Lag of Vandalism Crimes 2012	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)
Number of Banks 2009	0.05 (0.04)	0.08 (0.04)+	0.07 (0.04)+	0.08 (0.05)	0.10 (0.06)	0.00 (0.06)	0.05 (0.07)
Spatial Lag of Banks 2009	0.06 (0.08)	0.09 (0.08)	0.10 (0.08)	0.09 (0.11)	0.12 (0.12)	0.16 (0.12)	0.10 (0.13)
Population	0.00 (4.21E-005)***	0.00 (4.21E-005)***	0.00 (5.02E-005)***	0.00 (0.00)***	0.00 (0.00)***	0.00 (5.74E-005)***	0.00 (5.96E-005)***
Disadvantage	-	0.24 (0.10)*	0.19 (0.11)+	-	0.15 (0.12)	-	0.45 (0.26)+
Instability	-	0.19 (0.10)+	0.19 (0.09)*	-	0.10 (0.15)	-	0.15 (0.14)
City	-	-	0.34 (0.20)+	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Analyzing the cities separately, slightly different findings were discovered. In the analyses for Norfolk, population was significant in both models. Further, in the second model, once concentrated disadvantage was accounted for, the number of banks was significant ($p < .10$), indicating a 11 percent increase ($e^{.10} = 1.11$) in vandalism crimes with the addition of a bank to the census tract. In the Virginia Beach models, population was significant, and in the second model concentrated disadvantage was significant ($p < .10$), indicating a 58 percent increase ($e^{.45} = 1.58$) in vandalisms with each standard deviation increase in disadvantage.

H2a: Neighborhoods that have locally operated banks nearby will experience lower levels of neighborhood crime

As shown in Table 8 and Appendix Tables 8 and 9, the analyses for the hypothesis predicting that locally owned banks would lower levels of crime indicated that for violent crimes and crimes of vandalism having a locally operated bank was associated with increases in crime. However, locally operated banks were not statistically associated with property crimes. Consistent with the findings in hypothesis 1a, these findings suggested that it did not matter whether the bank was locally owned.

The findings of the negative binomial regression of the relationship between violent crimes in 2012 and locally operated banks are in Table 8. Following the same procedures as above, the first model for the two cities together indicate that only the population was significant. In the second model, the inclusion of concentrated disadvantage and instability were both significant in addition to the population, and the dichotomous variable for local banks was now statistically significant ($p < .05$). Results from the second model indicated that if a census tract had a locally operated bank the

number of violent crimes increased by a predicted 70 percent ($e^{.53} = 1.70$), which was the opposite of what was predicted. The inclusion of the social disorganization variables changed the effect of the number of banks statistically significant when it was not before, which was evidence of a suppression effect. For each standard deviation increase in disadvantage there was a predicted 47 percent ($e^{.39} = 1.47$) increase in violent crimes, and for each increase in instability there was a 28 percent ($e^{.25} = 1.28$) increase. The third model for the two cities together included the control for city, which was not significant.

Table 8. H2a; 2009 Local Banks and 2012 Violent Crime

	Both Cities N = 164		
	Model 1	Model 2	Model 3
Intercept	1.31 (0.25)***	1.16 (0.26)***	0.96 (0.34)***
Spatial Lag of Violent Crime 2013	0.02 (0.02)	0.00 (0.02)	0.00 (0.02)
Dichotomy of Local Banks 2009	0.24 (0.21)	0.53 (0.22)*	0.50 (0.22)*
Spatial Lag of Local Banks 2009	0.04 (0.22)	0.01 (0.24)	0.05 (0.25)
Population	0.00 (4.54E-005)***	0.00 (4.51E-005)***	0.00 (5.31E-005)***
Disadvantage	-	0.39 (0.11)***	0.36 (0.11)***
Instability	-	0.25 (0.10)*	0.25 (0.10)*
City	-	-	0.18 (0.21)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

The results from the negative binomial regression analyses for 2012 property crimes as predicted by the presence of local banks in 2009 are presented in Appendix Table 8. In the first model, as in several of the other analyses, only the control for population was statistically significant. When the social disorganization variables were included, only residential instability was significant, as found in the second hypothesis of property crime and banks. The third model included the control for city, which was not statistically significant.

The results from the negative binomial regression analyses for 2012 vandalism crimes as predicted by the presence of local banks in 2009 are presented in Appendix Table 9. In the first model only the control for population was statistically significant. In the second model the findings indicated that having a locally operated bank in a census tract was associated with a 44 percent increase ($e^{.36} = 1.44$) in vandalism crimes. Further, this model suggested that a standard deviation increase in concentrated disadvantage or in residential instability were both associated with a 23 percent increase ($e^{.21} = 1.23$) in vandalisms. In the third model the control for city was included, which was not statistically significant.

HYPOTHESES 3 AND 4

H3: Neighborhoods with greater levels of investment will benefit from lower levels of neighborhood crime

H4: Any effect of banks on crime in a neighborhood will be mediated through residential loans

Hypothesis 3 and 4 are presented together in Tables 9 and 10, and Appendix Tables 10 through 25, and are organized by loan type for each of the three crime

dependent variables. The presentation of hypotheses 3 and 4 together is due to the similar and building nature of these two hypotheses. Hypothesis 3 examined the impact of different loan types on violent, property, and vandalism crime. Hypothesis 4 built on hypothesis 3 by including the variables for bank locations to examine the full theoretical model, discussed at the end of chapter 3, for each of the types of lending and crime.

Similar to the steps followed above, for the analysis of the third hypothesis the first model included the spatial lag of the dependent variable, loan amount, and spatial lag of loans in 2009, and the control for population. The second model included the social disorganization variables of concentrated disadvantage and residential instability, and the third model included the control for city. The analysis for the fourth hypothesis followed the same procedure, except that the number of banks and spatial lag of banks in 2009 were included in all three models. As above, when the control for city was statistically significant, further analyses of the two cities separately are presented.

Overall, there was little support for the third and fourth hypotheses. In the first model, loan dollars and the spatial lag were often significant; however, when the social disorganization variables were included in the model they were no longer significant. The exceptions to this were total loan dollars and refinancing loan dollars, both of which were found to have a decreasing effect on violent crimes. However, refinancing loan dollars made up must of the total loan dollars, making it possible that refinancing loans were what was driving the significant findings for total loans.

TOTAL LOANS

The findings for hypothesis 3 for total loan dollars and violent crime supported the hypothesis. The findings for hypothesis 4 indicated that total loan dollars and banks

were both significantly related to violent crime; however, the hypothesis was not supported. The findings of hypotheses 3 and 4 for property crimes and acts of vandalism were not supported for total loan dollars. For hypothesis 3, focusing on property and vandalism crime, total loan dollars were not significant in the final models where social disorganization variables were controlled. As was shown in hypothesis 2, bank locations were not significantly related to reports of property crime. In the analyses for hypothesis 4, for acts of vandalism, total loan dollars did not mediate the effect of banks on neighborhood levels of crime.

The results from the analyses for violent crime and total loan dollars are in Table 9. In the first model for hypothesis 3, the variables for total loan dollars and population were statistically significant. The negative coefficient for total loan dollars indicated a decrease in violent crime with the addition of loan dollars; however, the metric used was too small to determine the size of this effect. The second model included the social disorganization variables, both concentrated disadvantage ($p < .05$) and instability ($p < .10$) were significant. The addition of these variables reduced the statistical significance of total loan dollars, but it was still significant at the ($p < .10$) level. The third model included the control for city, which was not significant.

The second half of Table 9 presents the findings for hypothesis 4. In the first model, again total loan dollars and population were the only significant variables. These findings, as above, indicate that increases in total loan dollars were associated with decreases in violent crime, and that increases in population were associated with increases in violent crime. The addition of the social disorganization variables reduced the effect of total loan dollars to no longer be statistically significant, even though only

concentrated disadvantage was significant. However, their addition also changed the significance for the number of banks, which was non-significant in the first model, but was significant at the ($p < .05$) level in the second model. This finding suggested a slight suppression effect and indicated that with the addition of each bank in a census tract there was an associated 10 percent increase ($e^{.10} = 1.10$) in violent crimes. Again the third model includes the control for city, which was not statistically significant.

Table 9. H3 and H4; Violent Crimes 2012, Total Loan Dollars and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	1.30 (0.32)***	1.27 (0.33)***	1.16 (0.34)***	1.17 (0.34)***	1.10 (0.34)***	1.00 (0.36)**
Spatial Lag of Violent Crime	0.01 (0.02)	0.00 (0.02)	0.00 (0.02)	0.01 (0.02)	-0.01 (0.02)	-0.00 (0.02)
Banks 2009	-	-	-	0.06 (0.04)	0.10 (0.04)*	0.10 (0.04)*
Spatial Lag of Banks 2009	-	-	-	0.06 (0.08)	0.08 (0.09)	0.08 (0.09)
Total Loan Dollars	-4.51E-005 (9.78E-006)***	-2.24E-005 (1.28E-005)+	-2.18E-005 (1.28E-005)+	-4.65E-005 (9.78E-006)***	-2.04E-005 (1.30E-005)	-1.98E-005 (1.30E-005)
Spatial Lag of Total Loans	2.31E-007 (9.23E-006)	-1.17E-009 (9.25E-006)	-9.88-006 (1.18E-005)	4.40E-007 (9.32E-006)	-8.22E-007 (9.17E-006)	-8.33E-006 (1.16E-005)
Population	0.00 (6.74E-005)***	0.00 (7.29E-005)***	0.00 (7.49E-005)***	0.00 (6.72E-005)***	0.00 (7.24E-005)***	0.00 (7.45E-005)***
Disadvantage	-	0.23 (0.11)*	0.21 (0.11)+	-	0.34 (0.12)**	0.31 (0.12)**
Instability	-	0.19 (0.10)+	0.19 (0.10)+	-	0.15 (0.11)	0.16 (0.11)
City	-	-	0.35 (0.28)	-	-	0.28 (0.28)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

The findings for property crime and total loan dollars are presented in Appendix Table 10. In the first model of hypothesis 3 only total loan dollars and population were significant. Again, the negative coefficient for total loan dollars suggested a decrease in property crime with the addition of loan dollars to a census tract; however the metric used was too small to determine the size of this effect. The second model included disadvantage and instability. Their addition reduced the effect of total loan dollars to no longer be significant, and as seen in previous analyses for property crime, only residential instability was significant. This indicated that standard deviation increases in residential instability in a census tract was associated with 23 percent increases ($e^{.20} = 1.23$) in property crimes. The third model includes the control for city.

Model 1 for hypothesis 4 showed that only the spatial lag of bank location and population was significant. The findings for spatial lag of banks indicated that having a bank in a census tract nearby was associated with an increase of 14 percent ($e^{.13} = 1.14$) in property crimes. The inclusion of concentrated disadvantage and residential instability reduced the effect to non-significance. As observed with the findings of hypothesis 3 for property crimes, only residential instability was significant ($p < .10$), and the inclusion of the control for city in model 3 is not significant.

Appendix Table 11 displays the results for vandalisms and total loan dollars for hypotheses 3 and 4. As discussed above, in the first model, only total loan dollars and population were statistically significant, and the negative coefficient for total loan dollars suggested that a decrease in acts of vandalism with the addition of loan dollars to a census tract; however, the metric used was too small to determine the size of this effect. The inclusion of the social disorganization model reduced this effect, and only residential

instability was significant ($p < .05$). The finding for residential instability indicated an increase of 22 percent ($e^{.20} = 1.22$) with a standard deviation increase. The inclusion of city in the third model was not significant.

In the first model of hypothesis 4 and vandalism crime, only population size was significant. In the second model, concentrated disadvantage is significant ($p < .10$), as is the variable for the number of banks after its inclusion, which suggested a slight suppression effect. This indicated that the addition of a bank in a census tract was associated with an 8 percent increase ($e^{.08} = 1.08$) in acts of vandalisms. In the third model with the inclusion of the control for city, which was not significant.

FHA/VA LOANS

The findings of hypotheses 3 and 4 were not supported for FHA/VA loans. For hypothesis 3, FHA/VA loans were not significantly related to the crime variables in the final models when social disorganization variables were controlled. In the analyses for hypothesis 4, FHA/VA loans did not mediate the effect of banks on neighborhood levels of crime for any of the three crime types examined.

The results of the analysis for hypothesis 3, which examined violent crimes and FHA/VA loans, are presented in Appendix Table 12. In the first model for the two cities combined, only the control for population was significant; indicating that increases in population of a census tract were associated with higher reports of violent crime. Neither of the variables for FHA/VA loans were significant. Meaning that the amount of FHA/VA loans did not affect violent crime when looking at the two cities together. In the second model, the controls for population, concentrated disadvantage, and residential instability were significant. These findings indicated that census tracts that had a

standard deviation increase in concentrated disadvantage had a 40 percent increase ($e^{.34} = 1.40$) in violent crime, and a 30 percent increase ($e^{.26} = 1.30$) in violent crime for a standard deviation increase in residential instability. The third model included the control for city, which was statistically significant.

The second half of Appendix Table 12 shows analysis for the cities separately. In Norfolk model 1, total FHA/VA loan dollars was significant ($p < .05$); however, the magnitude of this association cannot be determined because the metric used was too small to determine the size of this effect. As in all of the other analyses, population was also statistically significant. In the second model, concentrated disadvantage and residential instability were added neither of which are significant; however, their addition reduced the effect of FHA/VA loans to be no longer be significant. In contrast, the first model for Virginia Beach had the spatial lag of FHA/VA loans and population was significant. Similar to the Norfolk analysis, the effect of the spatial lag of FHA/VA was too small to determine the size of the effect. In the second model, the spatial lag of FHA/VA lending was no longer significant. In this model only population and concentrated disadvantage were significant. A one-standard deviation increase in concentrated disadvantage in a census tract in Virginia Beach was associated with twice as many ($e^{.75} = 2.13$) violent crimes. The difference in findings between the two cities was possibly due to an issue of statistical power.

The analyses for hypothesis 4 that examines violent crimes and FHA/VA loan dollars are presented in Appendix Table 13. In the first model the only variable that was statistically significant was the control for the population. In the second model the theoretical variables for concentrated disadvantage and residential instability were

included, both of which were statistically significant. The addition of these variables changed the variable for the number of banks to become significant as well, denoting that the increase of one bank in a census tract was associated with an 11 percent increase ($e^{.10} = 1.11$) in violent crimes. The third model included the control for city, which was not significant.

The findings of the analyses for property crimes and FHA/VA loans for hypotheses 3 and 4 are presented in Appendix Table 14. In the first model for hypothesis 3, the variables for the spatial lag of FHA/VA lending and population were significant. As seen previously, the effect of the spatial lag of FHA/VA lending was too small for the magnitude of this association to be determined. The second model included disadvantage and instability. Of these, only instability was significant, indicating a 28 percent increase ($e^{.25} = 1.28$) in property crimes with a standard deviation increase in instability, which was consistent with previous findings. Their inclusion reduced the effect of the spatial lag of FHA/VA loans to no longer be significant. The third model included the control for city, which was not significant.

The analyses for the fourth hypothesis followed a similar pattern. In the first model the spatial lag for banks and population were significant. Census tracts that had a bank in a census tract near them had an estimated 15 percent increase ($e^{.14} = 1.15$) in property crimes. However, in the second and third models, when concentrated disadvantage and residential instability were included this effect was no longer significant. Only population and residential instability were significant in the second and third models.

The results of the analysis for hypothesis 3, which examined acts of vandalism and FHA/VA loans, are presented in Appendix Table 15. In the analyses for the two cities together, and in the separate analyses, none of the lending variables were significant. The second and third models for the cities together found that residential instability was significantly related to vandalism. In the second model, concentrated disadvantage was significant, but when city was controlled in the third model the effect of this variable was no longer significant, but city was. In the analyses for the two cities separately only the control for population was significant. Again these differences were likely due to issues of statistical power.

The findings for hypothesis 4 for vandalism crime, FHA/VA loans, and bank locations are presented in Appendix Table 16. In the first model for the two cities together only the control for population was significant. The second model included concentrated disadvantage and residential instability, both of which were significant ($p^{\wedge} < .05$). The inclusion of these variables changed the significance of the variable for number of banks ($p < .10$), which was evidence of a suppression effect. This finding indicated that the addition of a bank in a census tract was associated with an 8 percent increase ($e^{.08} = 1.08$) in vandalisms. The third model included the control for city, which was significant ($p < .10$), and reduced the significance of concentrated disadvantage to the ($p < .10$) level.

In the analysis of Norfolk, only population was statistically significant in both models. For the Virginia Beach, in the first model only population was significant. In the second model concentrated disadvantage was also significant ($p < .10$), indicating that a standard deviation increase in concentrated disadvantage in a census tract was

associated with a 57 percent increase ($e^{.45} = 1.57$) in vandalism crimes. It is interesting that the number of banks was significant when the two cities were analyzed together, but not when the cities were examined separately. These differences were due to issues of statistical power when the two cities were split apart.

CONVENTIONAL LOANS

The findings of hypotheses 3 and 4 are not supported for conventional home loan dollars. For hypothesis 3, conventional loan dollars were not significant in the final models when social disorganization variables were controlled. In the analyses for hypothesis 4, conventional loan dollars did not mediate the effect of banks on neighborhood levels of crime.

The findings of the analyses for hypotheses 3 and 4, examining violent crimes and conventional loan dollars, are presented in Appendix Table 17. In the first model, conventional loan dollars, the spatial lag of conventional loan dollars, and population were statistically significant. However, the effect of conventional loans and the spatial lag of these variables were too small to determine the size of the effect. When the social disorganization variables were included the effect of conventional loan dollars was reduced to no longer being significant; the spatial lag of conventional lending however was still significant. As observed in previous analyses, increases in concentrated disadvantage and residential instability were associated with increases in violent crime. The third model included the control for city, which was not statistically significant. However, the inclusion of this variable reduced the effect of the spatial lag of conventional loans to no longer be significant.

The second half of Appendix Table 17 examines hypothesis 4. In the first model, the variables for conventional loan dollars, the spatial lag of conventional loans, and population were significant. In contrast to the findings of hypothesis 3, when the controls for concentrated disadvantage and residential instability were included, the variables related to conventional loans were no longer significant. In the second model, the variables for number of banks, population, concentrated disadvantage and residential instability were significant. The findings for banks revealed an increase of 10 percent ($e^{.09} = 1.10$) with the addition of a bank in a census tract, which was similar to previous findings. As discussed above, banks were only significant when concentrated disadvantage was controlled for in the model, which suggested a suppression effect. When the control for city was included in the third model it was not significant, and there was no change in significant variables.

The results of the analyses for hypotheses 3 and 4 on property crimes and conventional loans are presented in Appendix Table 18. For hypothesis 3, none of the lending variables were significant through the three models. As observed in the prior property crime analyses, only residential instability and population were statistically significant for property crimes. The analyses for hypothesis 4 produced similar results to those of hypothesis 3. In the first model, the spatial lag of banks was significant, indicating a 16 percent increase ($e^{.15} = 1.16$) in property crimes in neighborhoods that had banks in nearby tracts. It was not significant in subsequent models when concentrated disadvantage and residential instability were included. In the second and third models, only the variables for population and residential instability were found to be statistically significant.

Appendix Table 19 displays the results for the analyses of hypotheses 3 and 4, examining the relationship between acts of vandalism and conventional loan dollars. In the first model for hypothesis 3, both the variables for conventional loan dollars and the spatial lag of conventional loan dollars were significant ($p < .05$), in addition to the control for population. The negative coefficient for conventional loan dollars suggested a decrease in acts of vandalism with the addition of loan dollars to a census tract; however, the metric used was too small to determine the size of this effect. As observed above, the effect of the spatial lag of conventional lending was too small to determine the magnitude of the effect. When the variables to control for social disorganization were included, the effect of the lending variables was reduced considerably, conventional loan dollars were no longer significant, and the spatial lag of conventional lending was now significant at the ($p < .10$) level. Of the social disorganization variables, only residential instability was significant. In the third model, the control for city was added to the model, which was not found to be statistically significant. This addition, however, reduced the effect of the spatial lag of conventional loan dollars to no longer be significant, and in the third model only population and residential instability were significant.

Similarly, in the first model for hypothesis 4, both of the lending variables were significant ($p < .05$), as was the control for population. Again, the effects of these variables were too small to determine the size of the relationship. In the second and third models though, the effect of the lending variables were no longer significant when concentrated disadvantage and residential instability were controlled for. In the second and third models, only residential instability and population were found to be significantly related to acts of vandalism.

REFINANCING LOANS

The findings for refinancing loans and violent crime support the third hypothesis. The findings for hypothesis 4 indicated that refinancing home loan dollars and banks were both significantly related to violent crime. However, the hypothesis was not supported that the effect of banks will be mediated by lending. The findings of hypotheses 3 and 4 for property crimes and acts of vandalism were not supported for refinancing loans. For hypothesis 3, focusing on property and vandalism crime, refinancing loan dollars were not statistically significant in the final models where social disorganization variables were controlled. In the analyses for hypothesis 4 for property crimes, neither banks nor refinancing loans were significant. For acts of vandalism, banks were significant but refinancing loan dollars were not and did not mediate the effect of banks.

Table 10 displays the results for the analyses of hypotheses 3 and 4 that were focused on violent crime and refinancing loans. In the first model of hypothesis 3, the variables for refinancing loan dollars and population were both significant at the ($p < .001$) level. The negative coefficient for refinancing loan dollars suggested a decrease in violent crimes with the addition of refinancing loan dollars to a census tract; however, the metric used was too small to determine the size of this effect. When concentrated disadvantage and residential instability were included in the second model, the significance of this effect was reduced but was still significant at the ($p < .10$) level. Additionally, in this model population, concentrated disadvantage and residential instability were significant. The third model included the control for city, which was not significant. The variable for refinancing loan dollars was still significant in this model,

which was one of the two times lending variables that remained significant after controlling for concentrated disadvantage and residential instability.

Table 10. H3 and H4; Violent Crimes 2012, Refinancing Loan Dollars and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	1.24 (0.30***	1.25 (0.31)***	1.09 (0.33)***	1.24 (0.32)***	1.08 (0.32)***	0.95 (0.35)**
Spatial Lag of Violent Crime	0.01 (0.02)	-0.00 (0.02)	-9.89E-005 (0.02)	0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Banks 2009	-	-	-	0.06 (0.04)	0.10 (0.04)*	0.10 (0.04)*
Spatial Lag of Banks 2009	-	-	-	0.05 (0.08)	0.08 (0.09)	0.08 (0.09)
Refinancing Loan Dollars	-4.64E-005 (1.06E-005)***	-2.42E-005 (1.31E-005)+	-2.37E-005 (1.31E-005)+	-4.81E-005 (1.07E-005)***	-2.33E-005 (1.33E-005)+	-2.27E-005 (1.34E-005)+
Spatial Lag of Refinancing Loans	5.48E-007 (1.07E-005)	-7.82E-007 (1.06E-005)	-1.09E-005 (1.27E-005)	8.38E-007 (1.08E-005)	-1.56E-006 (1.05E-005)	-8.97E-006 (1.25E-005)
Population	0.00 (6.39E-005)***	0.00 (6.69E-005)***	0.00 (6.95E-005)***	0.00 (6.40E-005)***	0.00 (6.66E-005)***	0.00 (6.94E-005)***
Disadvantage	-	0.25 (0.10)*	0.22 (0.11)*	-	0.36 (0.11)**	0.33 (0.12)**
Instability	-	0.19 (0.10)+	0.20 (0.10)*	-	0.15 (0.10)	0.16 (0.11)
City	-	-	0.34 (0.26)	-	-	0.26 (0.26)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

In the analyses for the fourth hypothesis, the variable for refinancing loan dollars remained statistically significant. In the first model, population was significant and the coefficient for refinancing loans was negative and significant. In the second model, concentrated disadvantage and residential instability were included. In this model, refinancing loans, the number of banks, population, and concentrated disadvantage were significant. The negative and significant coefficient for refinancing loans indicated a decrease in violent crimes; however, the positive and significant coefficient for banks indicated an increase in violent crime. In this model the addition of a bank in a census tract was associated with an increase of 11 percent ($e^{.10} = 1.11$) in violent crimes. This finding is the same as the findings of hypothesis 2 that examined bank locations and violent crime, indicating that the effect of banks on neighborhood violent crime was not mediated by refinancing loan dollars. The third model included the control for city, which was not significant. The variable for refinancing loan dollars was still significant in this model, which was the only time lending variables remained significant after controlling for concentrated disadvantage, residential instability, and bank locations.

The results of the analyses for hypotheses 3 and 4 on property crimes and refinancing loans are presented in Appendix Table 20. For hypothesis 3, only the variable of refinancing loan dollars was significant in the first model. Again, the negative coefficient for refinancing loan dollars indicated a decrease in property crimes with the addition of loan dollars to a census tract; however, the metric used was too small to determine the size of this effect. As observed in the above analyses, only residential instability and population were found to be statistically significant to property crimes. The analyses for hypothesis 4 produced similar results. In the first model, the spatial lag

of banks as significant, indicating a 14 percent increase ($e^{.13} = 1.14$) in property crimes in census tracts that had banks in nearby tracts. The spatial lag of banks was not significant in subsequent models when concentrated disadvantage and residential instability were included. In the second and third models, only the variables for population and residential instability were found to be statistically significant.

Appendix Table 21 displays the results for acts of vandalism and refinancing loan dollars for hypotheses 3 and 4. In the first model the variables for refinancing loan dollars and population were statistically significant. The negative coefficient for refinancing loan dollars suggested a decrease in acts of vandalism with the addition of refinancing loan dollars to a census tract; however, its metric was too small to determine the size of this effect. With the inclusion of the social disorganization models the effect of refinancing loan dollars that the census tract received was no longer statistically significant. As seen in the previous analyses for vandalism, residential instability and population were the only significant variables in the second and third models of the third hypothesis.

Similarly, in the first model for hypothesis 4, both of the variables for refinancing loan dollars was significant, as was the control for population. Again, the effects of these variables were too small to determine the size of the effect; however, a negative direction of the relationship was suggested by the negative coefficient. The effect of refinancing loan dollars was no longer significant when concentrated disadvantage and residential instability were controlled. In the second model the number of banks was significant ($p < .10$), indicating an 8 percent increase ($e^{.08} = 1.08$) in vandalisms with the addition of a bank to a census tract. In contrast to the findings of hypothesis 3, in the second model

for hypothesis 4, concentrated disadvantage was significant ($p < .10$), but residential instability was not. In the third model city was controlled for, which was not significant but reduced the effect of banks and concentrated disadvantage to no longer being significant. In the third model for hypothesis 4, only the control for population was statistically significant.

HOME IMPROVEMENT LOANS

The findings of hypotheses 3 and 4 were not supported for home improvement loans. For hypothesis 3, home improvement loan dollars were not significant in the final models, where social disorganization variables were controlled. In the analyses for hypothesis 4, home improvement loan dollars did not mediate the effect of banks on neighborhood levels of crime.

The results for the analyses of hypotheses 3 and 4 focused on violent crime and home improvement loans are presented in Appendix Table 22. In the first model, the variables for home improvement loan dollars and population were significant. In the second and third models, this effect was no longer significant, and only the controls for concentrated disadvantage, residential instability, and population were significant. Similarly, the analyses for hypothesis 4 indicated that home improvement loan dollars were significant in the first model; however, when concentrated disadvantage and residential instability were accounted for the effect was no longer significant. The inclusion of the social disorganization variables in the second and third models changed the variable for the number of banks to become significant, which was evidence of a suppression effect as discussed above. The addition of a bank in a census tract was associated with an 11 percent increase ($e^{.10} = 1.11$) in violent crimes.

The results of the analyses for hypotheses 3 and 4 on property crimes and home improvement loans are presented in Appendix Table 23. For hypothesis 3, none of the lending variables were significant through the three models. As observed in above analyses only residential instability and population were found to be statistically significant to property crimes. The analyses for hypothesis 4 produced similar results. In the first model, the spatial lag of banks was significant, indicating an 18 percent increase ($e^{.16} = 1.18$) in property crimes in census tracts that had banks in nearby tracts. The spatial lag of banks was not significant in subsequent models when concentrated disadvantage and residential instability were included. In the second and third models, only the variables for population and residential instability were found to be statistically significant.

Appendix Table 24 displays the results for the analyses of hypothesis 3, examining the relationship between acts of vandalism and home improvement loans. As observed in above analyses of acts of vandalism, in the first model the lending variables for home improvement loan dollars and the control for population were significant. The effects of these variables were too small to determine the size of the effect; however, a negative relationship was suggested by the negative coefficient. With the inclusion of the social disorganization variables, the effect of refinancing loan dollars that a census tract received was no longer statistically significant. As seen in the previous analyses for vandalism, residential instability and population were the only significant variables in the second model. In the third model though, when the control for city was included in the analyses it was significant. In the analyses of the two cities separately only the control for population was significant in the models, perhaps due to statistical power.

Appendix Table 25 displays the results for the analyses of hypothesis 4, examining the relationship between acts of vandalism, home improvement loans, and bank locations. As observed above, in the first model for the two cities together, the lending variables for home improvement loan dollars and the control for population were significant. The inclusion of concentrated disadvantage and residential instability, both of which were significant, diminished this effect to no longer be significant; however, their inclusion did change the effect of the number of banks to become significant ($p< .10$), suggestive of a slight suppression effect. When the control for city was included in the third model, the effect of disadvantage was reduced to being non-significant. In the third model the variables for the number of banks, residential instability, population, and city were significant. In the Norfolk specific models, the variables for home improvement loans and population were significant in the first model. However, in the second model only the control for population was significantly related to acts of vandalism. In the Virginia Beach models, population was the only significant variable in the first model, and in the second model concentrated disadvantage was significant at the ($p < .10$) level.

STRUCTURAL EQUATION MODEL TO TEST FOR RECIPROCAL CAUSATION

The final stage of analysis tested for the possibility of reciprocal causation, which had been suggested as a possibility by previous research (Vélez 2009; Vélez and Richardson 2012). Though some research in Seattle, Vélez et al. (2012) found that there was no statistically significant relationship between prior levels of neighborhood crime and the amount of mortgage investment received, it is possible that such a relationship does exist. However, the tests for reciprocal causation were not found to produce

significant results. Similar to the findings of Vélez et al. (2012), there was no evidence that the direction of the crime and lending relationship influenced where residential lending was happening. This indicated that the hypothesized direction of the relationship between lending and crime that guided this research was correct.

Seven structural equation models were conducted to examine this possibility, none of which produced consistent results. In the analyses between the rates of each crime type and banks there were no significant findings between the different variables. There were high stability coefficients between the variables over time, suggesting that rates of crime and number of banks were relatively stable over the time period measured.

The structural equation models for loans and crime rates resulted in more substantial findings. As seen with the negative binomial analyses, property crimes were not significantly related to loan dollars received. However, there were statistically significant findings for the analyses of violent crime and acts of vandalism as related to total loan dollars. Appendix Figure 1 displays the SEM analyses for violent crime rates. Total loan dollars in 2007 had a significant decreasing effect on the violent crime rate in 2010. This effect however was not found for the 2009 total loan dollars and 2012 violent crime rate.

Similarly, Appendix Figure 2 displays the SEM analyses for acts of vandalism. The total loan dollars in 2007 had a decreasing effect on the rate of vandalisms in 2010. Yet, this effect was not found in the subsequent years of analyses. Further, in this model the effect of the vandalism rate in 2008 had a significant and negative effect on total loan dollars in 2009. This effect was not found for the subsequent years included in the analyses. This was the only time that there was any evidence of reciprocal causation, that

crimes were influencing loans and not the other way around. The findings from the structural equation models did not empirically support reciprocal causation, and suggested that the hypothesis that loans influenced crimes was more likely.

EXTENDED ANALYSES

There were several findings in the course of the planned analyses that warranted further investigation. For example, in testing the first hypothesis it was found several times in the Norfolk analyses that when the social disorganization variables were added in the second model the spatial lag of banks in 2009 became significant. A similar finding was discovered in hypothesis 1a, regarding the spatial lag of local banks and the social disorganization variables. The relationships between these variables were examined and the significant findings of refinancing loans were further analyzed.

In the analyses for the first hypothesis the spatial lag for banks was significant and negative for four of the five models in the Norfolk analyses, but only when concentrated disadvantage was controlled. The change in the coefficient for the spatial lag of banks when concentrated disadvantage was controlled for suggested the possibility of a suppression effect (Thompson and Levine 1997). One possible explanation for this may be an interaction effect. The creation of an interaction term between the spatial lag of banks and concentrated disadvantage was statistically significant in all four cases. Additional analyses of the four loan types were conducted and the results are presented in Table 11.

In the analysis of total loan dollars as predicted by bank locations, the spatial lag of banks, and the interaction term between the spatial lag of banks and disadvantage are both significant ($p < .05$). When concentrated disadvantage was at its mean of zero, the

effect of having a bank in a neighborhood nearby was a decrease of 21 percent ($e^{-.24} = 0.79$) in total loan dollars received. The interaction term showed that the effect of the spatial lag of banks varied with levels of concentrated disadvantage. In neighborhoods where there were high levels of concentrated disadvantage, having a bank nearby was associated with decreases in the total loan dollars received. In the analysis of conventional home loan dollars, the spatial lag of banks, concentrated disadvantage, residential instability, and the interaction term were significant ($p < .001$). When concentrated disadvantage was at its mean, the effect of having a bank in a neighborhood nearby was a decrease of 50 percent ($e^{-.70} = 0.50$) in conventional home loan dollars received. The effect of concentrated disadvantage when the spatial lag of banks was zero was a 42 percent decrease ($e^{-.57} = 0.58$) in conventional loans.

As was seen in the original analyses, increases in residential instability were associated with increases in the amount of conventional loans received, specifically a predicted 59 percent increase, which was lower than the original estimate. The interaction term was significant and interpreted the same as above, indicating that having a bank in a census tract nearby negatively impacted the amount of conventional loans received in neighborhoods that were disadvantaged. For refinancing loans the variables for the spatial lag of banks, concentrated disadvantage, and the interaction term were significant. When concentrated disadvantage was at its mean, the effect of having a bank in a neighborhood nearby was a decrease of 20 percent ($e^{-.22} = 0.80$) in refinancing loan dollars received. The effect of concentrated disadvantage when the spatial lag of banks was zero was a 22 percent decrease ($e^{-.25} = 0.78$) in refinancing loans received. Again,

the interaction indicated that having a bank in a census tract nearby negatively impacted the amount of refinancing loans received in disadvantaged neighborhoods.

Finally, for home improvement loans the variables for the spatial lag of banks, concentrated disadvantage, and the interaction term were significant. When concentrated disadvantage was at its mean, the effect of having a bank in a neighborhood nearby was a decrease of 41 percent ($e^{-.53} = 0.59$) in home improvement loan dollars received. The effect of concentrated disadvantage when the spatial lag of banks was zero is a 30 percent decrease ($e^{-.36} = 0.70$) in home improvement loans received. Again, the interaction indicated that having a bank in a census tract nearby negatively impacted the amount of home improvement loans received in disadvantaged neighborhoods.

Table 11. H1; Extended Analyses: Residential Loans 2009, Banks 2009 and Interaction Term

	Norfolk N = 81			
	Total Loan Dollars	Conventional Loan Dollars	Refinancing Loan Dollars	Home Improvement Loan Dollars
Intercept	9.02 (0.38)***	6.96 (0.28)***	8.72 (0.32)***	4.32 (0.34)***
Spatial Lag of Loan Type	1.44E-005 (1.41E-005)	1.34E-005 (0.00)	8.88E-005 (1.44E-005)	0.00 (0.00)+
Number of Banks 2009	-0.00 (0.06)	-0.06 (0.05)	0.01 (0.06)	0.14 (0.11)
Spatial Lag of Banks 2009	-0.24 (0.12)*	-0.67 (0.14)***	-0.22 (0.12)+	-0.53 (0.15)**
Disadvantage	-0.24 (0.15)	-0.54 (0.15)***	-0.25 (0.15)+	-0.36 (0.18)*
Instability	-0.14 (0.15)	0.46 (0.14)***	-0.22 (0.15)	-0.15 (0.20)
Interaction Term	-0.15 (0.07)*	-0.44 (0.12)***	-0.13 (0.07)*	-0.49 (0.13)***

+p < .10. *p < .05. **p < .01. ***p < .001

In the analyses for hypothesis 1a the spatial lag of local banks was significant and negative for conventional and home improvement loans in the Norfolk analyses, but only when concentrated disadvantage was controlled for. The change in the coefficient for the spatial lag of local banks when concentrated disadvantage was controlled for suggested the possibility of a suppression effect (Thompson and Levine 1997). The creation of an interaction term between the spatial lag of banks and concentrated disadvantage was not statistically significant for conventional home loans. The interaction effect was

significant for the analysis of home improvement loans; however, due to the small number of cases the estimates were not reliable.

Only two types of lending were associated with decreases in violent crime, total loans, and refinancing loan dollars. Refinancing loans comprised most of the total loan dollars and thus might well be driving the findings for total loan. In the subsequent analyses the four types of lending were categorized into "investment loans" and "reinvestment loans." The category of investment loans consisted of FHA/VA loans and conventional home loans, as they were used to purchase new homes. Reinvestment loans however were used to improve a current home or home mortgage; therefore this category consisted of refinancing and home improvement loans. The results of these analyses are presented in Table 12.

In the first model for hypothesis 3 both forms of lending were significant, and associated with a decrease in violent crime. The negative coefficient for the lending variables suggested a decrease in violent crimes with the addition of both kinds of loan dollars to a census tract; however, the metric used was too small to determine the size of this effect. In the second model the social disorganization variables were included, which reduced the effect of investment loans to no longer be significant. Reinvestment loans were still significant as was population, concentrated disadvantage, and residential instability. As seen in the other analyses, increases in concentrated disadvantage and residential instability were associated with increases in violent crime. Model 3 included the control for city that was not significant. When both types of loans were included in an analysis of violent crime in 2012, and the social disorganization variables were also

included, the reinvestment loans were found to be significant while the investment loans were not.

In the first model of the analysis for hypothesis 4 both forms of lending were significant and indicated a decrease in neighborhood violent crime. The inclusion of the social disorganization variables changed the variable for the number of banks to become significant, which was evidence of a suppression effect, as discussed before. The inclusion of the variables also changed the effect of investment dollars to no longer be significant. Reinvestment loans were still significant in this model; however, they did not reduce the effect of banks on violent crime. In the third model the control for city was included, which was not significant but changed the significance level of reinvestment loans to no longer be significant. This finding was not believed to be problematic though because reinvestment loans in model 2 were significant at the $p < .10$ level, and the change in the significance level for model 3 was very small.

The extended analyses of investment and reinvestment loans on crime were also conducted for property and vandalism crimes. However, there were no significant findings, as would be predicted by the results of the previous analyses of these two types of crime and the several forms of residential lending.

Table 12. Extended Analyses: Investment and Reinvestment Loans 2009 and Violent Crime 2012

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	1.31 (0.25)***	1.23 (0.25)***	1.04 (0.33)**	1.19 (0.26)***	1.05 (0.27)***	0.88 (0.35)*
Spatial Lag of Violent Crime	0.01 (0.02)	-0.00 (0.02)	0.00 (0.02)	0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Banks 2009	-	-	-	0.06 (0.04)	0.10 (0.04)*	0.10 (0.04)*
Spatial Lag of Banks 2009	-	-	-	0.06 (0.08)	0.08 (0.09)	0.08 (0.09)
Investment Dollars 2009	-5.29E-005 (3.08E-005)+	-5.50E-006 (3.50E-005)	-1.11E-006 (3.52E-005)	-5.42E-005 (3.05E-005)+	2.84E-005 (3.47E-005)	5.77E-005 (3.49E-005)
Reinvestment Dollars 2009	-4.40E-005 (1.04E-005)***	-2.42E-005 (1.28E-005)+	-2.21E-005 (1.30E-005)+	-4.54E-005 (1.05E-005)***	-2.29E-005 (1.30E-005)+	-2.12E-005 (1.32E-005)
Population	0.00 (6.78E-005)***	0.00 (7.30E-005)***	0.00 (7.38E-005)***	0.00 (6.75E-005)***	0.00 (7.20E-005)***	0.00 (7.32E-005)***
Disadvantage	-	0.25 (0.11)*	0.23 (0.11)*	-	0.36 (0.12)**	0.34 (0.12)**
Instability	-	0.19 (0.10)+	0.20 (0.10)+	-	0.15 (0.11)	0.16 (0.11)
City	-	-	0.20 (0.21)	-	-	0.16 (0.21)

+p < .10. *p < .05. **p < .01. ***p < .001

CHAPTER VI

IMPLICATIONS AND CONCLUSION

One of the most recent developments in social disorganization theory has been the examination of the role of institutions and their effects on neighborhoods. This research tested some key ideas in social disorganization theory and contributed to the literature by including banks as a social institution, and examining their role in residential lending. No other research has studied the influence of institutions outside of neighborhoods and their effects on neighborhood crime through residential lending.

The second contribution of this research to this growing body of knowledge is that, rather than using only an aggregated measure of lending, the current research used both aggregated and disaggregated measures of mortgage, refinancing, and home improvement lending. This is an important contribution because it was previously unknown if different kinds of residential lending had different effects on neighborhood crime.

The third contribution is the inclusion of property crimes and acts of vandalism to the analyses. Prior research examining residential lending has emphasized homicide and violent crimes. The last contribution to the literature is the use of the cities of Norfolk and Virginia Beach to test the relationship between banks, lending, and crime in two new contexts. Each of these contributions and their findings are summarized below and their implications for future research are discussed.

DO BANKS MATTER?

The main question that has driven this research is, do banks matter? And if they do, what kind of effect do banks have on neighborhood crime? The findings indicated that banks do matter, however in a different way than was hypothesized. It was theorized that banks, either having one in the neighborhood or one nearby, would have a positive effect on neighborhoods and that this effect would work through residential lending. However, the findings indicate a different relationship.

The first research question was, does having a bank in or nearby a neighborhood impact levels of residential lending? In the first hypothesis it was predicted that having a bank in the neighborhood would increase the amount of loan dollars a neighborhood received. Prior research by Ergungor (2010) and Ergungor and Moulton (2011) found that the presence of bank branches was associated with increased access to mortgage loans.

The findings of this research did not support this prediction and at times showed the opposite. When the spatial lag of banks was significant in the analyses it was actually associated with a decrease in loan dollars received. This was found in two of the five analyses when examining the two cities together for conventional and refinancing loans. However, when looking at Norfolk and Virginia Beach separately, the spatial lag of banks was only found to be significant in the Norfolk analyses. The spatial lag for banks was significant and negative for four of the five analyses: total, conventional, refinancing, and home improvement loan dollars in the Norfolk analyses. Importantly, this only occurred when concentrated disadvantage was controlled for.

Further examination indicated that there was an interaction effect between the spatial lag of banks and concentrated disadvantage in Norfolk. The interaction term indicated that having a bank in a census tract nearby negatively impacted the amount of loans received in disadvantaged neighborhoods. This is an important finding because it supported the idea that banks played a role in residential lending, as well as the idea that there were important differences between cities. However, it is important to remember that the amount of loan dollars received was influenced more by the social disorganization variables than by the number of banks in a neighborhood or nearby.

To further understand the role of banks, it was asked if locally owned banks had different effects on residential lending. In hypothesis 1a it was predicted that having a locally owned bank nearby would have a positive effect on residential loan dollars received. The findings, similar to those of hypothesis 1, provided no support for this hypothesis. Having a locally owned bank in a neighborhood was not significantly related to the amount of residential lending received, at least not when looking at the two cities together, or when looking at Virginia Beach alone. For Norfolk, having a locally operated bank nearby, but not within the neighborhood, was found to decrease the amount of conventional and home improvement loan dollars received, but once again only when concentrated disadvantage was controlled for, which was further evidence of an interaction effect. Again, the amount of loan dollars received was influenced more by the social disorganization variables than by having a locally owned bank within a neighborhood or nearby.

To examine the effects of banks on crime in the second hypothesis it was predicted that having a bank in a neighborhood or nearby would result in lower incidents

of crime. The results do not support this hypothesis, and in fact the opposite was found for violent crimes and acts of vandalism. Having a bank in a census tract was found to be associated with an increase in violent crimes; however, this variable was only significant if concentrated disadvantage was included in the model.

Tests for multicollinearity and interaction effects were not significant, which was evidence of a slight suppression between the number of banks and concentrated disadvantage. The exact nature of the relationship of this suppression effect was unclear and awaits future research. Further increases in levels of concentrated disadvantage and residential instability were also associated with increases in violent crime. Lee et al. (2013) have also found the number of banks to be associated with increases in violent crime. These findings, however, were in opposition of prior research that found that having a bank nearby was associated with decreases in crime (Fairchild and Rai 2011; Garmasie and Moskowitz 2004; Slocum et al. 2013).

How banks affect property crimes and acts of vandalisms has not been examined in prior research. The number of banks or having a bank nearby was not associated with any significant change in property crimes reported. Of the social disorganization variables only residential instability was significantly related to property crime. Neighborhoods with higher levels of residential instability reported higher number of property crimes. For acts of vandalism, having a bank within a census tract was associated with an increase in reported acts, as were concentrated disadvantage and residential instability. Further, acts of vandalism were the only crime type for which the control for city was significant. However, when the two cities were examined separately, no variables were significant, perhaps due to the lack of statistical power. The absence of

a relationship between property crimes and banks is worthy of consideration. Although acts of vandalism can be considered a form of property crime it is possible that they have more in common with violent crimes than is usually assumed.

Locally owned banks, which were the focus of hypothesis 2a, were found to have similar effects on neighborhood levels of crime. Locally owned banks were found to be associated with increases in violent crime, and to have no significant effect on property crimes or acts of vandalism when the social disorganization variables are included in the analyses. The effects of the social disorganization variables were consistent with the findings of hypothesis 2. As the analyses of hypothesis 2 and 2a show, the social disorganization variables were more significantly related to all three crime types than the proximity of banks are.

DOES LENDING MATTER?

The second line of questions that guided the research was related to the effects of residential lending. How do banking investments affect neighborhood crime? And, do different forms of residential lending have different effects on neighborhood crime? In the third hypothesis it was predicted that the neighborhoods that received residential loans would benefit from lower instances of crime. Prior literature has consistently found a robust and significant negative relationship between residential lending received by a neighborhood and violent crime rates (Peterson and Kivro 2009a, 2009b; Saporu et al. 2011; Squires and Kubrin 2006; Squires and O'Connor 2001 Vélez 2009; Vélez and Richardson 2012; Vélez, Lyons and Boursaw 2012).

The findings of this research supported prior findings, but also expanded upon them. For total loan dollars and refinancing loan dollars there was a significant ($p < .10$) negative relationship between loan dollars and violent crimes. This indicated that as total or refinancing loan dollars received by a neighborhood increases violent crime decreases. However, the metric used was too small to determine the size of the effect. These findings indicated that it was refinancing loans that were driving the effect of total loan dollars. Since prior research has only used the measure of total loans the distinction between investment and reinvestment was lost. None of the types of residential lending were found to be significantly related to property crimes or acts of vandalism for the cities included in the analyses. As was observed in the prior hypotheses, crime was found to be influenced more by social disorganization variables than by the amount of residential lending a neighborhood received.

Finally, it was asked if the effect of banks on neighborhood crime worked through residential lending. The fourth hypothesis extended the third hypothesis to predict that the effect of banks on crime would work through residential lending, which was a test of the theoretical model proposed in chapter 3. The findings did not support this prediction or the theoretical model. As was found in the analyses for hypothesis 2, the number of banks had a positive or increasing effect on violent crimes and acts of vandalism. The inclusion of the various measures of residential lending did not mediate the effect of banks on these types of crime. Building off of the findings of the third hypothesis, the inclusion of the number of banks changed the effect of total loan dollars to no longer be significantly related to violent crimes. For refinancing loans however, the inclusion of banks did not reduce the negative or decreasing effect of loan dollars. The effect of

refinancing loans on violent crime was the only significant result of residential lending in all of the analyses for the fourth hypothesis. Even with the lending variables included in the analyses the effect that banks had on violent crimes and acts of vandalism were consistent with the findings of hypothesis 2.

Overall, the basic components of social disorganization theory were better at explaining crime in Norfolk and Virginia Beach than residential lending and bank locations were. Concentrated disadvantage and residential instability were consistently and positively related to violent crimes and acts of vandalism. In these analyses, property crimes were not significantly related to many of the variables included except for residential instability. Increased rates of residential instability were consistently associated with higher reports of property crime.

LIMITATIONS AND FUTURE DIRECTIONS

Despite the contributions to the literature there were several limitations to this research. First, despite adding to the literature on banks and their effects on neighborhood crime, the bank location data was restricted to depository banks. Credit unions and mortgage banks were not included in these analyses. The exclusion of other financial institutions could be problematic because over half of the mortgages in the U.S. originate from mortgage banks. As discussed, banks have been associated with encouraging asset accumulation, which is important to acquiring home loans. It is important however, to examine all financial institutions that could assist in this process. Future research should expand on the types of financial institutions included.

A second limitation was found in the measures of banking behavior used. The focus here was on residential lending; however, from history we know that banking practices could have many different impacts. Other behaviors of banks should be examined, such as their contributions to community events or their other banking practices. Examining other banking practices such as their role in the housing market crash, subprime mortgage loans, and relationship to payday lending companies could allow for deeper understanding of why banks have negative effects on neighborhoods.

A third limitation was the use of HDMA data. Prior research on residential lending and crime has utilized HDMA data, and often mentions its shortcomings. One shortfall of the data however is that the data did not contain information on where the loans were acquired from. There was data available that lists by borrower how many loans and how much lending each census tract received. However, for example, there was only one listing for Bank of America and there was no way of knowing if the applicants went to the location in their neighborhood or not. It was assumed that residential lending would be received from nearby bank branches; however, there was no way to test this with the data available.

In addition to the concern of not knowing what location an applicant applied for a loan, there was the growth of online banking. It is possible that many of the home loans applied for were completed at least partly online. The expansion of online mortgage lenders and banking could also have an effect on bank branches. It is possible that bank branches are becoming less important to accommodating customers banking needs. In order to overcome these limitations, primary data would need to be collected possibly by surveying homeowners on their banking practices and decisions regarding their mortgage

and other lending needs. While this data may be difficult to collect due to its sensitive nature, it would allow for a better understanding of the relationship between banks and residential lending.

The fact that significant findings for refinancing loans could be artifacts of several contextual elements was another possible limitation. Refinancing loans comprised a majority of the residential loans received by Norfolk and Virginia Beach census tracts. It is possible that the utter amount was what drove these findings to be significant compared to the home purchasing loans. If this were to be true, it would mean that what kind of loan it is does not matter, that different loans do not have different effects; it is just important that money is coming into the neighborhood. Related to this was the time period under examination in this research. The data used for this research was from a period just following historic changes in the housing and mortgage markets. It is possible then that the findings were due to the specific time period that was examined. This could explain why refinancing loans comprised such a large amount of total loan dollars received. During the period under study many people across the country stood to lose money by selling their houses and thus refinanced instead. Their choice to "reinvest in the neighborhood" could possibly have nothing to do with the neighborhood, but have more to do with the recovering housing market and the potential for economic loss. However, residential lending needs to be examined by the type of lending neighborhoods are receiving. If findings for other cities are consistent with those found here it is possible that the significant findings of community investment could actually be findings of community reinvestment. Findings here suggest that if research continues to be done examining the lending types only as a combined measure the truth will remain unknown.

Another limitation of this research was that it is focused on only two mid-sized east coast cities. Further, using the dichotomous variable of city as an indicator to conduct separate analyses was problematic. When this variable was significant it was an indication of differences in the intercept between the two cities rather than differences in the relationships between the dependent and independent variables. However, there is little theoretical reason available to support examining city differences. The findings of this research though, such as the interaction and suppression effects, suggested that city differences are important. The prior research has focused on large cities such as Chicago, Seattle, and cities with populations over 300,000 (Peterson and Kivro 2009a, 2009b; Saporu et al. 2011; Squires and Kubrin 2006; Squires and O'Connor 2001 Vélez 2009; Vélez and Richardson 2012; Vélez, Lyons and Boursaw 2012). The census tracts in these large cities received substantially more residential lending than Norfolk and Virginia Beach did, which could be part of the reason more substantial results have been found. However, there are relatively few cities that are similar to Chicago and Seattle, and research needs to continue in new cities to see if the findings are still applicable to new contexts. Additionally, there is a need for theoretical development about differences between cities that are not captured by social disorganization variables.

Finally, typically the measure of residential instability has been measured and interpreted the same way for decades. Residential instability is measured as the percent of people over the age of five who lived somewhere differently five years ago, and by the percent of people who rent their home. Other measures are sometimes included, but these are the core components, based on the work of Shaw and McKay. Residential instability is usually interpreted to have a negative impact on neighborhood social

cohesion. Many of the findings discussed in this research follow these general guidelines, and indicated that residential stability had adverse effects on residential lending and neighborhood crime.

There was one exception however, the findings of hypothesis 1. For conventional home loans, increases in residential instability were associated with increases in loan dollars received. This makes sense. In order for mortgages to be needed, for homes to be bought, there needs to be some level of residential instability. Seeing this and thinking it through opens up the thought that it is possible that residential instability as traditionally measured is not always an indicator of disorganization. For example, new developments where homes are being built would increase the number of new residents but that would not necessarily be evidence of disorganization. Conversely, today, in areas with lots of students or military, the renting of homes does not necessarily equate to an unstable or undesirable neighborhood. The original conceptualization of residential stability is still meaningful; however, as the world becomes increasingly mobile this concept maybe in need of reconceptualization.

Despite these limitations this research makes several contributions to the growing body of knowledge of social institutions and residential lending. To answer the main question that drove this research, banks do matter. However, they do not matter in the ways predicted, since in the cities examined having them nearby had adverse effects on residential lending and neighborhood crime. Further research is needed to understand why banks have these effects. Additionally research needs to continue to examine different types of residential lending, as these results could have important policy applications.

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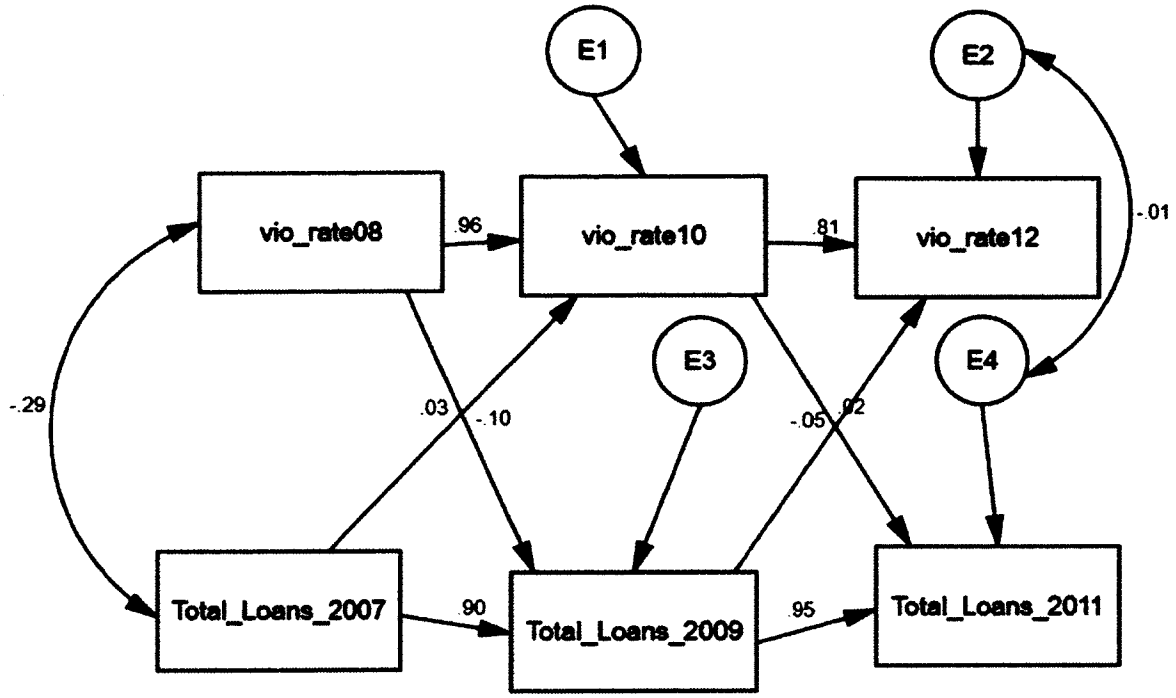
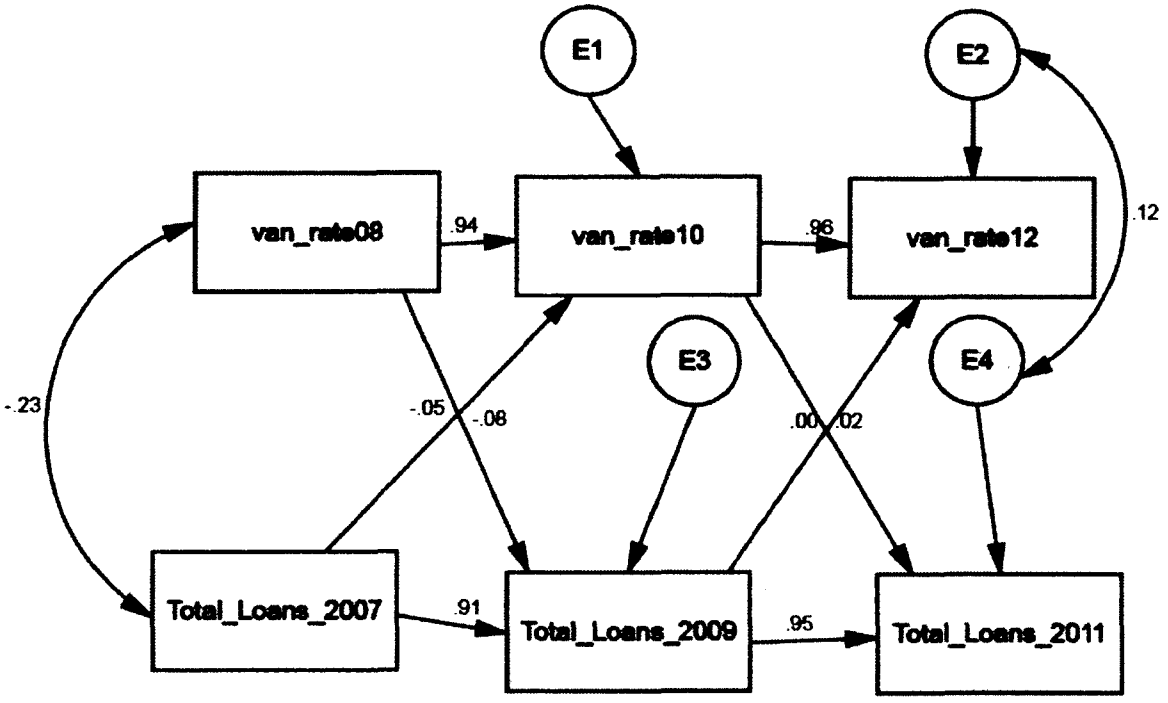
APPENDIX A

FIGURES

Appendix Figure 1. Structural Equation Model for Violent Crime and Total Loan Dollars



Appendix Figure 2. Structural Equation Model for Acts of Vandalism and Total Loan Dollars



APPENDIX B

TABLES

Appendix Table 1. H1; 2009 Bank Locations and 2009 VA/FHA Home Loans

	Both Cities N = 164		
	Model 1	Model 2	Model 3
Intercept	8.20 (0.24)***	8.25 (0.25)***	8.21 (0.25)***
Spatial Lag of FHA Loans 2009	-6.51E-005 (6.20E-005)	-6.89E-005 (6.26E-005)	2.33E-006 (7.77E-005)
Number of Banks 2009	0.04 (0.05)	0.02 (0.05)	0.02 (0.04)
Spatial Lag of Banks 2009	0.01 (0.09)	-0.03 (0.09)	-0.05 (0.09)
Disadvantage	-	-0.22 (0.11)*	-0.19 (0.10)+
Instability	-	-0.13 (0.10)	-0.10 (0.10)
City	-	-	-0.33 (0.21)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 2. H1; 2009 Bank Locations and 2009 Refinancing Loans

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	9.74 (0.17)***	9.63 (0.18)***	9.69 (0.18)***	8.62 (0.31)***	8.85 (0.33)***	10.01 (0.25)***	9.83 (0.25)***
Spatial Lag of Refinancing Loans 2009	-4.37E-005 (7.52E-006)***	-3.10E-005 (8.18E-006)***	-4.53E-006 (1.24E-005)	6.30E-006 (1.45E-005)	5.76E-006 (1.45E-005)	-5.09E-005 (2.25E-005)*	-3.99E-005 (2.07E-005)+
Number of Banks 2009	0.08 (0.05)	0.04 (0.05)	0.04 (0.05)	0.02 (0.06)	-0.01 (0.06)	0.08 (0.07)	0.06 (0.07)
Spatial Lag of Banks 2009	-0.04 (0.09)	-0.13 (0.09)	-0.14 (0.08)+	-0.14 (0.11)	-0.25 (0.12)*	-0.04 (0.12)	-0.07 (0.12)
Disadvantage	-	-0.46 (0.11)***	-0.36 (0.11)***	-	-0.43 (0.12)***	-	-0.08 (0.28)
Instability	-	-0.28 (0.11)**	-0.26 (0.10)*	-	-0.15 (0.15)	-	-0.40 (0.16)*
City	-	-	-0.81 (0.24)***	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 3. H1; 2009 Bank Locations and 2009 Home Improvement Loans

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	4.73 (0.19)***	4.34 (0.21)***	4.57 (0.22)***	4.04 (0.28)***	4.66 (0.35)***	4.67 (0.27)***	4.13 (0.29)***
Spatial Lag of Home Improvement Loans 2009	0.00 (0.00)	0.00 (0.00)*	0.00 (0.00)***	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.01 (0.00)
Number of Banks 2009	0.04 (0.06)	0.04 (0.06)	0.06 (0.06)	0.12 (0.12)	0.06 (0.11)	0.02 (0.07)	0.04 (0.08)
Spatial Lag of Banks 2009	0.10 (0.09)	-0.03 (0.09)	-0.07 (0.09)	-0.10 (0.10)	-0.46 (0.13)***	0.18 (0.12)	0.17 (0.13)
Disadvantage	-	-0.62 (0.11)***	-0.52 (0.11)***	-	-0.78 (0.13)***	-	-0.30 (0.26)
Instability	-	-0.27 (0.11)**	-0.26 (0.11)**	-	0.21 (0.17)	-	-0.49 (0.16)**
City	-	-	-0.64 (0.19)***	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 4. H1a; 2009 Local Bank and 2009 VA/FHA Home Loans

	Both Cities N = 164		
	Model 1	Model 2	Model 3
Intercept	8.11 (0.24)***	8.17 (0.24)***	8.12 (0.24)***
Spatial Lag of FHA Loans 2009	-5.13E-005 (6.28E-005)	-5.96E-005 (6.32E-005)	1.25E-005 (7.69E-005)
Dichotomy of Local Banks 2009	0.27 (0.20)	0.21 (0.20)	0.23 (0.20)
Spatial Lag of Local Banks 2009	0.22 (0.45)	-0.03 (0.46)	-0.15 (0.47)
Disadvantage	-	-0.20 (0.11)+	-0.17 (0.11)
Instability	-	-0.14 (0.10)	-0.10 (0.10)
City	-	-	-0.33 (0.21)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 5. H1a; 2009 Local Banks and 2009 Conventional Home Loans

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	7.36 (0.15)***	7.34 (0.16)***	7.46 (0.18)***	6.32 (0.28)***	6.87 (0.30)***	7.66 (0.21)***	7.23 (0.22)***
Spatial Lag of Conventional Loans 2009	0.00 (6.87E-005)***	0.00 (7.53E-005)***	0.00 (9.92E-005)	-1.71E-006 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Dichotomy of Local Banks 2009	0.45 (0.20)*	0.24 (0.20)	0.23 (0.20)	0.71 (0.34)*	0.40 (0.34)	0.00 (0.26)	-0.08 (0.27)
Spatial Lag of Local Banks 2009	0.50 (0.42)	-0.43 (0.45)	-0.61 (0.45)	0.07 (0.66)	-1.17 (0.68)+	0.22 (0.35)	0.18 (0.37)
Disadvantage	-	-0.81 (0.09)***	-0.73 (0.10)***	-	-0.75 (0.11)***	-	-0.84 (0.24)***
Instability	-	0.18 (0.10)+	0.20 (0.10)*	-	0.50 (0.14)***	-	-0.08 (0.16)
City	-	-	-0.65 (0.24)**	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 6. H1a; 2009 Local Banks and 2009 Refinancing Loans

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	9.73 (0.17)***	9.62 (0.17)***	9.68 (0.18)***	8.43 (0.32)***	8.61 (0.34)***	10.14 (0.23)***	9.89 (0.23)***
Spatial Lag of Refinancing Loans 2009	-4.43E-005 (7.49E-006)***	-3.15E-005 (8.18E-006)***	-5.00E-006 (1.24E-005)	6.87E-006 (1.44E-005)	6.53E-006 (1.46E-005)	-5.49E-005 (2.12E-005)*	-4.16E-005 (2.05E-005)*
Dichotomy of Local Banks 2009	0.27 (0.20)	0.12 (0.20)	0.17 (0.20)	0.37 (0.31)	0.31 (0.33)	0.14 (0.26)	0.04 (0.27)
Spatial Lag of Local Banks 2009	0.01 (0.45)	-0.60 (0.46)	-0.66 (0.47)	-0.06 (0.77)	-0.57 (0.79)	-0.24 (0.36)	-0.30 (0.36)
Disadvantage	-	-0.45 (0.11)***	-0.35 (0.11)***	-	-0.36 (0.12)***	-	-0.16 (0.28)
Instability	-	-0.29 (0.11)**	-0.28 (0.10)**	-	-0.22 (0.15)	-	-0.39 (0.16)*
City	-	-	-0.82 (0.24)***	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 7. H1a; 2009 Local Banks and 2009 Home Improvement Loans

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	4.51 (0.18)***	4.35 (0.18)***	4.52 (0.19)***	3.76 (0.25)***	4.48 (0.35)***	4.83 (0.25)***	4.36 (0.25)***
Spatial Lag of Home Improvement Loans 2009	0.00 (0.00)	0.00 (0.00)*	0.00 (0.00)***	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.01 (0.00)*
Dichotomy of Local Banks 2009	0.21 (0.20)	0.16 (0.21)	0.26 (0.21)	0.61 (0.31)+	0.39 (0.36)	0.02 (0.26)	0.09 (0.27)
Spatial Lag of Local Banks 2009	1.37 (0.45)**	0.09 (0.49)	-0.12 (0.52)	1.30 (0.90)	-2.75 (1.25)*	0.36 (0.39)	0.20 (0.39)
Disadvantage	-	-0.58 (0.11)***	-0.47 (0.11)***	-	-0.75 (0.17)***	-	-0.29 (0.26)
Instability	-	-0.29 (0.11)**	-0.30 (0.11)**	-	-0.03 (0.18)	-	-0.48 (0.16)**
City	-	-	-0.64 (0.19)***	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 8. H2a; 2009 Local Bank and 2012 Property Crime

	Both Cities N = 164		
	Model 1	Model 2	Model 3
Intercept	3.57 (0.23)***	3.53 (0.26)***	3.89 (0.40)***
Spatial Lag of Property Crime 2012	0.00 (0.01)	0.00 (0.00)	0.00 (0.00)
Dichotomy of Local Banks 2009	0.24 (0.20)	0.31 (0.20)	0.33 (0.21)
Spatial Lag of Local Banks 2009	0.36 (0.22)	0.19 (0.23)	0.18 (0.22)
Population	0.00 (4.57E-005)***	0.00 (4.58E-005)***	0.00 (5.10E-005)***
Disadvantage	-	0.02 (0.10)	0.06 (0.10)
Instability	-	0.21 (0.09)*	0.21 (0.09)*
City	-	-	-0.27 (0.23)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 9. H2a; 2009 Local Bank and 2012 Vandalism Crime

	Both Cities N = 164		
	Model 1	Model 2	Model 3
Intercept	3.03 (0.31)***	2.91 (0.31)***	2.60 (0.36)***
Spatial Lag of Vandalism Crime 2012	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
Dichotomy of Local Banks 2009	0.22 (0.20)	0.36 (0.21)+	0.33 (0.21)
Spatial Lag of Local Banks 2009	0.09 (0.21)	0.07 (0.22)	0.14 (0.23)
Population	0.00 (4.27E-005)***	0.00 (4.24E-005)***	0.00 (5.12E-005)***
Disadvantage	-	0.21 (0.10)*	0.16 (0.10)
Instability	-	0.21 (0.10)*	0.21 (0.10)*
City	-	-	0.33 (0.20)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 10. H3 and H4; Property Crimes 2012, Total Loan Dollars, and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	3.94 (0.33)***	3.91 (0.35)***	4.04 (0.40)***	3.75 (0.34)***	3.76 (0.36)***	3.92 (0.41)***
Spatial Lag of Property Crime	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-5.09E-005 (0.00)	-0.00 (0.00)
Banks 2009	-	-	-	0.04 (0.04)	0.04 (0.04)	0.05 (0.04)
Spatial Lag of Banks 2009	-	-	-	0.13 (0.08)+	0.10 (0.08)	0.10 (0.08)
Total Loan Dollars	-2.10E-005 (9.22E-006)*	-1.21E-005 (1.21E-005)	-1.26E-005 (1.21E-005)	-2.04E-005 (9.29E-006)	-1.07E-005 (1.22E-005)	-1.13E-005 (1.22E-005)
Spatial Lag of Total Loans	-1.17E-005 (8.55E-006)	-1.03E-005 (8.72E-006)	-5.57E-006 (1.14E-005)	-1.02E-005 (8.64E-006)	-9.46E-006 (8.70E-006)	-3.76E-006 (1.13E-005)
Population	0.00 (6.09E-005)***	0.00 (6.75E-005)***	0.00 (6.97E-005)***	0.00 (6.09E-005)***	0.00 (6.76E-005)***	0.00 (6.98E-005)***
Disadvantage	-	-0.05 (0.10)	-0.04 (0.11)	-	-0.00 (0.11)	0.02 (0.11)
Instability	-	0.20 (0.10)*	0.20 (0.10)*	-	0.17 (0.10)+	0.17 (0.10)+
City	-	-	-0.20 (0.29)	-	-	-0.25 (0.29)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 11. H3 and H4; Vandalism Crimes 2012, Total Loan Dollars, and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	2.79 (0.35)***	2.77 (0.36)***	2.67 (0.37)***	2.69 (0.36)***	2.68 (0.36)***	2.57 (0.37)***
Spatial Lag of Vandalism Crime	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	1.97E-006 (0.01)	-0.00 (0.01)	-0.00 (0.01)
Banks 2009	-	-	-	0.06 (0.04)	0.08 (0.04)+	0.07 (0.04)+
Spatial Lag of Banks 2009	-	-	-	0.09 (0.08)	0.10 (0.080	0.10 (0.08)
Total Loan Dollars	-2.61E-005 (9.90E-006)**	-9.53E-006 (1.21E-005)	-9.00E-006 (1.22E-005)	-2.78E-005 (9.11E-006)	-9.01E-006 (1.23E-005)	-8.27E-006 (1.23E-005)
Spatial Lag of Total Loans	7.35E-006 (9.01E-006)	7.99E-006 (9.09E-006)	-1.99E-006 (1.15E-005)	8.72E-006 (9.15E-006)	8.37E-006 (9.08E-006)	-3.74E-007 (1.12E-005)
Population	0.00 (6.28E-005)***	0.00 (6.95E-005)***	0.00 (7.16E-005)***	0.00 (6.29E-005)***	0.00 (6.92E-005)***	0.00 (7.15E-005)***
Disadvantage	-	0.10 (0.10)	0.07 (0.10)	-	0.19 (0.11)+	0.16 (0.11)
Instability	-	0.20 (0.10)*	0.20 (0.10)*	-	0.15 (0.10)	0.16 (0.10)
City	-	-	0.35 (0.26)	-	-	0.32 (0.26)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 12. H3; Violent Crimes 2012, FHA/VA Loan Dollars, and Bank Locations 2009

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Hypothesis 3						
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	1.38 (0.34)***	1.40 (0.36)***	1.20 (0.37)***	1.21 (0.54)*	1.21 (0.53)*	1.79 (0.47)***	1.82 (0.56)***
Spatial Lag of Violent Crime	0.02 (0.02)	-0.00 (0.02)	0.00 (0.02)	0.01 (0.03)	0.01 (0.03)	0.03 (0.02)	-0.01 (0.02)
FHA/VA Loan Dollars	-4.05E-005 (3.91E-005)	2.19E-005 (4.12E-005)	2.93E-005 (4.13E-005)	0.00 (8.59E-005)*	0.00 (0.00)	4.89E-006 (4.42E-005)	1.64E-005 (4.87E-005)
Spatial Lag of FHA/VA Loans	4.95E-006 (6.10E-005)	-3.57E-005 (6.48E-005)	0.00 (7.67E-005)	-9.56E-005 (9.79E-005)	-9.64E-005 (9.81E-005)	0.00 (0.00)*	0.00 (0.00)
Population	0.00 (5.18E-005)***	0.00 (4.81E-005)***	0.00 (5.25E-005)***	0.00 (0.00)***	0.00 (0.00)***	0.00 (5.85E-005)*	0.00 (6.24E-005)**
Disadvantage	-	0.34 (0.10)***	0.29 (0.10)**	-	0.09 (0.12)	-	0.75 (0.29)**
Instability	-	0.26 (0.10)**	0.26 (0.10)**	-	0.06 (0.16)	-	0.17 (0.16)
City	-	-	0.44 (0.24)+	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 13. H4; Violent Crimes 2012, FHA/VA Loan Dollars, and Bank Locations 2009

	Both Cities N = 164		
	Hypothesis 4		
	Model 1	Model 2	Model 3
Intercept	1.24 (0.36)***	1.17 (0.37)**	1.10 (0.38)**
Spatial Lag of Violent Crime	0.02 (0.02)	-0.01 (0.02)	-0.00 (0.02)
Banks 2009	0.05 (0.04)	0.10 (0.04)*	0.10 (0.05)*
Spatial Lag of Banks 2009	0.04 (0.08)	0.07 (0.09)	0.08 (0.09)
FHA/VA Loan Dollars	-4.53E-005 (3.91E-005)	2.11E-005 (4.11E-005)	2.65E-005 (4.12E-005)
Spatial Lag of FHA/VA Loans	1.72E-005 (6.17E-005)	-2.65E-005 (6.45E-005)	-8.59E-005 (7.71E-005)
Population	0.00 (5.26E-005)***	0.00 (4.87E-005)***	0.00 (5.36E-005)***
Disadvantage	-	0.43 (0.11)***	0.39 (0.11)***
Instability	-	0.22 (0.10)*	0.22 (0.10)*
City	-	-	0.36 (0.25)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 14. H3 and H4; Property Crimes 2012, FHA/VA Loan Dollars, and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	4.12 (0.36)***	3.93 (0.37)***	4.06 (0.42)***	3.92 (0.37)***	3.85 (0.38)***	3.95 (0.43)***
Spatial Lag of Property Crime	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-9.49E-005 (0.00)	0.00 (0.00)	-0.00 (0.00)
Banks 2009	-	-	-	0.04 (0.04)	0.05 (0.04)	0.05 (0.04)
Spatial Lag of Banks 2009	-	-	-	0.14 (0.08)+	0.10 (0.08)	0.10 (0.08)
FHA/VA Loan Dollars	1.21E-006 (3.79E-005)	3.55E-005 (4.02E-005)	3.48E-005 (4.02E-005)	-1.96E-006 (3.79E-005)	3.05E-005 (4.00E-005)	2.97E-005 (4.01E-005)
Spatial Lag of FHA/VA Loans	0.00 (6.19E-005)+	9.06E-005 (6.32E-005)	-7.57E-005 (7.33E-005)	-9.03E-005 (6.26E-005)	-8.80E-005 (6.33E-005)	-6.18E-005 (7.37E-005)
Population	0.00 (4.72E-005)***	0.00 (4.65E-005)***	0.00 (5.01E-005)***	0.00 (4.91E-005)***	0.00 (4.75E-005)***	0.00 (5.13E-005)***
Disadvantage	-	-0.01 (0.09)	0.00 (0.09)	-	0.04 (0.10)	0.05 (0.10)
Instability	-	0.25 (0.09)**	0.25 (0.09)**	-	0.21 (0.10)*	0.21 (0.10)*
City	-	-	-0.10 (0.26)	-	-	-0.14 (0.27)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 15. H3; Vandalism Crimes 2012 and FHA/VA Loan Dollars 2009

	Both Cities N = 164			Norfolk N = 81		Virginia Beach	
	Hypothesis 3						
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	3.02 (0.37)***	2.90 (0.39)***	2.73 (0.39)***	2.64 (0.55)***	2.66 (0.55)***	3.42 (0.55)***	3.40 (0.60)***
Spatial Lag of Vandalism Crime	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.00 (0.01)	-0.01 (0.01)
FHA/VA Loan Dollars	-3.17E-005 (3.75E-005)	1.27E-005 (3.97E-005)	2.21E-005 (3.98E-005)	0.00 (8.09E-005)	-6.67E-005 (0.00)	5.79E-006 (4.30E-005)	1.35E-005 (4.65E-005)
Spatial Lag of FHA/VA Loans	2.42E-005 (6.08E-005)	1.39E-005 (6.25E-005)	-5.53E-005 (7.35E-005)	-4.59E-005 (9.35E-005)	-5.16-005 (9.36E-005)	0.00 (0.00)	0.00 (0.00)
Population	0.00 (4.70E-005)***	0.00 (4.55E-005)***	0.00 (4.99E-005)***	0.00 (0.00)***	0.00 (0.00)***	0.00 (5.68E-005)**	0.00 (5.91E-005)***
Disadvantage	-	0.16 (0.09)+	0.11 (0.10)	-	0.00 (0.12)	-	0.41 (0.26)
Instability	-	0.24 (0.09)**	0.24 (0.09)*	-	0.17 (0.15)	-	0.15 (0.15)
City	-	-	0.44 (0.23)+	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 16. H4; Vandalism Crimes 2012, FHA/VA Loan Dollars, and Bank Locations 2009

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Hypothesis 4						
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	2.90 (0.38)***	2.77 (0.39)***	2.61 (0.40)***	2.55 (0.54)***	2.50 (0.55)***	3.16 (0.61)***	3.32 (0.64)***
Spatial Lag of Vandalism Crime	0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)	-0.01 (0.01)
Banks 2009	0.05 (0.04)	0.08 (0.04)+	0.07 (0.04)+	0.08 (0.06)	0.10 (0.06)	0.01 (0.06)	0.05 (0.07)
Spatial Lag of Banks 2009	0.07 (0.08)	0.09 (0.08)	0.10 (0.08)	0.14 (0.11)	0.14 (0.12)	0.13 (0.13)	0.08 (0.13)
FHA/VA Loan Dollars	-3.56E-005 (3.73E-005)	9.59E-006 (3.93E-005)	1.76E-005 (3.94E-005)	0.00 (8.15E-005)	-7.32E-005 (0.00)	4.59E-006 (4.31E-005)	1.02E-005 (4.61E-005)
Spatial Lag of FHA/VA Loans	4.16E-005 (6.15E-005)	2.66E-005 (6.25E-005)	-4.00E-005 (7.42E-005)	-3.82E-005 (9.70E-005)	-2.85E-005 (9.71E-005)	0.00 (0.00)	0.00 (0.00)
Population	0.00 (4.87E-005)***	0.00 (4.61E-005)***	0.00 (5.11E-005)***	0.00 (0.00)***	0.00 (0.00)***	0.00 (5.83E-005)***	0.00 (6.01E-005)**
Disadvantage	-	0.24 (0.10)*	0.19 (0.11)+	-	0.11 (0.13)	-	0.45 (0.26)+
Instability	-	0.19 (0.10)*	0.19 (0.10)*	-	0.07 (0.16)	-	0.14 (0.15)
City	-	-	0.41 (0.24)+	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 17. H3 and H4; Violent Crimes 2012, Conventional Loan Dollars, and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	0.89 (0.29)**	0.96 (0.03)***	0.95 (0.33)**	0.82 (0.30)**	0.87 (0.31)**	0.83 (0.35)*
Spatial Lag of Violent Crime	0.02 (0.02)	0.00 (0.02)	0.00 (0.02)	0.01 (0.02)	-0.00 (0.02)	-0.00 (0.02)
Banks 2009	-	-	-	0.03 (0.04)	0.09 (0.05)*	0.09 (0.05)*
Spatial Lag of Banks 2009	-	-	-	0.06 (0.08)	0.07 (0.09)	0.08 (0.09)
Conventional Loan Dollars	0.00 (4.96E-005)*	-3.38E-005 (5.64E-005)	-3.36E-005 (5.64E-005)	0.00 (4.93E-005)*	-1.72E-005 (5.71E-005)	-1.61E-005 (5.73E-005)
Spatial Lag of Conventional Loans	0.00 (8.04E-005)**	0.00 (8.32E-005)+	0.00 (0.00)	0.00 (8.22E-005)*	0.00 (8.60E-005)	9.06E-005 (0.00)
Population	0.00 (5.10E-005)***	0.00 (5.08E-005)***	0.00 (5.42E-005)***	0.00 (5.14E-005)***	0.00 (5.11E-005)***	0.00 (5.47E-005)***
Disadvantage	-	0.26 (0.11)*	0.26 (0.11)*	-	0.37 (0.12)**	0.36 (0.12)**
Instability	-	0.23 (0.10)*	0.23 (0.10)*	-	0.20 (0.10)*	0.20 (0.10)*
City	-	-	0.02 (0.26)	-	-	0.07 (0.26)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 18. H3 and H4; Property Crimes 2012, Conventional Loan Dollars, and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	3.52 (0.31)***	3.58 (0.33)***	3.91 (0.40)***	3.40 (0.32)***	3.49 (0.33)***	3.82 (0.41)***
Spatial Lag of Property Crime	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Banks 2009	-	-	-	0.04 (0.04)	0.05 (0.04)	(0.05) (0.04)
Spatial Lag of Banks 2009	-	-	-	0.15 (0.08)+	0.10 (0.08)	0.10 (0.08)
Conventional Loan Dollars	-3.63E-005 (4.67E-005)	-2.30E-005 (5.11E-005)	-2.79E-005 (5.12E-005)	-3.37E-005 (4.63E-005)	-1.16E-005 (5.18E-005)	-1.68E-005 (5.19E-005)
Spatial Lag of Conventional Loans	5.73E-005 (8.02E-005)	2.35E-005 (8.34E-005)	0.00 (0.00)	4.42E-005 (8.11E-005)	4.99E-006 (8.47E-005)	8.15E-005 (0.00)
Population	0.00 (4.63E-005)***	0.00 (4.79E-005)***	0.00 (5.10E-005)***	0.00 (4.77E-005)***	0.00 (4.85E-005)***	0.00 (5.16E-005)***
Disadvantage	-	-0.05 (0.10)	-0.02 (0.10)	-	0.01 (0.11)	0.04 (0.11)
Instability	-	0.23 (0.09)**	0.22 (0.09)*	-	0.20 (0.09)*	0.19 (0.09)*
City	-	-	-0.41 (0.27)	-	-	-0.39 (0.27)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 19. H3 and H4; Vandalism Crimes 2012, Conventional Loan Dollars, and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	2.72 (0.33)***	2.73 (0.34)***	2.63 (0.36)***	2.68 (0.33)***	2.69 (0.34)***	2.56 (0.36)***
Spatial Lag of Vandalism Crime	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.00 (0.010	-0.00 (0.01)	-0.00 (0.01)
Banks 2009	-	-	-	0.04 (0.04)	0.06 (0.04)	0.07 (0.04)
Spatial Lag of Banks 2009	-	-	-	0.08 (0.08)	0.09 (0.08)	0.10 (0.09)
Conventional Loan Dollars	-9.82E-005 (4.79E-005)*	-6.08E-005 (5.37E-005)	-5.76E-005 (5.39E-005)	0.00 (4.72E-005)*	-5.27E-005 (5.35E-005)	-4.79E-005 (5.39E-005)
Spatial Lag of Conventional Loans	0.00 (7.89E-005)*	0.00 (8.16E-005)+	0.00 (9.73E-005)	0.00 (8.06E-005)*	0.00 (8.38E-005)	6.75E-005 (9.86E-005)
Population	0.00 (4.78E-005)***	0.00 (4.79E-005)***	0.00 (5.19E-005)***	0.00 (4.86E-005)***	0.00 (4.84E-005)***	0.00 (5.27E-005)***
Disadvantage	-	0.08 (0.10)	0.07 (0.10)	-	0.16 (0.11)	0.15 (0.11)
Instability	-	0.21 (0.09)*	0.21 (0.09)*	-	0.17 (0.10)+	0.18 (0.10)+
City	-	-	0.18 (0.24)	-	-	0.23 (0.24)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 20. H3 and H4; Property Crimes 2012, Refinancing Loan Dollars, and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	3.85 (0.30)***	3.84 (0.32)***	4.01 (0.39)***	3.67 (0.32)***	3.67 (0.33)***	3.90 (0.40)***
Spatial Lag of Property Crime	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-4.84E-005 (0.00)	-0.00 (0.00)
Banks 2009	-	-	-	0.04 (0.04)	0.04 (0.04)	0.05 (0.04)
Spatial Lag of Banks 2009	-	-	-	0.13 (0.08)+	0.10 (0.08)	0.10 (0.08)
Refinancing Loan Dollars	-2.29E-005 (1.01E-005)*	-1.44E-005 (1.23E-005)	-1.49E-005 (1.23E-005)	-2.24E-005 (1.02E-005)	-1.32E-005 (1.26E-005)	-1.40E-005 (1.26E-005)
Spatial Lag of Refinancing Loans	-1.26E-005 (9.59E-006)	-1.13E-005 (9.76E-006)	-6.21E-005 (1.21E-006)	-1.05E-005 (9.71E-006)	-1.01E-005 (9.76E-006)	-4.01E-006 (1.20E-005)
Population	0.00 (5.86E-005)***	0.00 (6.26E-005)***	0.00 (6.52E-005)***	0.00 (5.89E-005)***	0.00 (6.28E-005)***	0.00 (6.53E-005)***
Disadvantage	-	-0.05 (0.10)	-0.04 (0.10)	-	-0.00 (0.10)	0.02 (0.11)
Instability	-	0.21 (0.09)*	0.20 (0.09)*	-	0.18 (0.10)+	0.17 (0.10)+
City	-	-	-0.21 (0.27)	-	-	-0.26 (0.28)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 21. H3 and H4; Vandalism Crimes 2012, Refinancing Loan Dollars, and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	2.78 (0.34)***	2.80 (0.35)***	2.65 (0.36)***	2.69 (0.34)***	2.70 (0.35)***	2.55 (0.36)***
Spatial Lag of Vandalism Crime	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)
Banks 2009	-	-	-	0.06 (0.04)	0.08 (0.04)+	0.07 (0.04)
Spatial Lag of Banks 2009	-	-	-	0.08 (0.08)	0.10 (0.08)	0.10 (0.08)
Refinancing Loan Dollars	-2.55E-005 (9.90E-006)**	-8.60E-006 (1.25E-005)	-8.34E-006 (1.26E-005)	-2.72E-005 (9.99E-006)**	-8.31E-006 (1.28E-005)	-7.74E-006 (1.28E-005)
Spatial Lag of Refinancing Loans	8.54E-006 (1.03E-005)	8.28E-006 (1.04E-005)	-2.23E-006 (1.22E-005)	1.01E-005 (1.05E-005)	8.86E-006 (1.03E-005)	-2.20E-007 (1.97E-005)
Population	0.00 (6.02E-005)***	0.00 (6.45E-005)***	0.00 (6.74E-005)***	0.00 (6.05E-005)***	0.00 (6.44E-005)***	0.00 (6.75E-005)***
Disadvantage	-	0.11 (0.10)	0.08 (0.10)	-	0.20 (0.11)+	0.17 (0.11)
Instability	-	0.21 (0.10)*	0.21 (0.10)*	-	0.16 (0.10)	0.17 (0.10)
City	-	-	0.35 (0.25)	-	-	0.33 (0.25)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 22. H3 and H4; Violent Crimes 2012, Home Improvement Loan Dollars, and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	1.21 (0.30)***	1.22 (0.31)***	1.04 (0.34)**	1.08 (0.31)***	1.06 (0.32)***	0.89 (0.36)*
Spatial Lag of Violent Crime	0.01 (0.02)	-0.00 (0.02)	6.31E (0.02)	0.01 (0.02)	-0.01 (0.02)	-0.01 (0.02)
Banks 2009	-	-	-	0.05 (0.04)	0.10 (0.04)*	0.10 (0.04)*
Spatial Lag of Banks 2009	-	-	-	0.08 (0.08)	0.09 (0.09)	0.10 (0.09)
Home Improvement Loan Dollars	-0.00 (0.00)*	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)**	0.00 (0.00)	0.00 (0.00)
Spatial Lag of Home Improvement Loans	0.00 (0.00)	0.00 (0.00)	-8.46E-005 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Population	0.00 (5.05E-005)***	0.00 (5.04E-005)***	0.00 (5.51E-005)***	0.00 (5.12E-005)***	0.00 (5.09E-005)***	0.00 (5.64E-005)***
Disadvantage	-	0.30 (0.10)**	0.26 (0.10)*	-	0.41 (0.11)***	0.37 (0.11)***
Instability	-	0.24 (0.10)*	0.25 (0.10)**	-	0.19 (0.10)+	0.20 (0.10)+
City	-	-	0.27 (0.23)	-	-	0.25 (0.23)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 23. H3 and H4; Property Crimes 2012, Home Improvement Loan Dollars, and Bank Locations 2009

	Both Cities N = 164					
	Hypothesis 3			Hypothesis 4		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	3.74 (0.30)***	3.71 (0.31)***	3.98 (0.40)***	3.56 (0.31)***	3.59 (0.32)***	3.87 (0.41)***
Spatial Lag of Property Crime	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	8.52E-005 (0.00)	-3.36E-006 (0.00)	-0.00 (0.00)
Banks 2009	-	-	-	0.04 (0.04)	0.05 (0.04)	0.05 (0.04)
Spatial Lag of Banks 2009	-	-	-	0.16 (0.08)*	0.11 (0.08)	0.11 (0.08)
Home Improvement Loan Dollars	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Spatial Lag of Home Improvement Loans	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-5.16E-005 (0.00)	0.00 (0.00)	0.00 (0.00)
Population	0.00 (4.63E-005)***	0.00 (4.77E-005)***	0.00 (5.11E-005)***	0.00 (4.80-005)***	0.00 (4.84E-005)***	0.00 (5.21E-005)***
Disadvantage	-	-0.04 (0.10)	-0.02 (0.10)	-	0.01 (0.10)	0.04 (0.11)
Instability	-	0.23 (0.09)**	0.23 (0.09)*	-	0.19 (0.09)*	0.19 (0.10)*
City	-	-	-0.27 (0.24)	-	-	-0.28 (0.24)

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 24. H3; Vandalism Crimes 2012 and Home Improvement Loan Dollars 2009

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Hypothesis 3						
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	2.91 (0.34)***	2.90 (0.35)***	2.68 (0.37)***	2.67 (0.54)***	2.40 (0.54)***	3.01 (0.45)***	3.30 (0.50)***
Spatial Lag of Vandalism Crime	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.01 (0.01)	0.01 (0.01)	-0.00 (0.01)	-0.00 (0.01)
Home Improvement Loan Dollars	-0.00 (0.00)*	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Spatial Lag of Home Improvement Loans	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Population	0.00 (4.68E-005)***	0.00 (4.68E-005)***	0.00 (5.16E-005)***	0.00 (0.00)***	0.00 (0.00)***	0.00 (6.02E-005)***	0.00 (6.20E-005)***
Disadvantage	-	0.13 (0.09)	0.08 (0.10)	-	0.01 (0.10)	-	0.43 (0.27)
Instability	-	0.22 (0.09)*	0.22 (0.09)*	-	0.18 (0.14)	-	0.16 (0.14)
City	-	-	0.37 (0.22)+	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

Appendix Table 25. H4; Vandalism Crimes 2012, Home Improvement Loan Dollars, and Bank Locations 2009

	Both Cities N = 164			Norfolk N = 81		Virginia Beach N = 83	
	Hypothesis 4						
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 1	Model 2
Intercept	2.83 (0.34)***	2.83 (0.35)***	2.59 (0.37)***	2.34 (0.52)***	2.34 (0.52)***	2.73 (0.50)***	3.21 (0.54)***
Spatial Lag of Vandalism Crime	4.74E (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)	-0.01 (0.01)
Banks 2009	0.05 (0.04)	0.07 (0.04)+	0.07 (0.04)+	0.08 (0.06)	0.10 (0.06)	-0.00 (0.01)	0.05 (0.07)
Spatial Lag of Banks 2009	0.09 (0.08)	0.10 (0.08)	0.11 (0.08)	0.11 (0.11)	0.12 (0.12)	0.18 (0.12)	0.09 (0.13)
Home Improvement Loan Dollars	-0.00 (0.00)*	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)+	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Spatial Lag of Home Improvement Loans	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Population	0.00 (4.77E-005)***	0.00 (4.73E-005)***	0.00 (5.28E-005)***	0.00 (0.00)***	0.00 (0.00)***	0.00 (6.11E-005)***	0.00 (6.29E-005)***
Disadvantage	-	0.21 (0.10)*	0.17 (0.11)	-	0.11 (0.12)	-	0.47 (0.26)+
Instability	-	0.17 (0.10)+	0.17 (0.10)+	-	0.09 (0.15)	-	0.14 (0.14)
City	-	-	0.38 (0.22)+	-	-	-	-

$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

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Lee, Anne. 2012. "Private Prisons and Community Corrections" in Prison Privatization: The Many Facets of a Controversial Industry. Eds. Byron E. Price and John C. Morris. Arlington, MA: Praeger Publishers.

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