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NEIGHBORHOODS, SOCIAL CAPITAL AND ECONOMIC SUCCESS

By

Sean M. Payne

A Dissertation Submitted to the Faculty of the College of Arts and Sciences of the
University of Louisville in Partial Fulfillment of the Requirements for the degree of

Doctor of Philosophy

Department of Urban and Public Affairs

University of Louisville

Louisville, Kentucky

December 2013

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A Dissertation Approved on

October 29, 2013

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ABSTRACT

NEIGHBORHOODS, SOCIAL CAPITAL AND ECONOMIC SUCCESS

Sean M. Payne

October 29, 2013

This study examines the relationship between neighborhoods, social capital and economic success. In the model developed in this research, social capital mediates the relationship between neighborhoods and economic success. Social capital represents social networks with their associated norms and resources and increases economic success by facilitating cooperation and by lowering transaction costs. Neighborhoods affect social capital through local interactions, network exclusion, social learning and social identity processes. An understudied part of these relationships is the existence of endogeneity among the key variables. Using data from the Project on Human Development in Chicago Neighborhoods, this study uses structural equation modeling to test the model empirically and find that social capital and economic success are endogenous, but while social capital increases economic success, economic success decreases social capital, *ceteris paribus*. I also find that social capital is highly dependent on neighborhood levels of social capital. These results suggest that place-based policies may be an effective method for increasing economic success.

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CHAPTER 1 – INTRODUCTION

Americans live in a stratified landscape. Economic and racial cleavages are replicated in housing patterns as people are sorted into separate communities and neighborhoods. While racial segregation has been one of the most important social institutions in shaping urban political economy, segregation by income is growing and shaping American life in important ways. How does this neighborhood inequality, the sorting of people of different means geographically, affect an individual's life chances? Put another way, how does the neighborhood in which you live affect your opportunity for economic success? In this dissertation, I argue that social capital—social resources rooted in social connections—is a link between neighborhoods and economic success.

Evidence in the U.S. shows that income inequality has grown over the past 40 years. A 2011 report from the Congressional Budget Office reported that between 1979 and 2007, income grew by 275 percent for the top one percent of income earners, while it grew only 18 percent for those in the bottom quartile (CBO 2011). This growth in income inequality has been mirrored by increasing segregation by income in the same period (Reardon and Bischoff 2011). In 1970, only 15% of Americans lived in either poor or affluent neighborhoods. By 2007, this has increased to 31%. These trends

have been driven more by the segregation of the affluent rather than for the poor (Reardon and Bischoff 2011). Overall, these trends describe growing economic cleavages in the U.S. which are transcribed in the geography and composition of neighborhoods.

There is also growing evidence that these social cleavages are having real economic and social consequences beyond income. Disparate authors such as libertarian Charles Murray (2012) and communitarian Robert Putnam (Putnam et al. 2012) and journalist Timothy Noah (2012) have observed similar trends of growing differences in human capital, social connections, and adult investment in children along economic cleavages. These are some of the very indicators that predict success in life, suggesting that class cleavages are increasingly being reinforced across generations (Putnam et al. 2012: 1-2). While Murray and Putnam offer different particular explanations—Murray prefers culture and marriage while Putnam prefers differences human capital investment in children—both converge on the idea that social separation by income drives the differences.

How does this separation by neighborhood affect economic success? This is the main problem around which this dissertation is focused. In this research I propose the hypothesis that these different socio-economic outcomes are driven in part by social capital—resources embedded in social structures and relationships—and that in turn social capital is in part determined by neighborhoods. The purpose of this dissertation is to investigate the links between neighborhoods, social capital and economic success. To do that, we weave a conceptual and empirical narrative that shows that economic success is in part determined by social capital for individuals and then that social capital is affected by neighborhood economic conditions and the social capital of others in your

neighborhood. In the next section we outline some conceptual basics that underlie this research and then describe the main research questions. Following that, I provide a brief summary of the main empirical methodology of this study and an overview of the arguments.

Conceptual Overview and Framework

Central Concepts

This research is built around three core concepts: economic success, social capital and neighborhoods. Before providing an overview of the research focus and the rest of the dissertation, we need a working understanding of these concepts and how they are related.

Economic success as a concept is meant to relate an individual's ability to secure their own economic well-being. At its most basic, economic success represents an individual's income—either through wages earned in the labor market or other sources. The basis of economic cleavages, and hence inequality, are differences in income and wealth. In this study I focus on income as the primary indicator of success.

Social capital represents a qualitatively different type of resource than economic success. Social capital is defined here as social networks with their associated norms and resources. This definition requires a little unpacking. This concept of social capital sees people as fundamentally embedded in social networks—social connections among friends, family, colleagues and others. These network relationships vary based on the informal rules and expectations by which people interact and the resources such as information that people can access due to their network membership. Social capital is

distinct from human capital. Human capital refers to the competencies and abilities that make an individual brings to their activity, while social capital refers to shared norms, knowledge and expectations that exist in the links between people (Ostrom 2000).

Although there is controversy about how social capital is precisely conceptualized, social capital research has increased drastically since its popularization by Putnam (1993; 2000), and has become “routinized” in policy and research discourse (Woolcock 2010). Social capital is often differentiated qualitatively between bridging and bonding social capital. Bridging social capital refers to networks with wider reach, often across social cleavages, while bonding refers to close-knit networks among homogenous groups. Both are important, but different types of social capital could have different effects on economic success.

The last central concept is that of neighborhoods. Neighborhoods are both a geographic and social construction (Coulton 2012). Geographically, neighborhoods are contiguous areas with shared space, but may not have well defined boundaries. More importantly, neighborhoods are a network of relationships among people who live close together and composed of a shared understanding of what, and who, the neighborhood is. Because neighborhoods are social networks, access to neighborhoods or membership in the neighborhoods is one means by which individuals have access to social capital. The converse of access is closure, the restriction of access to resources (Burt 2000). This means that membership in neighborhood networks can give or restrict access to social capital.

This study focuses on two scales of interactions: the individual scale and the neighborhood scale. We also focus on the interactions between the scales, how

individuals affect the neighborhood and how the neighborhood affects individuals. This is based on Giddens's (1984) theory of structuration. In structuration theory, human agency and structure are in a relationship with one another, and analytic primacy cannot necessarily be given to one over the other. Instead, individuals make choices in response to their environment and the opportunities which are available, i.e. in response to the structure, but through the actions of many individuals that environment or structure may change. Here we see social capital existing in the interactions between individuals and their networks, the most important of which for this study are neighborhoods.

Social Capital and Economic Success

One of the main concerns since the popularization of social capital has been its role in the economy (Woolcock 2011). This economic social capital literature can be generally split into two camps: those that look at the macro-economic effects of social capital and those that look at the micro-economic outcomes.

Studies examining aggregate levels of social capital and aggregate economic outcomes, such as growth, have generally found a positive relationship between the two. Putnam's (1993) classic study of Italy kick-started research into the relationship between economic growth and social capital. Putnam used civic engagement, measured by voter turnout, newspaper reading, voluntary membership and trust in institutions, to explain regional differences in economic development between north and south Italy. Similarly, Fukuyama (1995) used "trust," measured simply as voluntary organization membership, to explain economic development differences between nations and among societal groups, arguing that high trust societies will prosper. Knack and Keefer (1997) compare

economic performance and social capital cross-nationally using factors constructed from the World Values Survey (WVS). They find that trust and civic norms impact aggregate economic output, but find that association memberships, contrary to Putnam, have little impact. Other studies using the WVS have generally supported these findings (Whitley 1997; La Porta et. al. 1997).

More important for our purposes are the studies that look at the micro-economic impact of social capital. These studies have also generally found a positive relationship between social capital and economic success. The most convincing evidence on the micro-economic front is how social capital functions in the labor market, where social networks have been shown to help people find work, increase labor force participation, and keep their jobs (Granovetter 1973; Aguilera, 2003 Zippay, 2001 Fernandez and Castillo, 2001). Studies of both low-wage labor markets (D. Brown et al 2001) and higher-paid managers (Bowman et al 1991) found that the majority of workers found their jobs through informal means. Also, a large number of studies find that social capital in youth, often measured at the family level, is a significant predictor of upward mobility, test scores and human capital development generally (Furstenburg and Hughes 1995; Hagan et. al. 1996; McNeal 1999).

Research into neighborhoods has also shown a connection between neighborhood conditions and the economic success of individuals. Though it has some precursors, the influential work of William J. Wilson (1987; 1996) spawned the “neighborhood effects” literature which examines how poor neighborhoods limit the opportunities of the residents within them. Wilson’s primary thesis is that poor neighborhoods are socially disconnected from opportunities that could better them. In effect, he argues that poor

individual's social capital was limited by their neighborhoods. Studies following Wilson have found strong correlations between neighborhood poverty and individual economic outcomes (Small and Newman 2001).

A significant methodological issue for studies of social capital and economic outcomes is the problem of endogeneity (Portes and Vickers 2011; Durlauf 2002). Endogeneity is where two concepts have some element of mutual causality. In the case of social capital, we can see from the theories of Bourdieu (1986) and Coleman (1988) that economic status and social capital may be mutually reinforcing—that an individual or group possess certain forms of social capital, say bridging networks, based on their economic status which then help them maintain their income or economic position. This is what Portes and Vickstrom (2011) call the “origins issue,” which they claim is under-theorized and studied (466). Durlauf (2002) also criticizes the empirical literature for its lack of dealing with endogeneity. In the few studies that do use an instrumental variables approach, an econometrics technique for dealing with endogeneity, the instruments often fail validity tests. Durlauf argues that “researchers need to provide explicit models of the codetermination of individual outcomes and social capital” (474). A codetermination model would explicitly model the reciprocal relationship between social capital and economic outcomes.

Research Questions

This dissertation is driven by the following broad conceptual and empirical research questions:

(1) What is the relationship between social capital and economic success at the individual level? Previous research strongly suggests that there is a link between social capital and economic success, but there are many unanswered questions about the mechanisms and nature of this relationship. There are three sub-questions or tasks involved in examining this question. The first task of this research is to examine the causal link between social capital and to outline the mechanisms by which social capital has an effect on economic success. The second is to examine if different forms of social capital, i.e. bridging and bonding social capital, have different dynamics. Due to the different nature of these social capitals, it is usually argued and assumed that they have different dynamics with regards to income (Briggs 1998; Putnam 2000). Bridging social capital is seen as more productive as it is outward looking and forms wider network connections, while bonding is seen as not as productive for income because of its close-knit nature (Putnam 2000). The third aspect is to determine the nature of the relationship between social capital and economic success. Does social capital increase success, or does success increase income? There is good reason to believe that this relationship is endogenous, i.e. that there is an element of mutual causality or feedback between the two (Durlauf 2002). One objective of this research is to develop the theoretical argument for the endogeneity of economic status with social capital and to test this endogeneity empirically.

(2) What is the relationship between social capital and economic success at the neighborhood level? This question mirrors the first, but looks at the relationship between social capital and economics success at the neighborhood level. Why and how do

neighborhoods matter for social capital, and is this linkage endogenous? Are the same dynamics at the individual level the same at the neighborhood?

(3) What is the relationship between neighborhoods and individual social capital? The final research question follows closely with the investigation of the second question. Why do neighborhoods matter for individuals? This question is driven by research that shows that neighborhood economic conditions can have significant effects on the life chances and outcomes of individuals. The neighborhood effects literature offers convincing accounts of neighborhood context that reinforce poverty through social capital related mechanisms (Wilson 1996). Previous research has indicated contextual effects for neighborhood ethnic or racial diversity on individual social capital (Putnam 2007), and for neighborhood economic conditions for aggregate social capital (Sampson et al. 1999). This study does not focus on effects of poor neighborhoods exclusively. Focusing solely on impoverished neighborhoods draws attention away from differences and similarities between neighborhoods, and it is important to understand the range of interactions in neighborhoods.

Summary of Methodology and Data

The main empirical methodology for the empirical portion of this dissertation is structural equation modeling (SEM). SEM is a family of statistical techniques that combines confirmatory factor analysis and path regression techniques. SEM is particularly suited for research that features latent variables or complicated causal questions. Latent variables are measures which cannot be directly observed, but must be inferred from other outcomes which the latent variable is thought to cause. In this study, social capital is conceived as a latent variable underlying observable indicators such as

trust of neighbors, participation in voluntary organizations and cooperative behavior. SEM techniques were developed to handle and model these variables within a causal framework. Causality is the second strength of SEM techniques, as the path regression component allows for causal paths to be specifically defined and tested. In order to specifically test endogeneity of social capital and income, I employ an additional statistical method, two-stage least squares regression, to specifically test for endogeneity.

The data for the empirical portion of the dissertation comes from the Project on Human Development in Chicago Neighborhoods (PHDCN) community survey (Earls et. al. N.D.). The PHDCN survey was a large scale study designed to investigate the relationship between neighborhood conditions and individual outcomes. The survey sampled 8,782 individuals on health, socioeconomic status, community participation, and neighborhood conditions among others and organizes responses into 343 neighborhood clusters in Chicago. This organizing of respondents by neighborhoods allows us to model neighborhood level effects on individuals. This survey includes quite a few questions on social capital indicators and socio-economic status. For over a decade, Robert Sampson and colleagues have used the PHDCN data to investigate the relationship of social capital related concepts to violent crime (Sampson et. al. 1997; Morenoff et. al. 2001), Childhood development and well-being (Sampson et. al. 2008a) and the social monitoring of children's behavior (Sampson et. al. 2002) among others. Also the survey instrument has been replicated in other studies and contexts (Dorsey and Forehand, 2003; Drukker et al 2003; Lochner et. al. 2003; Rankin and Quane, 2002; Subramanian et al. 2003; Brisson and Usher 2005; Brisson and Usher 2007).

Overview of the Argument

The thesis of this dissertation is this: Social capital increases economic success because it provides a foundation for cooperation that is a basis for economic success. Economic success also has an effect on social capital because it can allow for the building of wider networks. Neighborhoods affects an individual's access to social capital because they are one of the primary networks that individuals have access to, and that economic cleavages between neighborhoods are also network cleavages that shape social capital. I develop this argument across the following chapters, leading ultimately to an empirical test of the relationships between these elements and to some policy recommendations

In chapter two I develop the argument for how social capital and economic success are related at the individual level. After a review of the social capital literature, I situate social capital and economic success as a problem of collective action and as a social dilemma. I then outline how social capital helps overcome problems of collective action through behavioral norms and specific resources. Social capital affects economic success by developing norms that encourage cooperation and through resources such as information, access, and social support. Finally in chapter two, I argue that social capital and economic success are mutually causal, because economic success provides the opportunity for more social resources and reinforces the norms and behavior that led to it.

In chapter three I move beyond the individual level to look at group level dynamics, with a particular focus on the neighborhood. After reviewing the neighborhood effects literature, I argue that social capital is best understood as a type of social interaction, which seems obvious, but means that because social capital is a

relational concept it can be understood as a type of externality. Social capital is a type of local interaction, which means that the spillover effects of social capital, the positive or negative benefit it generates for *others*, is limited to those connected in the network. Local interactions can lead to the significant differences between networks and limits what social capital people can access. Finally I connect social capital with processes of social learning and social identity to show how norms and resources are transmitted, even indirectly, through neighborhood networks.

Chapter four serves as a transition between the theoretical arguments in chapters two and three and the empirical portion of the dissertation in chapter five. In chapter four I develop a model for the relationship between social capital, economic success and neighborhoods and specific hypotheses that are tested in chapter five. The empirical results show that the relationship between social capital and economic success is indeed endogenous, and that neighborhood social capital is one of the largest predictors of social capital. However, we also find something surprising. While social capital increases economic success, as expected, economic success actually decreases social capital all other things being equal. In chapter six, I look at the policy implications and argue that the role of neighborhood social capital in creating individual social capital means that we need place-based policies designed to build social capital. I argue that the current policies of poverty deconcentration are counter-productive and may actually be harmful to those they are intended to help.

CHAPTER 2 – SOCIAL CAPITAL AND ECONOMIC SUCCESS

The question of economic success is central to understanding economic inequality. The significant macro-differences in income distributions reflect processes that play out at smaller scales. If we can gain some understanding of economic success at the individual level, then that understanding will help build an understanding of the bigger picture. The frame of analysis that we introduced in the first chapter, structuration (Giddens 1984), applies here: *individual* level dynamics create and pattern dynamics at the aggregate level that in turn influences future individual level dynamics. This chapter builds an understanding of the *social* aspects of economic success at the individual level.

What determines whether an individual is economically successful? The basic idea is that individuals sell their capabilities and skills, also known as human capital, in the labor market for a particular price determined by the supply and demand for labor. Individuals with the same capabilities should receive the same wages. Empirically, however, this is not the case (Bowles, Gintis and Osborne 2001). Individuals with very similar capabilities, age schooling and experience often have very different earnings. While race and gender are well-known predictors of income, a large difference among people of similar demographics can still be seen. A key piece of the individual level dynamics puzzle is what determines the non-merit determinants of income.

In this chapter we focus on the elements of economic success that come from social capital at the individual level. The argument that I put forth in this chapter is that social capital has two elements that influence economic success at the individual level. The first is that the norms associated with social capital form a basis of economically productive behavior and cooperation. The second is that access to non-money resources in social networks allows an individual to be more successful and productive in earnings.

To build this argument I first introduce and review the concept of social capital, and frame the entire problem of economic success as one of collective action. Then I develop the argument for norms and the resource view of social capital. These processes are very closely tied to those at the aggregate level, in particular dynamics of social learning, network differences and social identity. For the sake of analytic clarity, those concepts will be discussed in the next chapter. The next chapter will also look at some of the co-determinant aggregate processes.

Social Capital

Before we look at how social capital affects economic success, we need to have some idea of what, exactly, we mean by the concept. In the broad view social capital, as a concept, is meant to capture the networks of relationships in which human action is embedded and the norms of behavior and resources accessible due to these relationships. Defining social capital precisely is a problem. It is an “essentially contested concept,” meaning that there is widespread recognition of the concept, but not widespread agreement on its particulars (Woolcock 2010). In this study, I will view social capital as social networks with their associated embedded resources and norms.

The term “social capital” was introduced as early as 1916 by education researcher Lyda Hanifan (1916) and has even earlier precursors in the work of social theorists such as Adam Smith, Karl Marx and Emile Durkheim (Portes 1998). However, it is the work of Robert Putnam (1993; 2000) which has brought the concept to prominence in social and political research and policy discourse. In perhaps his most important work, *Bowling Alone*, Putnam defines social capital as:

Whereas physical capital refers to physical objects and human capital refers to the properties of individuals, social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them. In that sense social capital is closely related to what some have called “civic virtue.” The difference is that “social capital” calls attention to the fact that civic virtue is most powerful when embedded in a sense network of reciprocal social relations. A society of many virtuous but isolated individuals is not necessarily rich in social capital (Putnam 2000: 19).

This definition has two elements that are important to tease out when discussing the concept of social capital. First, social capital is based on both social connections, or social networks, and norms of reciprocity. This captures the idea that people are connected to each other and they are willing to act on another’s behalf. In this way, social capital can be seen as a mechanism for facilitating collective action and overcoming the prisoners’ dilemma (Axelrod 1985). An important point is that Putnam doesn’t specify exactly who possesses social capital—is it people in networks, the networks themselves or some larger aggregate? Yet, in his operationalization of the concept Putnam utilizes all the levels of analysis but primarily focuses on social capital as a collective property generated by individual actions (Putnam 1993; 2000).

The second and more controversial element is that Putnam ties social capital to “civic virtue.” By tying networks to civic virtue, Putnam is essentially limiting his

conception to Tocquevillian notions of civil society—social networks that increase participation and fluidity of public affairs. This plays out in how he focuses his research on associational activity. For example in his study of regional economic differences in Italy, Putnam (1993) finds that it is civic participation and associational activity that explain why northern Italy outperformed the south. In *Bowling Alone*, Putnam (2000) argued that associational activity in the US had steadily declined and that this has had negative effects on political engagement, informal socializing, human well-being, general tolerance and trust. Putnam, in essence, is defining social capital as a public good. Putnam has been criticized for this normative conflation of networks with civiness (Portes 1998; DeFilippis 2001), and it is noteworthy that in later works Putnam (2007) dropped the explicit connection with civic virtue. He instead focused on a “lean and mean” definition in which social capital was defined as “social networks and the associated norms of reciprocity and trustworthiness” (Putnam 2007: 137).

In contrast to this focus on the collective benefits of social capital, earlier theorists have focused on how social capital affects individuals (Coleman 1988; Bourdieu 1986; Loury 1977). Loury (1977) argued that the individualistic framework of neoclassical economics failed to explain racial income inequality. The alternative explanation that Loury offered was that differences in opportunity—defined as the intergenerational transfer of wealth, knowledge and social connections—continued racial income inequality. Loury (1977) wrote:

The social context within which individual maturation occurs strongly conditions what otherwise equally competent individuals can achieve. This implies that absolute equality of opportunity, where an individual’s chance to succeed depends only on his or her innate capabilities, is an ideal that cannot be achieved ... an individual’s social origin has an obvious and important effect on the amount of resources that is ultimately invested in his or her development. It

may thus be useful to employ a concept of “social capital” to represent the consequences of social position in facilitating acquisition of the standard human capital characteristics (176).

In a similar vein, Bourdieu (1986) defined social capital as the aggregate of actual and potential resources linked to the possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition. In other words, social capital is linked to membership in a group (Bourdieu 1986, 248). While somewhat vague, both of these conceptions see social capital as a social resource that primarily benefits individuals and recognize that class and privilege are maintained through these social networks (Field 2003). Wacquant and Wilson (1989) reiterate Bourdieu’s conception in their analysis of the social structure of urban ghettos, identifying social capital as resources “potentially provided by ... lovers, kin and friends and by the contacts they develop within the formal association to which they belong—in sum, the resources they have access to by virtue of being socially integrated into solitary groups, networks or organizations” (22).

Coleman (1988) also expands on the benefit of social capital to individuals, but defines the concept functionally: “Social capital is defined by its function. It is not a single entity, but a variety of different entities having two characteristics in common: They all consist of some aspect of social structure, and they facilitate certain actions of individuals who are within the structure” (1988: s98). In essence, Coleman sees social capital as any social structure which facilitates cooperation and mutual advantage (Field 2003). Portes (1998) argues that Coleman makes contradictory claims regarding the sources of social capital and function, leading to some conceptual confusion. Yet, Coleman’s concept is essentially relational. It is not a quality of actors, but “inheres in

the structure of relations between actors” (s98); however, its benefits accrue for actors. By actors, Coleman primarily means individuals, but also allows for benefits to corporate actors. Though Coleman and Bourdieu have similar conceptions of social capital as resources provided through networks, Field (2003) points out the stark difference between them. “Coleman’s view is also naively optimistic; as a public good, social capital is almost entirely benign in its functions ... with little or no ‘dark side’. Bourdieu’s usage of the concept, by contrast, virtually allows only for a dark side for the oppressed and a bright side for the privileged” (28).

These concepts of social capital have some important similarities and differences. They both define social capital relationally as social networks between actors and the expectations of reciprocity among them. Where they differ is in the functional purpose of social capital, and to whom the benefits accrue. Bourdieu and Loury conceptualize social capital as essentially a private good which benefits those actors in the networks, while Putnam and Coleman conceptualize social capital as public or club good that facilitates cooperation. This is, in part, a level of analysis argument. It is reasonable to argue, following Glaeser (2001) and Durlauf (2002), that social capital has both elements of private individual benefits and powerful externalities in the aggregate. Woolcock (2011) has argued that the levels of analysis problem follows disciplinary lines and that sociologists and economists prefer more individualistic conceptions while political scientists have focused on the aggregate level (471).

David Halpern (2005) argues that the concepts of social capital can be boiled down into three common broad components: networks, norms and sanctions (9-11). The component of networks captures the relational nature of social capital as existing in the

relationships between people. These networks could be geographically defined, such as a neighborhood community, or feature broader and “ill-defined” connections. The second component, norms, captures the role of informal rules and expectations that fuels reciprocity in these networks. The last component, sanctions, captures the idea that these networks often have means of enforcing norms among members, which may be direct, such as exclusion, or indirect through reputation and gossip (11).

Thus defined, social capital is a very broad concept that could be applied to almost any form of social relation, and this conceptual vagueness is a source of criticism (Portes 1998). Woolcock (2011) argues that social capital is an “essentially contested concept,” meaning that its usefulness lies not in a clear conceptual consensus, but rather “on its capacity to draw attention to salient features of the social and political world ... that are of significance in their own right and play a role in valued aspects of everyday life” (470). In this way we can regard social capital as an umbrella concept of certain types of social relations. However, to understand social capital, it has to be articulated through more specific sub-concepts.

Typology of social capital – Bonding and Bridging and Others

Since the initial definitions above were articulated, more work has developed seeking to differentiate types of social capital. The most influential of these typologies is the distinction between bridging and bonding social capital (Putnam 2000; Briggs 1997; Woolcock 1998; Gittel and Vidal 1998). Bonding social capital are those networks that are “by choice or necessity inward looking and tend to reinforce exclusive identities and homogenous groups,” while bridging social capital are networks which are “outward

looking and encompass people across diverse social cleavages” (Putnam 2000: 22-3). Briggs (1998) offers the distinction between these two as social capital for “getting ahead” versus “getting by.” Bridging capital links individuals with others outside their immediate community, offering access to jobs and influence not contained locally. By contrast, bonding social capital offers mechanisms to cope with the difficulties of everyday life, such as borrowing money or emotional support (178). The concept of bridging social capital echoes the sociological work of social network theorists who emphasize the role of “weak ties” (Granovetter 1973) or network “structural holes” (Burt 1992) in promoting economic mobility and development.

The dichotomy between bridges and bonds, or between weak and strong ties, is a useful distinction for thinking about how different types of networks link people with certain kinds of resources. Other authors go further, however, in specifying particular types of social capital. For instance, Williamson (2010) looks at general social trust, trust of neighbors, group involvement and informal socializing; all arguably aspects of social capital. Similarly, Sampson et. al. (1997) look at collective efficacy, which measures informal social control and how willing neighbors are to intervene. In a related study, they form specific concepts of social cohesion (how much people trust their neighbors), organization participation (which reflects the traditional measures of social capital) and social ties (based on the number of friends) (Morenoff et. al. 2001). Durlauf (2002) argues that these more specific conceptualizations of aspects of social capital offer a more compelling vision of how social capital is operating. Though these more specific conceptions of social capital are attractive, they add further terminological confusion.

This analysis uses bridging and bonding as the basic typology of social capital in order to stay consistent with the majority of the literature.

Social Dilemmas and Problems of Collective action

Economic Success as a collective action problem

The great thrust of contemporary social capital theorizing is that it is a tool for overcoming collective action problems¹. Collective action problems are generally situations where the actors involved would benefit from working together and coordinating their actions, but private incentives work to discourage this cooperation. Mancur Olson (1956) first formulated the idea of a “problem” of collective action in examining why small groups are more effective than broad-based interests. In effect, well organized minorities can be more effective than majorities. Many political and economic problems, if not most, can be categorized as collective action problems. The key point of the concept of the collective action problem is that it is a relational concept; whenever an individual’s outcome or benefit depends on both her own and *others’* behavior, there is the potential for a collective action problem. The nature of these problems is that an individual cannot solve the problem on their own; there must be coordination between individuals (Ostrom 2003). Ostrom and Ahn (2003) summarize collective action this way: “Collective-action problems arise whenever individuals face alternative courses of actions between short-term self-regarding choices and one that, if followed by a large enough number of individuals in a group, benefits all. The problem is one of overcoming selfish incentives and achieving mutually beneficial cooperative

¹ For examples, see Ostrom and Ahn (2003) and Woolcock (2010).

ways of getting things done” (4). Cooperation is hard, because in the short run an individual is better off by not cooperating.

The Prisoner’s Dilemma game represents the problem well, and it has even been called the central problem of political science (Ostrom 1998). The narrative version of the Prisoner’s Dilemma (PD) goes something like this: Susan and Katie are arrested after robbing a store and are taken separate holding cells at jail. The prosecutor goes to Susan and offers her a deal. If she confesses and betrays Katie, then Susan will get a minor charge and a slap on the wrist: 3 months in jail. If both Susan and Katie confess, then the prosecutor cannot let Susan off so lightly, but will pursue the lowest amount of time possible: 2 years in jail. If Susan doesn’t confess, however, the prosecutor will throw the book at Susan: the maximum sentence of 5 years in jail. The prosecutor then leaves and offers the exact same deal to Katie, but makes sure that the two cannot communicate. What the prosecutor doesn’t tell the women is that there is not enough evidence to convict them of anything other than a minor crime. Essentially if both women stay quiet, they will only be sentenced to one year of jail time each.

Table 2.1 shows the payoff matrix of the game and the dilemma. Collectively, the best outcome for both women is to cooperate with each other and not confess, since this minimizes both of their jail times. If Susan confesses and Katie does not, then Susan gets the best possible outcome for herself, even though this means more total jail time between her and Katie. On the other hand, if Susan does not confess, and Katie does, then she will get her worst possible outcome. By confessing, Susan will avoid her worst outcome while also potentially obtaining the best. This payoff structure means that the

dominant strategy is to confess and avoid the worst-case scenario, because there is uncertainty about what the other will do.

Table 2.1 Prisoner's Dilemma Payoff Matrix

	Cooperate	Defect
Cooperate	-1,-1	-5,0
Defect	0,-5	-3,-3

In this very basic version, there are some curious qualities about the PD game. First, it is what Elinor Ostrom calls a “first generation” collective action problem, meaning that it relies on a fundamental assumption that humans are selfish, rational and atomized individuals (Ostrom and Ahn 2007: 6). People, however, are embedded in relationships and networks with other people. Field research and experiments have repeatedly rejected the assumption of universal selfishness (Ostrom 1998). If Susan and Katie knew each other well before their arrest, would it change their behavior or calculations? The second curious thing is that the basic PD game is played only one time, and the actors don’t consider the future beyond the immediate payoff. In reality, through embedded relationships, people interact and face collective choices over and over again. This repetition fundamentally changes the nature and payoff structure of the game (Axelrod 2006), as the players know the other players' previous strategies and have to think about how their decision in this game might affect future situations. Thirdly, outside of the rather artificial metaphor for the PD game above, cooperation is rarely an all or nothing affair. People can cooperate in degrees, taking small risks until a

relationship is established with the other party. In light of these problems, perhaps the best way to regard the simple PD game is as an ideal type or metaphor that reveals an underlying structure of a situation where cooperation is advantageous, but difficult.²

Before moving on to discuss the role of social capital in the prisoner's dilemma game, it is useful to show how the simple PD game can determine economic success. The easiest way to show this is through a simple exchange. Take David Hume's classic example of neighbors digging a drainage ditch to clear a swampy area (1739). Two neighbors would both profit from digging a drainage ditch. If the ditch is dug, they both will be able to grow more crops and profit, no matter who does the work. Inherent in this is the incentive for one-neighbor to free-ride on the work of the other. If they work together, the total profit is greater than if just one neighbor had done the work. Cooperation enhances the overall economic efficiency. Of course, Hume's argument was that there would be no free-riding in this situation because of the neighbor's ability to monitor each other's action and know the reputation of the other. However, the more people you add to the project, the harder it is to know them and monitor; therefore, the opportunity for them to free-ride increases. Hume's argument also shows how, sometimes, a PD game isn't really a prisoner's dilemma.

There are two inter-dependent ways of changing the payoff structure of the PD game so that it is fundamentally different. The first is repeating the game for an unknown length of time. In repeated games, benefits of defecting quickly disappear, and cooperation generally has much higher benefits in the long run. If a player values the future, that is has a low discount rate, then indefinitely repeated games create an incentive

² My categorization of PD games as ideal types is controversial, but generally follows Koppl and Whitman (2004).

to cooperate.³ But, repetition also allows the players to observe each other's behavior and react to it. In a computer simulation run among many competing strategies in a repeated PD game, Robert Axelrod (2006) found that the most successful strategy in the long run was a tit-for-tat strategy—one which began by cooperating but then mirrored the other player's behavior. What this strategy demonstrates is the ability of players to 1) adjust their strategy in relation to others' behavior and, significantly, to 2) monitor and punish defections. The second way is to not assume that the players are necessarily selfish, but to allow for altruistic and cooperative behavior. As mentioned earlier, field research and experiments have generally rejected a hardline view of economic rationality and have found that people cooperate in all sorts of situations that, from the outside, could be constructed as social dilemmas (Ostrom 1998). One central finding from field and experimental research on social dilemma is that “the world contains multiple types of individuals.” Some are willing to act cooperatively and trustingly from the start and with more emphasis on reciprocity (Ostrom 2000: 138). This is to say that individuals vary in their balance between norms of trust and reciprocity and non-cooperation.

These two elements, norms of trust and reciprocity and repeated interactions, are at the core of most social capital theories (Halpern 2005; Woolcock 2010). The theory assumes that people are embedded in networks formed through repeated interactions, whether they are very frequent interactions with family and friends, as in the case of bonding social capital, or less frequent but with more diverse people in bridging social capital. The concept is incomplete, however, without norms governing behavior. The most important norm in the literature is that of trust. Trust and reciprocity may be generalized, meaning that someone is generally trusting of most people, or it could be

³ Discount rate is explained below.

particularized, meaning that trust is limited to a select group. The most important point is that it exists and creates a foundation for overcoming collective action problems with the trusted parties. In the next section we will examine more closely the role of norms in creating a basis for economic success.

Social Capital and Norms

There are two primary means for overcoming challenges to collective action. The first is through formal institutions, which regularize transactions through formal rules (North 1990). Many institutions are designed purely to facilitate economic cooperation: contract law, organized markets, insurance and so on. Social capital functions both alongside and in lieu of these institutions. For instance, when formal labor market matching institutions, such as trade unions that match skilled laborers with jobs, are absent, personal connections can act a substitute by matching laborers with employers. If there is no insurance system for protecting a business deal, then trust, reputation and reciprocity can substitute for the formal institution in reducing the uncertainty in the transaction. Norms are central in overcoming collective action problems. Trust, cooperation and reciprocity offer a means of reducing free-riding. They reduce transaction costs and provide a means of monitoring behavior. Other more internalized norms, such as self-efficacy and time preference, interact with these to enhance and subvert economic success. Here we look at four inter-related norms associated with social capital, trust, cooperation, self-efficacy and time preference, and the closely related issues of reciprocity and reputation.

Norms

Norms are unwritten rules of behavior and codes of conduct (North 1990). In effect, norms form a logic of appropriate action (March and Olsen 2004). Preferences, on the other hand, are the result of an actor's internal ordering between preferred choices or outcomes. Some preferences may be wholly determined by an individual's personal qualities, but often they are influenced by the social environment and relations (Bowles and Gintis 1993). That is, they can be socially endogenous. Norms and socially endogenous preferences are very closely related both conceptually and analytically and can be used interchangeably. The distinction is minor: Social norms can lead to internalized motives or constraints on action (preferences), but norms can also be enforced through social sanctions where a defector from the norm will be punished for breaking the rules. For the sake of further simplicity, the terms will be used interchangeably.

Norms and social preferences represent one type of "non-skill determinant of economic success" (Bowles, Gintis and Osborne 2002). In their review of the behavioral economics literature, Bowles et. al. found four particularly salient behavioral preferences, or norms, that were important in predicting economic success in individuals: trust, cooperation, self-efficacy, and time preference (discount rate). Trust and cooperation refer to how much an actor is willing to work with others in situations of uncertainty, where there is the possibility to defect, and their anticipation of how others will act. Self-efficacy is the belief or attitude that an actor can effect change in the world and achieve what they want, while time preference is an individual's willingness to trade current income for benefits at a later time.

Trust and cooperation have been the traditional norms of focus in social capital research, and many scholars conceptualize social capital as equivalent with generalized trust (Fukuyama 1995). Trust is most often used as an aggregate concept of social capital and to predict various behaviors and economic development (Fukuyama 1995; Halpern 2005). Ostrom and Ahn (2007) draw a distinction between trust and trustworthiness that is important. They define trust as the subjective belief about the unobservable or yet-to-be observed actions of other agents. Trustworthiness, on the other hand, is a probability assessment regarding the motivation of a trustee and their likelihood of behaving cooperatively and is based on the trustor's perception of the population, in particular on observable characteristics based on identity (12). Actors tend to see people with similar characteristics as more trustworthy (Usulaner 2011). More importantly, individual trust and perceptions of trustworthiness are based on the observation of trusting and cooperative behaviors in others and learning them through social interaction (Ostrom and Ahn 2007: 14-15). Agents who act in trusting networks will be more likely to trust, and vice versa, so the aggregate level of trust is one important determinant of individual trust. Trust and cooperation are important to economic success, because they are precursors to accessing the social leverage and support resources embedded in networks. A person who is perceived as trustworthy will have a greater capability of accessing diverse networks either directly or through intermediaries who vouch for them (Coleman 1994).

Self-efficacy and time preference are more internalized norms than trust and cooperation. These norms are what Bowles et. al. (2002) call “earnings-enhancing behaviors,” in that individuals who display these norms empirically earn more, all else equal (40). The intuition behind this observation is that individuals who are able to delay

current benefit and who see themselves as capable of affecting the world will have more economic success.

A ubiquitous feature of life is the existence of inter-temporal choices, which are “decisions involving tradeoffs among costs and benefits occurring at different times” (Frederick Lowenstein and O’Donoghue 2002: 351). These choices can have important consequences for future economic success in basic and fundamental ways. Choosing to go to college, for example, is in part a choice⁴ between earning wages right after secondary school or delaying wages for the promise of greater future benefit. Time preference, also known as discount rate⁵, is how much a person is willing to sacrifice current value for future gains. Or, put more simply, how much value someone puts on the future. A high discount rate means that they value future value much less than current value; future value is heavily discounted in comparison with current value. Conversely, low discount rates means that the future is valued closer to current values. Discount rates are important for understanding investment, schooling, saving, health decisions and acceptance of risk (Frederick, Lowenstein and O’Donoghue 2002).

These inter-temporal choices feature heavily in cooperative behavior alongside trust. Axelrod (2006) calls the discount rate the “shadow of the future,” meaning the probability that agents will have to interact again in the future (13). This is a slight permutation of the preference, but it captures the same logic: An actor can face a trade-

⁴ This is not to minimize the fact that not everyone has an equal opportunity or ability to attend college, no matter what their time preference may be.

⁵ The terminology for time preference can be somewhat confusing. Time preference refers to actual internalized preference, while discount rate is a measure of how much someone values the future compared to the present. A high discount rate means that future value is heavily discounted, or reduced in value, compared to current value. Some authors use the term discount factor instead, which is essentially the same as discount rate but with an inverse interpretation; i.e. a low discount factor means a discounting of future value.

off between profits now and those of the future. Axelrod's case is made in reference to the PD game. If there is a low chance of future interaction, or if the actor cares about those interactions very little, then they most likely will not cooperate because they do not stand to gain anything. If there is a high likelihood of future interaction, or they place a high value on the future, then cooperation is much more likely, barring other factors. Social networks of relatively stable interactions mean, by definition, that actors have a very high probability of interacting with those in their network again in the future, mostly likely many times. Time preference, then, is not only an internalized preference for the self, but also relative to the social structure of the situation.

Self-efficacy, the last norm that is important for economic success discussed here, is the perhaps the most internalized. Efficacy is the psychological concept that connotes an agent's sense that they have control over their own lives and can "produce and regulate" the meaningful events in their lives (Bandura 1982: 122). Self-efficacy is not merely about possessing the capability to handle your environment, but the self-perception and self-judgments of those capabilities. It is trust in oneself. In a seminal article of the central role self-efficacy plays in human agency, Bandura (1982) outlined the functional and central role efficacy plays in decision making: Self-efficacy judgments, whether accurate or faulty, influence choice of activities and environmental settings. People avoid activities that they believe exceed their coping capabilities, but they undertake and perform assuredly those that they judge themselves capable of managing. Judgments of self-efficacy also determine how much effort people will expend and how long they will persist in the face of obstacles or aversive experiences. When beset with difficulties, people who entertain serious doubts about their capabilities

slacken their efforts or give up altogether, whereas those who have a strong sense of efficacy exert greater effort to master the challenges (123).

Econometric studies of self-efficacy, usually measured by the Rotter scale⁶ have shown that it has a significant influence on earnings and wages and was comparable in effect to schooling, intelligence and parent's earnings (Jencks 1979, Osborne 2000, Bowles, Gintis and Osborne 2001). Self-efficacy is also a strong predictor of educational attainment, occupational choice and career advancement (Duncan and Morgan 1981; Duncan and Dunifon 1998). But as Bowles, Gintis and Osborne (2001) point out, studies on the relationship between efficacy and economic success is still underdeveloped (158).

At first blush, self-efficacy seems more a personality trait or behavioral characteristic than a social norm and, therefore, not really relevant to a social capital-based understanding of economic success. This is, at least in part, true. Self-efficacy is an internalized personality characteristic derived, in part, from developmental experiences from birth onward. However, self-efficacy is also profoundly influenced by the social environment, in particular the family and peer interactions (Bandura 1986: 166-177). Bandura (1986) emphasizes the role of social learning in the development of self-efficacy. Through observational learning processes, seeing what others do and how they are rewarded, agents learn a sense of their own capabilities. Self-efficacy can be modeled in the family or in the extended social network. Bandura (1986) argues self-efficacy is most powerfully transferred through persistent, repeated social interactions (thus through social networks) with other persons who have similar attributes to the agent. Exposure to multiple and diverse models of efficacy have the most profound impact on self-efficacy (98-99). It is perhaps easier to understand the social nature of self-efficacy by thinking of

⁶⁶ The scale is based on Rotter's (1954; 1966) work on locus of control and social learning.

it as creating an expectation of the future. If Susan observes others in her social network who are similar as being successful, then it enhances her expectations of her own ability to achieve success. Conversely, observations of failure may diminish Susan's perception of self-efficacy. Because these processes model behavior where an individual updates their probability of success based on observing the success of those around them, I refer to it Bayesian social learning.⁷ Self-efficacy is important in a social capital context, because through Bayesian social learning, it is embedded in the same social network that is the basis for social capital.

All the norms above are learned socially as much as they are particular to the individual (Bowles and Gintis 2002). Bowles and Gintis call these "environmental inheritances" (13-4), but what they really mean is that they are learned from social interactions with family, peers and people in their social environment. Norms are transmitted through the social network. The mechanisms by which these norms are learned and transmitted are the focus of chapter 3.

Reciprocity

The concept of reciprocity is central to theories of social capital and functions hand-in-hand with trust. Putnam (2000) puts it directly, stating reciprocity "is the touchstone of social capital ... I'll do this for you now, without expecting anything immediately in return and perhaps without even knowing you, confident that down the road you or someone else will return the favor" (134). Putnam's definition is what we may call generalized reciprocity. Like generalized trust, generalized reciprocity is a norm

⁷ Bayes' theorem shows how someone updates their beliefs, modeled as probabilities, based on acquiring evidence.

and associated behavior that is extended to people at large. But Putnam's definition is misleading on two accounts: Reciprocity is not just general good will, but is often particularized; and he is overly positive and shows only the cooperative aspect of reciprocity. Importantly, reciprocity may also involve a retaliatory aspect. Fehr and Gächter (2000) quote the 13th century *Poetic Edda* that marks a more general view and captures the retaliatory aspect: "A man ought to be a friend to his friend and repay gift with gift. People should meet smiles with smiles and lies with treachery" (158). This quote is remarkable as it shows both specific reciprocity, be good to your friends; general reciprocity, meet like with like; and both cooperative and retaliatory aspects. This is the quintessential golden rule—the do unto others clause of most religions, but also the eye for an eye. Reciprocity, it seems, is a near universal norm (Ostrom 1998).

Reciprocity is different from mere cooperation and retaliation. As Fehr and Gächter (2000) point out, cooperation and retaliation are built on expectations of future benefits. It is also different from altruism, which is "unconditional" kindness to others, and is independent of others' actions. Reciprocity is a specific response to other actions, even if there is no material benefit (160-1). All the norms detailed here have behaviors and strategies associated with them, but the association is strongest for reciprocity. In addition to the attitudinal component, reciprocity is strongly associated with particular behaviors (i.e. repaying like with like and expecting the same).

Behavioral research on reciprocity shows a remarkable trend. "People repay gifts and take revenge even in interactions with complete strangers and even if it is costly for them and *yields neither present nor future material rewards*" (Fehr and Gächter 2000:

159).⁸ This goes against some of the maxims of strong rationality and shows the strength of the norm. A significant number people, maybe most, prefer to repay or punish people, even if it gives them no material benefit and at cost to themselves. This means that when moral interests and self-interest are in conflict, moral interest will often win.

Stating the strength and prevalence of reciprocal norms does not mean that they are accepted universally. They are a social construction, a rule, and adherence to the social rules will vary in any population. The prevalence of reciprocal norms depends very much on the environment an actor finds herself in. The role of the environment in affecting norms will be taken up in Chapter 3. There may also be a great deal of individual variation. Some individuals may use reciprocity strategically; they may behave reciprocally in situations where there is a strong likelihood of retribution or may sucker individuals with strong reciprocity norms into providing resources at small personal cost (Ostrom 1998: 11).

Reputation

There is one instrumental resource so closely related to norms that it is almost impossible to discuss it separately. That is the role of reputation. Put simply, reputation is how much others perceive an actor to follow social norms as well as their capability to do so. Reputation is based, in part, on past behavior. So an actor who acts in a trustworthy manner will gain a reputation for trustworthiness. An actor who behaves reciprocally, either positively or negatively, will gain a reputation as such. Someone who shirks, cheats, lies, defects and so on will gain a reputation of being untrustworthy, while

⁸ Emphasis in original.

someone who refuses to retaliate may gain a reputation as either a sucker or a saint depending on the observer.

One important facet of reputation is that it can be communicated and, therefore, learned by actors who have not necessarily interacted before. This is where social networks become important. If Mary and Bob both know Sue, then Mary can learn about Bob's reputation from Sue and vice versa. If Mary and Bob act in a trustworthy manner toward one another, then both of their reputations are enhanced. In this manner reputation is built little by little, through many and repeated interactions. This gives us two important methods for understanding social capital. First, it shows the diffusion of information about actors through the social network in a Bayesian model of social learning. The second method leads to the idea of indirect reciprocity (Doebeli and Hauert 2005).

In the Bayesian model, each actor's actions reveal something about themselves (most important, for this study, their adherence with norms of trust and reciprocity). Each other actor can, thereby, make better decisions by observing behavior and choosing their own actions in accordance (Gale and Kariv 2003). This social learning mechanism is important for much of the resource view of social capital discussed below.

Indirect reciprocity is the idea illustrated in the simple Mary, Bob and Sue example above: an actor can choose a strategy based on what they learn about their behavior from other actors. If Bob is trustworthy with Sue, then Mary can cooperate with Bob at a lower risk. If Bob cheated Sue, then Mary can learn not to cooperate with Bob. The effect is reciprocal action, retaliation and cooperation, in response to an individual's behavior with other actors. Indirect reciprocity goes beyond the simple "I help you and

you help me” to the more diffuse “I help you and someone else helps me” (Doebeli and Hauert 2005: 756).

Indirect reciprocity is somewhat different from the generalized concept of reciprocity. Generalized reciprocity is where the system is so indirect and so diffuse that actors behave reciprocally without the expectation of specific benefits. These three facets of reciprocity (direct, indirect and generalized) are really about the *scale* of the norm, or norm acceptance, rather than separate concepts. Norms operate at the inter-personal, network and aggregate/macro scale levels. Studies that focus on macro-economic performance or larger geographic units have most often focused on the role of generalized reciprocity (Putnam 1998; 2000; Fukuyama 1995). However, the macro scale plays less of a role in this analysis than direct and indirect reciprocity within networks.

Bridging Social Capital

The first form of social capital linked to economic success is bridging social capital. Bridging social capital, to echo the earlier general definition, refers to social networks that connect people or groups previously unknown to one another (Gittel and Vidal 1998: 15). Or to put it another way, it represents trust and cohesion between individuals from different communities. Aggregate bridging social capital has been the traditional focus of much of the previous social capital research, following the lead set by Robert Putnam and others, who primarily focused on the role of bridging social capital as a driver of civic engagement and generalized trust that provides wide benefits (Putnam 1993; 2000; Woolcock 2010).

As important as the aggregate is, different dynamics are observed at the individual level for bridging social capital. Rather than providing general public goods, bridging social capital provides particular access to valuable resources. These are resources that are used to “get ahead” or to better oneself and provide “social leverage” (Briggs 2007:153). The most important of these resources are access to private information, particularly about the labor market and individuals’ reputations, knowledge spillovers and access. Private information refers to gaining knowledge about individuals or opportunities that is not widely available, known as information asymmetries; knowledge spillovers refers to learning due to proximity; and access refers to the ability to gain access to institutions that can enhance success.

Information Asymmetries and the Labor Market

The first, and arguably the most important, channel in which social capital affects economic success is through providing a means of overcoming information asymmetries. Information asymmetries refer to situations of imperfect information, typically where one party has more relevant information about a transaction than other parties; or where individuals who could conduct a transaction cannot find each other; or when they do, they do not trust each other enough to trade (Durlauf and Fafchamps 2005). In contrast to standard neoclassical analysis, these sorts of information failures are the norm in human transactions rather than the exception (Hayek 1945).

Two specific types of information asymmetries are important for social capital: search and quality. Search refers to the available processes by which economic agents seek a trading partner before transacting. In markets, buyers rarely have perfect

information about the lowest priced goods and face the problem of how to acquire such information. Another variation of this is the search for jobs, where prospective workers have to acquire information about available jobs and their quality (Stigler 1962). This problem introduces a transaction cost known as a “search cost” (Dahlman 1979: 148).

The second information asymmetry is private information and quality. There is a specific information asymmetry that concerns the quality of a product in a transaction, whether that good is a used car (Akerlof 1970) or the skills of a potential worker. The problem is that the seller has more complete information about the quality of the good than the buyer. A used car seller knows more about the reliability of the car, and whether it is a “lemon,” than the buyer. A job applicant knows more about her skills and abilities than the potential employer. The problem becomes one where potential buyers or employers have to try to protect themselves from making “adverse selections”—costly or bad market decisions—due to information asymmetries (Akerlof 1970). This introduces information costs, another source of market inefficiency, into transactions. Both trust and reputation can reduce these costs, as they lessen the need for direct monitoring, provide information on reliability and provide a means of sanctioning non-cooperative agents through negatively affecting their reputation. Search and information costs therefore represent two significant sources of market inefficiency.

There are two methods for overcoming information asymmetries: formal institutions and interpersonal relationships (Durlauf and Fafchamps 2005). Formal institutions can take many forms to provide information or guarantee the exchange, such as a stock exchange or guarantees on used cars. Interpersonal relationships overcome asymmetrical information at a small scale through word-of-mouth or through repeated

interactions. Though they are not mutually exclusive, that is some formal institutions may facilitate or hinder beneficial interpersonal relationships, the concept of social capital brings the role of these interpersonal relationships into stark view. The chief insight is that an individual with a large network of contacts has access to more information at a lower cost than other agents. This gives her a potential competitive advantage in the marketplace. Below we will consider some specific examples of the way that social capital facilitates this type of advantage.

Flows of information in the labor market are perhaps the easiest to understand aspect of how social capital can affect economic success through overcoming information asymmetries. It is relatively easy to find anecdotal evidence of job searches being filled through personal connections or personal references and recommendations allowing someone to obtain a new position or advance their career. It is the embodiment of the cliché “it’s not what you know, it’s who you know”. Beyond the anecdotes and clichés, though, is a substantial body of research to support this claim. In the labor market we find that two types of information asymmetries are important: the search for jobs, including the quality of the job, and information about the job candidate.

Access to and information on the labor market is one of the main ways that social capital directly affects socioeconomic status. In a seminal article, Granovetter (1973) demonstrated the “strength of weak ties” in the job search. By weak ties, Granovetter was pointing to the type of connections that are referred to in the social capital literature as bridging connections—that is diverse and disperse connections with a wide range of people—and even refers to them as “bridge” connections between more tightly connected networks. These diverse ties channel information about jobs and applicants to jobs

through the loosely connected network. A fairly robust finding is that 40-50% of people find their jobs through information from family or friends (Granovetter 1995), meaning that a large proportion of people find their job through word-of-mouth and informal, interpersonal channels. Another finding is that people with diverse networks are able to obtain jobs with higher wages (Lin 2000; 2001; Calvó-Armengol and Jackson 2004). In Granovetter's (1973) analysis, having a diversity of weak contacts increases the probability of access to benefits. The implication is that individuals with more contacts, and contacts of higher quality, will be able to obtain jobs easier, will have fewer periods of unemployment, or will land jobs with higher wages. In practice, bridging social capital can be seen as reducing the search cost for job candidates by disseminating information about jobs to candidates through these interpersonal channels.

Another way that this bridging social capital operates is by providing information about a job seeker to a potential employer through personal recommendations and the reputation of the candidate. The issue for the firm looking to hire is to gain accurate information on the candidate. Reputation is the extent with which someone is believed to be trustworthy. The diverse ties in a bridging network can bring employers greater information about a candidate, for a lower cost, and reduce the likelihood of adverse selection in the hiring process. Personal recommendations deserve a specific mention in this process, as they represent the transfer of reputation from one person to the next. Here's an example: A new job candidate has little work experience and therefore very little reputation. Perhaps she knows someone who has ties to the hiring firm and is known to be trustworthy. This contact will vouch for her trustworthiness. Through this process of vouching, a portion of the trustworthy agent's reputation is tied to the new

candidate. If she turns out to be trustworthy, both of their reputations will be enhanced. If things do not work out, both reputations will be reduced. There is, therefore, some element of risk in personal recommendations, and it is unlikely that an agent will offer such a recommendation unless they have private information on the candidate's actual trustworthiness.

There is an element of mutual causality in the link between social capital and labor market success. People with high quality contacts are able to obtain higher quality positions and status, which reinforces and strengthens the quality of their social network. Conversely, poorer people are less likely to be able to advance their status or obtain higher quality jobs through their contacts and are less likely to form more diverse contacts through work channels. Social capital in this form has the effect of reinforcing relative income and status positions.

If we assume that a networked agent's employment and status is probabilistically related to that of their contacts, then the distributional effects of this form of social capital become more obvious. For example, Calvó-Armengol and Jackson (2004) develop a model that follows this assumption and shows that the duration of unemployment is dependent on the employment status of the network. If agents in the network become detached, drop-out of the labor market, it worsens the future prospects for other agents, causing the probability that they drop-out to increase. The reason for this, Calvó-Armengol and Jackson explain, is that searching for employment is costly; this cost may lead to the decision to drop if the expectation of the future is low. Likewise, employed agents in the network increase the likelihood of others to be employed in the future. In the aggregate, Calvó-Armengol and Jackson show that this employment externality "can

generate persistent differences among two social groups with identical economic characteristics except that they differ in their starting state” (438). Given different starting employment histories, these networks can result in sustained employment inequality.

One way to think of the type of economic success that can be facilitated by information sharing aspects of social capital is to think of them as a type of disequilibrium rent (Bowles Gintis and Osborne 2000). Disequilibrium rent simply means that an economic agent is able to gain economic benefit from asymmetries in the market—they are able to use their private information or access to private information to accumulate rents. This obviously takes place in the labor market, where individuals are able to advance their careers either through acquiring new jobs or advancing in their current ones due to access to private information. Entrepreneurship is another type of avenue. The Schumpeterian entrepreneur is one who searches for economic opportunities and takes advantage of private information (Bowles, Gintis and Osborne 2000: 6). Much like a job seeker, wide ranging and loosely connected networks provide a channel for the dissemination of this type of information.

Closely related to the capturing of disequilibrium rents is brokerage. The idea of brokerage is that some people are better positioned to take advantage of information asymmetries than others and can benefit by linking—by being the bridge—between disconnected networks (Burt 2000). Burt describes network structures known as “structural holes,” which exist when two more densely connected networks are very loosely connected to each other, perhaps through only a single agent. The agent that connects the two networks is a position, due to her bridging connections, to broker the

flow of information between the groups and can gain an economic advantage. As Burt (2000) puts it, her bridging connections give her “broad, early access to, and entrepreneurial control over, information” (355). The main idea is that an agent can use their network to profit by brokering between disconnected groups. This is similar to Granovetter’s weak ties argument, where looser connections provide greater access to private information. While the concepts of disequilibrium rents and brokerage can be applied directly to the labor market, which would mirror the discussion above in how it would operate through lowering search and information costs, they also point to other ways that social capital can lead to economic success. Social capital in these cases can fuel entrepreneurship by providing information on opportunities and markets or for career or social advancement through brokerage.

Knowledge Spillovers and Diffusion

Another information channel through which social capital can affect economic success is through knowledge spillovers. The concept of knowledge spillovers comes mainly from the field of industrial organization. In the most common definition, knowledge spillovers “include all the information exchange taking place informally between people working in the same or in unrelated industries” (Forni and Paba 2001:2). In this literature, knowledge spillovers are typically applied to the diffusion of technology and innovation and are modeled as efficiency-enhancing positive externalities. Importantly, these exchanges of knowledge are not regulated by formal market exchanges.

The typical conceptual narrative is that agents working to develop innovations or new knowledge facilitate other agents' innovation. This can happen either through active sharing or through pure imitation, but it is always facilitated through some form of social contact, typically geographic closeness (Breschi and Lissoni 2001). Studies of patent citations, such as the classic paper by Jaffe, Trajtenberg and Henderson (1993), show a geographic concentration of various activities and that patents (as a measure of innovation) are most likely to cite other patents from the same state and even the same metropolitan area. This geographic concentration shows that this behavior is based, at least in part, on social processes (Jackson and Yariv 2010).

Several studies have shown the spread of knowledge through social contact at the individual level. Some studies have looked at the spread of technological use by individuals, such as the use of hybrid corn among U.S. farmers (Griliches 1960) or the diffusion of microfinance participation in rural India (Banerjee et. al. 2012). Frank, Zhao and Borman (2004) show that the adoption of new technologies and productivity enhancing behaviors are facilitated within organizations through the social connections in those organizations. Their study shows that innovations spread more rapidly within an organization that has more social capital.

The basic concept of agglomeration can be related to social capital at the individual scale, as at its core agglomeration is based on the transfer of knowledge between individuals. Here is a simple example to show how productivity spillovers can work at the individual level. Consider two colleagues employed by the same firm working independently. The first, Sharon, figures out how to increase her productivity through a change in workflow. Her colleague, Michelle, learns of this innovation, either

through Sharon telling her about it or through observation of Sharon, and adopts the same behavior enhancing her productivity. If Sharon goes to a party, maybe she tells someone about her process and they try it, too. In this way, productivity is spread through normal social interactions and each person has potentially enhanced their economic position.

This knowledge externality doesn't necessarily have to be an innovation to have an economic impact. For instance, Greif (1993) shows how Maghribi traders in the 11th and 12th centuries exchanged information while conducting normal business in their complex trade and social network. In addition to market opportunities, the traders were able to monitor their own agents and the behavior of other merchants through the knowledge spillovers in the networks, could punish those who acted in bad faith and maintain a system of trust that enhanced their profits. The knowledge spillovers could also have a negative externality on productivity. For example, if employees learn that they can shirk some work from other employees, they may learn productivity reducing behavior. An example of this comes from Bandiera, Barankay and Rasul's (2008) study of fruit pickers. They found that without a strong individual motivation for productivity, in this case piece-work pay, the workers were likely to adopt the less productive methods of workers they were friends with.

The implication of these knowledge spillovers is that individuals who have more social capital—who are better connected socially—will have increased chances of benefiting from these types of externalities. Bridging connections increase contact between diverse groups and therefore also increase, probabilistically, the likelihood of learning productivity-enhancing knowledge or behaviors through these networks. Bonding networks can also provide knowledge spillovers, for example people may

acquire important work skills through their tight-knit networks (Edwards and Rothbard 2000), but the closed off nature of these networks generally do not allow for circulating new knowledge and behavior from outside the network unless it also features well-connected individuals. In a probabilistic fashion, better connected individuals with more bridging social capital will then be more likely to have greater work productivity and thus greater economic success.

Access and Influence - Institutional Resources

Better connected individuals have a further tool for enhancing their economic status: the potential for greater access and influence in a variety of settings and institutions. Probably the most important mechanism of this kind is access to institutional resources. The main intuition here is that individuals with a greater number of diverse ties and with social networks of higher social standing will be better able to leverage institutions and organizations to their benefit. According to social resource theory, individuals with high social capital are able to acquire greater ties to those who control access to institutional resources (Lin 1990). In this aspect, social capital not only provides information, but also opens doors.

Again, the labor market provides salient examples of how this access can influence economic success. While these institutional connections can provide greater success in the labor market by providing more avenues for the flow of information, as discussed above, they can also provide for success through access and influence in a firm's work hierarchy. The classic example of this is the "Old Boy Network," wherein people, usually men, with social ties are given preferential treatment in hiring and

promotion within firms. Ahn et al. (2012) found that CEOs were more likely to appoint a former school-mate or someone from their region, while Cohen, Frazzini and Malloy (2008) found that financial portfolio managers invested much more heavily in firms that had former school-mates in leadership; likewise Inci and Parker (2012) show that entrepreneurs are more likely to get financing if they are socially connected to lenders. This crowds out less connected entrepreneurs, who are less likely to find financing no matter the worth of their project. Lalanne and Seabright (2011) offer some damning evidence of the Old Boy Network—they find that executive pay has an increasing function for the number of ties they have to other people in high positions, but only for men. When they control for men’s networks, the large pay gap between male and female executives largely disappears.

Access to promotion is important, but social capital can open other doors that can have distributional effects. A strong example of this is high status parents leveraging their social connections to gain admission for their children in selective, high-quality private schools. One documented aspect of this is the “shadow process” of admissions at colleges. In 2009, an Illinois commission found that the University of Illinois College of Law and College of Business both routinely admitted less qualified applicants “at the intervention of well-placed family members or friends.”⁹ Similarly, an anecdotal report from Law Professor Aaron Taylor (2013) claims that this shadow process is a regular part of law school admissions and that it almost always works to advantage privileged, well-connected and typically wealthy applicants. These interventions were based almost

⁹ Saulny, S. “U. of Illinois Manipulated Admissions, Panel Finds,” *The New York Times*, August 7, 2009, A10.

entirely on the social capital of the family.¹⁰ Perhaps most telling is that this shadow process typically benefited least capable, but well-connected applicants over applicants from poorer backgrounds. As the discussion of the old boy network above shows, these college admissions will build connections that will serve to benefit the applicant later in life.

Another example is access to political institutions and resources through social connections. One of the most persistent themes in the analysis of social capital is its role in fostering “civic engagement” (Putnam 2000). While civic engagement is generally a public good, the concept of access goes beyond engagement to inter-personal relationships that grant privileged access to, and presumably influence over, these political institutions. The most nefarious example of this is pure cronyism, the granting of positions or contracts to friends and personal contacts (Mauro 1995). Beyond simple personal benefits, better connected individuals may be able to mobilize political support for public actions that provide economic benefit, such as the mobilization of public funds for neighborhood improvements that increase property values. Fischel (2005) shows how connected homeowners mobilize politically, typically in a NIMBY manner, to protect their property values.¹¹ Similarly, individuals with greater institutional access may have influence over the quality of policing or access to school officials.

¹⁰ “Calls from lawyers advocating on behalf of their friends’ kids were common. There was often a comical absurdity to their pitches. Most of these people knew little about the applicants whose admission they were supporting; a couple did not even know the applicant’s name. Most commonly, the basis of their urging was not the applicant’s accomplishments, but the accomplishments of the applicant’s family or social group. As a judge once told me in touting an applicant, ‘He comes from good genes.’” Taylor, Aaron N. “Hypocrisy, Social Capital, and the Shadow Process,” *Diverse: Issues in higher education*. February 28, 2013. <http://diverseeducation.com/article/51621/>

¹¹ NIMBY is an acronym for Not In My Back Yard.

In each of these examples, social capital serves to open the door for individuals to gain economic success through non-merit processes of inter-personal relationships. In some cases, such as that of political influence, the factors are subtle, but in others, such as the old boy network, they are not. What they all have in common, with each other and also the benefits of information above, is that they leverage social connections as a non-merit source of economic advancement. They offer a means of overcoming collective action problems and fostering cooperation among diverse agents.

Bonding Social Capital

So far we have focused on the role of diverse connections in fostering economic success. Now we turn to the role of close interpersonal connections, bonding social capital, in fostering success. Whereas bridging social capital is associated with diverse, dispersed and weakly connected social networks, bonding social capital is created in thick, dense and strongly connected networks. Bonding social capital refers to networks that connect similar people to one another—people of similar experience or characteristics. It represents close connections among people who know one another (Gittell and Vidal 1998: 15). It is the type of social capital associated with strong group connections and, to a certain degree, with exclusivity (Putnam 2000: 22-24). As Putnam (2000) states, bonding social capital undergirds “specific reciprocity,” mobilizes “solidarity” and serves as “a kind of sociological superglue” (22). It binds people together while also defining boundaries among and between people.

Like bridging social capital, bonding social capital is linked to specific types of resources and mechanisms which may have an effect on individual economic success. The most important is what Briggs (2007) calls “social support,” resources that

“help us get by or cope with particular challenges” (152). These social supports provide a base-line that enable economic success. By this I mean that they build a social scaffolding upon which economic success outside the home and neighborhood can be built. In some cases they act as substitute for bridging social capital and in some cases act as complement to it. Bonding resources are also more closely related to group dynamics of social learning and social identity, which are covered in the next chapter. Finally, bonding social capital can, in some cases, impede economic success when close network connections become a drag on personal resources.

Social Support: Bonds as a resource.

While bridging social capital grants social leverage to facilitate advancement and help individuals to “get ahead,” social support resources help individuals “get by” and cope with specific situations (Briggs 1998). At its most basic, bonding social capital represents a network structure for the exchange of favors and resources, usually based on affect or social obligations. Survey research has shown that people rely on their friends often and substantially with 55 percent of Americans reportedly going to friends and family first when needing to borrow money and 48 percent of British respondents reportedly lending an average of \$1,800 to friends and relatives in the span of a year (Leider et. al. 2009: 2).

The key is that these resources are accessed due to interpersonal relationships. These resources can take a variety of forms, from various types of material support accessed due to personal relationships, such as small loans, child care, shared car rides, to immaterial support such emotive care and personal advice. These are only examples.

The key is not the particular resource, but that it is gained through close interpersonal connections.

Social supports are perhaps most important for poor and working class families where they can function as a substitute for savings and income. This is demonstrated most clearly in Carol Stack's 1974 ethnography of a poor black community, *All Our Kin*. In those communities, Stack observed "extensive networks of kin and friends supporting, reinforcing each other—devising schemes for self-help, strategies for survival in a community of severe economic deprivation" (28). Stack's argument is that the poor families she studied were based in kinship networks. These networks were based on the exchange of services, gifts and emotional support. These support networks developed as survival strategies, "adaptations" for the residents who had very little to no income. These networks were governed by strong norms of exchange, based on both strong sentiments of solidarity and the material realities, where "not to repay on an exchange meant that someone else's child would not eat" (28).

Stack's work is just an example of a bonding network providing social support resources. Similar networks of exchange have been observed and studied in different communities and contexts, for example by Edin and Lien (1997) in their study of low income white and Hispanic mothers in Chicago, Boston, San Antonio and Charleston and by Newman's (1999) ethnography of the working poor in Harlem. Ethnic and immigrant communities often have similar strong social support networks, where the inherent closure (or exclusionary nature) of the networks allows for greater monitoring and the exchange of obligations (Coleman 1988: S106). The observation of these networks is

widespread, but it is not universal; the strength of ties varies based on the particular community and an individual's tenure and ties to it (Desmond 2012).

One of the most important services that is provided through bonding networks is child care. Upper and middle income families sometimes rely upon family or friends for child care but also have the resources to pay for child care, whereas poorer women more frequently use unpaid child care provided through family and friends. When poorer women do pay for care, it is both of lower cost and quality than better off families and represents a larger fraction of family income (Anderson and Levine 1999). Anderson and Levine's econometric analysis show some strong differences between skilled and unskilled mothers: 37% of mothers with less than a high school education rely on a relative for child care, the majority of it unpaid, compared to about 17 % of educated mothers. For those who do pay for child care, less educated mothers on average pay 10.4% percent of their income, while educated mothers only 6.5%, though education mothers pay much more in absolute amounts (7-9). The employment context can effect child care decisions, as low wage earners often have to work nontraditional hours, deal with shift work and can have changing work schedules (Presser 2003). Low-income jobs are also unstable, which combined with varied hours, can make finding child care, especially paid child care, much more difficult for low income families (Henly and Lambert 2005). Without an institutional response to increase the supply of child care, such as subsidized programs like Head Start, poor families can be pushed to rely upon relatives and friends for child support or may have to withdraw from the labor market to provide care themselves.

Middle-class and affluent families also benefit from social support networks, but for them it is less a means of survival and more a means for maintaining current income level. By its nature, bonding social capital ties together people of similar backgrounds and status, so members of the working-class will be most strongly bonded with other working class individuals, middle-class with middle-class and affluent with affluent, in addition to kinship and ethnic ties. Also of more affluent families, supportive and bonding networks can act as sources of social leverage (McNamee and Miller 2009). The bonding network could provide resources directly, for example through nepotistic hiring, or indirectly by providing a link to high quality bridging networks. As we saw earlier, one of the simplest examples of the latter is a close family member who uses their social bridges to find employment opportunities or job references for another family member.

In these examples, bonding social capital acts as a substitute for two types of resources: savings dimension and bridging social capital. The first, savings dimension, is the dynamic that was highlighted above for poor families. Access to a thickly connected network of personal ties allows families to provision resources through these interpersonal connections and is based on exchange of, or is discounted by, affect, favors and social bonds rather than through the exchange of money. The other type of substitution is with bridging social capital, allowing less connected individuals to access resources through their thick networks. For example, bonding ties can also serve as a link to the labor market, as job opportunities are often shared within close networks first and occupational skills can be transferred through close relationships (Portes 1998). This substitution is imperfect, however, as the information and resources in these networks are used over and over within the tight group with limited inputs. Outside connections,

bridging links, present opportunity for access to new resource systems (Granovetter 1973).

Bonding social capital also plays a large role in identity selection and norm formation. This is the socialization mechanism of social capital, which was one of the focuses of early social capital researchers like Coleman (1988). The processes of social identity and social learning are examined in the next chapter, but the main idea is that people's norms are influenced by those with whom they interact. Individuals learn from and tend to adopt identities similar to those of their peers. This means that bonding networks can play a major role in shaping the norms outlined above.

Beyond the resource enhancing and substitution functions of bonding social capital, it can in some cases be an impediment to economic success. The same social obligations that can serve to enhance or enable economic success can also work to impede it, if there are excessive social demands. Social obligations could potentially drain away resources from an individual who could otherwise use them for greater economic success. To draw upon Stack (1974) again, the networks of child care and sharing of earnings among poor single mothers often meant that individuals were not able to save for themselves. Another way bonding social capital can have negative economic consequences, and this can apply to bridging social capital as well, is when the collective action mechanisms of social capital enable coordination of anti-social behavior, such as with youth gangs; or when close-knit networks prevent the access of others to markets, such as with ethnic communities tightly controlling entry into certain markets as seen with Produce markets in the eastern U.S. (Carroll and Stanfield 2003: 402). Perhaps the greatest impediment to economic success, however, is that bonding social capital may

lead individuals to select “oppositional identities” (Ogbu 1978), which reject mainstream norms and values and may inhibit economic success.

One way to conceptualize the distributive effect, which is the effect on economic success, of bonding networks is to picture different networks of different resource levels. By membership in a particular group, say an extended family or closely bonded neighborhood, an individual can access the resources in that network at a lower cost. If these resources are of high quality—such as access to bridging networks of high status individuals or institutional resources—then an actor has a greater opportunity for economic success. Conversely, if a close bonding network lacks high quality resources or extensive bonding networks, then access to networks beyond the immediate group has a higher cost, reducing the ability, and possibly willingness, to obtain these resources. Of course individuals will vary greatly in their ability and willingness to capture these resources, but the distributional effects on average mean that actors in close and resource rich environments and networks will obtain greater economic success than those in resource poor networks. I will examine this claim more in the chapter on neighborhoods.

Endogeny in Social Capital

What causes social capital? If social capital has a direct effect on economic success, is the opposite also true? Does economic success create social capital? Is it even important? In this section I discuss the role of endogeny in social capital. There is a subtle difference between the theoretical question of endogeny, which occurs when causation is internal to the system, and endogeneity, which is a methodological issue discussed in chapter 5. Here we focus on the endogenous relationship between social capital and economic success.

Putnam (2000) states, in the study of social capital, “the causal arrows . . . are as tangled as well-tossed spaghetti” (137). One of these tangled spaghetti strands is the relationship between income and social capital. While the majority of this chapter has been spent showing how social capital affects economic success, it could also be argued that economic success has a direct effect on social capital. We can see this in the theories of Bourdieu (1986) and Coleman (1988), which show that economic status and social capital are mutually reinforcing—that individuals or groups possess certain forms of social capital based on their economic status, which then help them maintain their income or economic position. This is what Portes and Vickstrom (2011) call the “origins issue,” and it is important from both a theoretical and policy standpoint to understand how these can be mutually causal.

The argument is relatively straightforward and has been suggested through much of this chapter so far. If the various forms of social capital can be hypothesized to have an effect on economic success, economic success can also be hypothesized to have a reciprocal effect on social capital. Economic success can affect social capital both through the resource and normative dimensions. For resources, economic success in itself may provide the opportunity for building or strengthening bridging or bonding connections. For example, a successful career or higher status position provides opportunities for an individual to build connection with individuals of similar or higher status because of their own success. These connections could then open up new opportunities. Economic success creates opportunities for agents to access networks with high levels of resources. Those high resource networks then provide opportunity for an agent to either maintain or enhance their economic success in a positive feedback loop.

The argument for bonding social capital is similar but less direct. If a close bonding network is made of economically successful members, members will have access to greater resources at lower cost. This is what provides the opportunity to enhance individual economic success. Achieving economic success further enhances the resources available to members of the network, again creating a positive feedback loop. Bonding networks without higher levels of economic success can help sustain members at their current level of success, but the enhancement effect may be small. Bonding social capital may also be enhanced by economic success, because economically successful individuals will not strain the resources in bonding networks as much as less economically successful individuals.

Economic success can also affect norms. If an individual is rewarded economically by adopting a particular norm, such as trust or a low discount rate, then that success will have a positive feedback and strengthen the norm. Similarly, if an individual is in a network with economically successful individuals, then they may adopt the attitudes and behaviors of those around them. This could also work the other way. Individuals who are not successful when they behave in accordance with social norms could find that those norms are weakened by the lack of success.

It is also possible to show how economic success may have a negative effect on social capital. First, there is an opportunity cost to social capital. It takes time to build and maintain extensive networks or even circles of friends. Economically successful individuals may have a higher opportunity cost of time and be less likely to build or maintain their networks if they are already successful. Likewise, individuals who have to devote much of their time working, such as the working poor, may not have time to build

networks. In this case we could say that lack of success reinforces a lack of social capital. Second, there is an issue of motivation. If an individual is already economically successful, they may not feel the need to maintain or build social capital. Also, economically successful individuals may not build extensive bonding networks because they do not have a need for the resources that these networks provide, because resources such as child care and small loans can be provisioned in the market.

There is one more important aspect to treating social capital as endogenous from both a theory and policy perspective. Setting aside the issue of mutual causality for the moment, the subtle consequence of treating social capital as endogenous is that it implies that it can be affected and potentially manipulated. This is best illustrated by posing the counter-argument, which is that social capital is exogenous. If social capital were exogenous, then it would be set in the short-run and therefore unexplained. When we treat social capital as endogenous, we instead treat the causes of social capital as internal to the system. If we can understand the causes of social capital, then it can be changed by changing its causes. To bring the mutual causality of social capital and economic success back in, policies which affect one, such as policies to build social capital, has spillover effects on the other.

Conclusion

Social capital primarily affects economic success by enabling collective action. The norms associated with social capital provide a motivational and incentive basis for cooperation, and the networked resources help enable collective action by reducing different transaction costs and enhancing productivity. Collective action enables people

to find work, be more productive at their jobs, explore new opportunities and maintain their quality of life at lower cost. In short, collective action can make people better off.

In this chapter, we have focused primarily on the individual side of the social capital and the collective action question. But social capital is an inherently relational concept, meaning that our understanding is incomplete without looking at group processes, which are different from the individual ones. In the next chapter we do that by focusing on social capital at the neighborhood level.

CHAPTER 3 - NEIGHBORHOODS AND NETWORKS

Americans live in neighborhoods largely segregated by income, and the patterns of segregation have grown with time (Reardon and Bischoff 2011). Economic segregation has grown even as racial segregation has declined in many U.S. cities (Glaeser and Vigdor 2012). The patterns of economic segregation have followed closely the patterns of economic inequality, which raises the question: What role do communities have in economic success? In this Chapter we move from looking at the social dynamics of economic success at the individual level to how neighborhoods can affect economic success through social capital.

Neighborhoods are clearly segregated by income. The question is does the resource level of a neighborhood have a causal effect on individual success? The argument I put forth in this chapter is that neighborhoods do matter for individual success, because they are social networks and can determine who has access to resources, norms and other cooperative individuals. While there is an element of choice in neighborhoods—people are free to choose where to live—previous research on poor communities shows that neighborhoods do have an independent causal effect on individual success.

In this chapter, we will first examine some of the previous thinking about the role of neighborhoods in economic success. Most of this previous work has focused on the issue of concentrated poverty. After the review, we develop our theory by looking at the nature of social interactions and draw out the implications of those in segregated networks by looking at local interactions and processes of network differentiation. We will then look more closely at social capital transmission through processes of social learning and social identity theories. The chapter concludes by drawing explicit connections with chapter two.

Neighborhoods Effects: A Review

In chapter 2, we focused on developing a theory of how social capital affected economic success by focusing on the “stuff” of social capital: the normative and resource dimensions. In this chapter, we instead look at the aggregate side of social capital, the idea of networks and network dynamics. So why focus on neighborhoods? There are two answers. First, neighborhoods represent a particularly salient network to which most people have membership simply through their place of residence; and two, because previous research has shown the importance of neighborhoods for economic success.

Neighborhoods are both a geographical and social construction (Coulton 2012). Geographically, neighborhoods are contiguous areas of residence with some form of shared public space. The geographic boundaries of neighborhoods are often arbitrarily defined by public officials, but in practice they are often amorphous and shaped more by social interaction (or social isolation) than by static lines (Gotham 2003). The physical form of neighborhoods can be seen as forming an ecological environment for humans. The idea of a neighborhood as a physical space or a physical container for human action

can be contrasted with the equally important social definition of a neighborhood. The social definition is that a neighborhood is a social network of people who live in close proximity to each other. Neighborhoods are defined through social interactions and social understandings. So while neighborhoods can be thought of as places, even more importantly they are networks of people. Neighborhood effects refer to a class or group of theories and propositions, mostly stemming from sociology and political science, that the neighborhood one grows up or lives in has a causal effect on life outcomes.

Neighborhood effects have mostly been studied in the context of urban poverty (for example Wilson 1987, 1996) and the neighborhood's role in sustaining poverty in U.S. cities. Concentrated urban poverty is a highly visible, complex and intractable social problem that is tied in with a history of official and unofficial racial discrimination. But why should spatially concentrated poverty matter? Does it have, in itself, a causal effect? Does living near poor people make one poor? In other words: Is poverty contagious? It's worth considering some previous thinking on the causes of urban poverty before trying to make the connection to social capital.

The contemporary literature on the role of the neighborhood in shaping life chances and outcomes was sparked by the work of William Julius Wilson (1987; 1996). Wilson's work was in part a response to conservative thinkers of the 1980's and 1990's who, following Daniel Patrick Moynihan's controversial *Moynihan Report*, proposed that the cause of urban black poverty was a ghetto culture, or a culture of poverty. Wilson presented a pervasive counter-argument that took cultural differences and family structure (the pillars of conservative theorizing on poverty) seriously, but contextualized them by linking them to both unemployment and the changing social structure of urban

neighborhoods. Wilson argues that changes within the wider political economy led to the concentration of poverty in urban neighborhoods. Deindustrialization led to growing unemployment among working class African-Americans, while middle-class black families left urban neighborhoods as social changes granted greater mobility. Among other important causes of poverty the flight of the black middle class lowered the social capital in their former neighborhoods. One effect of this was the removal of a network for finding employment, while the second was transmission of “mainstream” behavior norms (Wilson 1996: 67–70). There are many important nuances in Wilson’s argument, but social capital plays a major role in sustaining concentrated poverty as a vicious circle. In other more empirical work, Wacquant and Wilson (1989; 1993) found that residents in poor neighborhoods had fewer overall social contacts, lower involvement in organization, more instances of single parents and that the social contacts they did have “tend to have ties of lesser social worth, as measured by the social position of their partners, parents, siblings and best friends” (1989:23).

Tietz and Chapple (1998) present eight hypotheses on the causes of urban poverty: macro-economic shifts and globalization that undercut employment for the urban poor; inadequate human capital; racial and gender discrimination in employment; the interaction of culture and behavior which isolates the poor from the mainstream labor market; a spatial mismatch hypothesis wherein new employment opportunities for less educated workers are spatially located on the urban fringe away from where most poor people live; migration processes that removed middle class residents from neighborhoods; what they call an “endogenous growth deficit,” which means low access to capital and entrepreneurship for community development; and finally that urban

poverty is the result of misguided public policy (36-7). These hypotheses are not mutually exclusive, and some are tied very closely. For instance, macro-industrial shifts are closely tied to the spatial mismatch hypotheses. The 1960s -1980s saw a radical deindustrialization of U.S. central cities, as globalization and deregulation allowed firms to move their manufacturing overseas or away from the urban core to take advantage of lower land and labor prices or were undermined by international competition. The jobs that replaced these were typically lower wage service industry jobs located mostly in the booming suburban sprawl, spatially distant from where most poor and less educated people lived. These structural economic shifts are important for understanding the historical rise in inequality, but by themselves don't explain the persistent role of community—it's easy to imagine, under the structural view, that neighborhoods are really just containers of people with no real causal processes themselves, and therefore, spatial poverty processes are just spurious to the macro-economy.

The neighborhood literature, however, has shown neighborhoods to have independent effects on outcomes. In the quantitative literature, concentrated poverty has been linked to a wide range of negative adolescent outcomes including physical and mental health, low school achievement, drop-outs and teenage pregnancy (Brooks-Gunn et al. 1997). Jencks and Mayer (1990) find in a fine grained meta-review of empirical studies that the socioeconomic status of the neighborhood independently affects a teenager's educational attainment and sexual behavior and reduces the chance to find well-paying jobs. Another in-depth review of the neighborhood effects literature (Sampson et al. 2002) found that a number of social problems—crime, delinquency, social disorder, infant mortality, child maltreatment—were “bundled together at the

neighborhood level” and related to neighborhood-level factors of disadvantage including “concentration of poverty, racial segregation, single parent families and rates of home ownership and length of tenure” (446).

Most of these are correlational studies that link structural factors of the neighborhood to outcomes, without considering the role of social capital in mediating the connections. An exception to this is the ongoing work of Robert Sampson and colleagues. Through an ongoing series of publications (Sampson et al. 1997, Sampson et al 1999; Morenoff et al 2001; Sampson and Graif 2009; Sampson 2011) that utilizes data from the Project on Human Development in Chicago Neighborhoods, the researchers examine neighborhood social processes related to social capital. They show that their concept of collective efficacy—basically a measure of informal social control—independently affects rates of violent crime using a hierarchical linear model to control for individual characteristics (Sampson et al. 1997, Morenoff et al. 2001). Importantly, they also found that neighborhood structural characteristics—such as concentrated disadvantage, affluence, stability, population density and immigration—are direct predictors of outcomes themselves and predictors of neighborhood social processes (Sampson et al. 1999). In a more recent study (Sampson and Graif 2009), they have shown that neighborhood disadvantage and residential stability are differentially related to four different measures of neighborhood social capital: collective efficacy, organizational involvement, local networks and conduct norms.

Sampson et. al. (2002) identify three common neighborhood mechanisms: social ties and interactions, norms and collective efficacy, and institutional resources (457-8)¹².

¹² They also suggest land-use patterns as a fourth mechanism, but this falls outside of the scope of this dissertation.

Social ties and interactions refer to the direct social relationship between neighbors, while norms and collective efficacy refer to conditions of mutual trust and cooperation between neighbors. The last, institutional resources, refers to the “quality, quantity and diversity of institutions in the community that address the needs of [residents]” (458). Quality schooling is an obvious member of this last category, but it can also include parks, quality policing, family support like day care and others. Despite these social mechanisms, structural characteristics of the neighborhood, such as poverty and stability, remain strong predictors of neighborhood outcomes (Sampson et. al. 2002: 465). The mechanisms that Sampson et. al. (2002) outlined are somewhat indistinct as concepts. It is hard to imagine, for example, strong trust among neighbors (a norm) without a density of social relations. It is more fruitful, perhaps, to abstract these specific neighborhood mechanisms into more general categories of socialization effects and resource pools, while understanding that in reality the mechanisms will always overlap.

Small and Newman (2001) propose socialization and instrumental mechanisms as two models of how neighborhoods affect economic success (32). Socialization mechanisms are processes that seek to describe how neighborhoods mold people, while instrumental mechanisms are ones in which the environment limits individual agency. These mechanisms are closely related to what I develop below in that they are concerned with how the social environment shapes individuals and conditions their access to resources. Where I differ is that I propose socialization and instrumental mechanisms as general aggregate processes of social capital and not just as processes in poor communities. The biggest change is that instrumental processes can limit or *enable* individual agency; it is not just the neighborhood, but the neighborhood as a social

network which molds people. As will be explained below, however, social networks and neighborhoods are related. The most important instrumental process in my account is that of network differentiation. The most important socialization processes in my account are social identity, membership processes and social learning.

Social Interactions

Neighborhood effects, peer interactions and even social capital generally can all be understood as primarily *social* interactions. Since the goal of this chapter is to outline the mechanisms by which social capital works in aggregate, it is worth taking a bit of an elementary view to consider the nature of social interactive processes before moving to the specific mechanisms of social capital. Scheinkman (2008) defines social interactions as “particular forms of externalities, in which the actions of a reference group affect an individual’s preferences”. In this general formulation, the reference group depends on context. These are sometimes referred to as “non-market” interactions, because they usually don’t rely on prices (Scheinkman 2008: 1).

Some forms of social interactions are purely strategic. This type forms the basis for non-cooperative game theory. For instance, the prisoner’s dilemma game can be viewed as a social interaction between the players, where each player selects a strategy based on her expectations of what the other player will do. Another interaction of this type is that of strategic complementaries, where an actor’s utility increases with how much peers take the same action (Scheinkman 2008). The prototypical version of this type of social interaction is the fairly well-known Thomas Schelling’s (1971, 1978)

critical mass, or tipping, model which initially sought to explain racial segregation.¹³ In the model, agents made choices about which neighborhoods they lived in and had a preference (increasing utility) for the race of her neighbors. If agents were unhappy, they would move to a neighborhood that matched their preferences. Strong racial preferences unsurprisingly lead to total segregation, but the surprising result was that even very mild racial preferences, say three out of eight neighbors of the same race, could also lead an initially integrated city to become totally segregated.

Social interactions can be thought of as being of several types (Manski 2000). First there are constraint interactions. These are interactions where the decisions of one agent constrain the choices of others. These are perhaps the easiest models to understand, as they range from the choice of agent buying a good affecting the availability or price of that good to models of street congestion, where each agent's use of roadways has an impact on others. This type of interaction forms the heart of the "tragedy of the commons" problem, where each agent's use of a resource limits its use by others (see Ostrom 1990). Second there are expectations interactions, which are a form of social learning, where an agent changes their expectations from observing the outcomes of the actions of others. Third there are preference interactions, where an agent's preferences depend or change with the actions or preferences of other agents. This is the type of interaction captured in the critical mass model, above, or in the social identity model. This list is not exhaustive, as Manski (2000) says, there is a more general class of interactions where "preferences, expectations and constraints of one agent ... affect the

¹³ The name critical mass model wasn't used until Schelling 1978, and was also published by Granovetter (1978) in a separate paper in the same year. The model was later expanded to explain other phenomenon.

preferences, expectations and constraints of another agent in ways that are not mediated through actions” (11).

Neighborhood effects can be generalized as a specific class of social interactions that influence outcomes. Manski (2000) outlines three general types of social interactions (23-25). First there are endogenous interactions, which occur when an individual’s behavior varies with the behavior of the group. This model implies that an individual bases her behavior on the expected or observed behaviors of others--the mean behavior of the group. The second type Manski outlines are contextual interactions, where behavior varies with exogenous characteristics of group members. This class includes things such as the socio-economic or racial composition of the group and is based on average attributes rather than behaviors. Most studies of neighborhood effects fall in this category, where researchers operationalize neighborhood measures as level of poverty, racial composition of the neighborhood and so forth.¹⁴ Manski’s final category of interaction is correlated effects, in which people in a group have similar outcomes because they have similar individual characteristics. Ascribed group membership, such as race, is an example of this effect, where individuals are assumed to co-vary in part because of facing the similar challenges or opportunities due to their race. Most of the social interactions I am concerned with here, however, are endogenous effects.

One near universal property of social interactions is that they produce externalities (Akerlof 1997: 1005). An externality is cost or benefit that falls on individuals not directly involved in a transaction (Buchanan 1967). In any type of social interaction, the behavior or characteristics of someone in a group has an effect on others in that group. These externalities are central to social capital (Durlauf and Fafchamps

¹⁴ See Sampson, Morenoff and Gannon-Rowley (2002).

2005). The behavior and resources of individuals in a network have effects on others within that network. In the analysis that follows, I focus on three inter-related types of social interactions: local interactions, social learning and social identity.

Local Interactions and Social Distance

To begin to understand to how social capital operates in a neighborhood, and in other network formations generally, it helps to conceptualize the neighborhood as a social space created through local interactions. The idea of local interactions is fundamental to social capital theory, but is rarely expressed explicitly. Local interactions are a type of social interaction concerned with the structure of relationships. The idea of local interactions refers to “environments where individuals interact with a group of agents close to them in an otherwise large economy” (Özgür 2010: 588). The idea comes from the observation that agents who are “close” either spatially or socially tend to have similar characteristics or outcomes. This is to capture the embeddedness of social and economic interactions, where “each agent’s ability to interact with others depends on the position of the agent in a predetermined network of relationships, e.g., a family, a peer group, or more generally any socio-economic group” (Özgür 2010: 592). This idea is at the heart of social capital theory: that people interact with people to whom they are connected and that these connections have individual and aggregate outcomes. So the idea of local interactions captures the network structure of social capital. People are simply more likely to interact with people to whom they are connected socially. For this analysis the important social connection is the neighborhood, but any social space could form the field for local interactions.

Local interactions become important when combined with the externalities of social interactions. If, as stated above, all social interactions involve some form of externality, negative or positive, then *localizing* those externalities can have important consequences in creating differences between networks. The social externalities are strongest felt with a social sub-set, the local environment. In an economy with multiple local interactive environments, the nature of the externalities can produce marked differences between social groups. An environment rich with positive externalities will generally benefit those connected with it, while an environment with strong negative externalities will hinder. An important point to distinguish is that the strongest effects of these externalities are contained within the locality and are not necessarily shared across larger geographic or social space. Schelling's (1974) tipping model represents precisely this type of interaction: agents make decisions based upon interactions with their neighbors rather than the larger economy. In Schelling's model the decision of other agents to move in or out of a neighborhood creates an externality for their local neighbors and influences those agents' decisions to stay or go. The interesting part is not just the local decisions, but how they create larger patterns of *difference* based on the local interactions, such as the production of segregation.

An empirical example will help make the importance of local interactions clear. Investigating the spatial dynamics of employment, Giorgio Topa (2001) looked at how unemployment clustered geographically in Chicago in the 1980's and 1990's. Empirically, unemployment was clustered into geographically contiguous census tracts, there were positive spatial covariances between locations, and unemployment rates over time were also correlated. As Topa states, "This geographic 'lumping' is consistent with

the presence of local interactions and information spillovers” (263). Topa found that having employed neighbors significantly increased the likelihood of an individual having a job and that this effect was independent of observed tract characteristics. The local effect was stronger in more socially homogenous census tracts, and the presence of neighboring tracts with similar demographic characteristics increased the effect. What Topa shows is that employment has a spillover effect and that this effect is localized and contained, not only in geographic areas, but in social spaces of neighborhoods. This evidence supports the ideas of information sharing in chapter two, where information exchange on jobs or references to peoples’ character are primarily local occurrences.

A closely related idea to local interactions is that of proximity and distance, particularly social distance. The idea of distance is the definition of who is local; who is interacting in these local interactions. Distance can be spatial, meaning physical distance between actors, or it can be social, meaning how much separation or social overlap there are between social groups. Proximity and distance are, on one hand, ways to represent the connectedness of the social network. On the other hand, they are somewhat analogous to the strength of ties in a network. A bonding social capital network would be characterized by more proximity, while bridging connections are access to more distant connections. Social distance, though, is also related to the perception an agent has about how similar a group is to themselves and not just a probability function of their likelihood of interactions, though the two are closely related (Akerlof 1997).

The concept of distance helps to define who is local in interactions and in understanding who people interact with in their networks. Individuals are less likely to

have network connections with those who are distant to them, which is important for understanding self-sustaining differences between networks.

Local Interactions, Network Differences and Exclusion

Now that we have an outline of how local interactions work, and how they can serve to create more limited economies through spillovers within larger economies, we can now begin to outline some of the ways these local interactions can create differences in resource distribution. Some of this analysis may be obvious, but it is worth drawing out some the implications before moving onto other collective level social capital mechanisms of learning and socialization.

Perhaps the most important dynamics that arise out of local interactions are ones of network differentiation and exclusion. I use network differentiation to connote how social networks differentiate themselves from one another and how these are sustained through the feedbacks of local interactions. Exclusion is the opposite side of the coin from membership in networks. The analysis has so far focused on what resources and socialization effects that membership in social networks provides to members, but membership in networks necessarily implies that some are excluded by definition; otherwise the network structure wouldn't exist. But just as memberships provide the network members with resources, other individuals excluded can be harmed by their exclusion from those networks. But first, let us examine network difference.

The historical formation of differences in networks is important, but beyond the scope of this dissertation. Take for instance the social structure of American urban neighborhoods, which are the result of a long historical process driven by inter-regional migration, capital investment patterns, government policy and racial discrimination

among other factor. To avoid confusing the myriad of forces operating in neighborhoods, it is perhaps better to step into abstract analysis, just to draw a picture of how differences in networks can develop and sustain. For now, assume that we have two groups of agents, connected to each other within the group but not across groups. For simplicity we can assume that the groups are similar in composition and preferences and start with the same endowments. By luck, fortune or enterprise, an agent in group A has an efficiency enhancing break-through, say an innovative business design, but it doesn't really matter. If this breakthrough has a large enough spillover, then other members of group A benefit from that agent's break-through, and everyone in group A profits. In the presence of local interactions, the benefits of these spillovers will be mostly contained within group A; group B may see some advancement as well, but will be mostly excluded from the benefits. Group A will have enhanced success creating a level of inequality between the two. Let us make the example a little more concrete. Assume two adjacent neighborhoods, A and B, which face some common social dilemma such as maintaining a public space. Let the difference between them now, though, be the general level of cooperation. Neighborhood A has a few gregarious individuals who have worked to establish a base level of trust, while neighborhood B does not. As we can recall from the previous chapter, trust is one manner of overcoming social dilemmas. Trust also has the property of reinforcing and propagating itself when it is upheld (Ostrom 2005). So if in neighborhood A people work together to maintain public space through cooperation, that cooperation will have the externality of raising the general level of trust and furthering greater cooperation. The public space will be maintained at lower cost. If neighborhood B doesn't have the same level of trust, then it will not be able to maintain the space, or

will have to resort to less efficient and coercive mechanisms. Even if both neighborhoods start with similar endowments, difference can develop through the mechanism of local interactions. If we drop the a-historical pretense, most neighborhood networks have very different endowments, such as wealth and access to investment finances, which would make the difference enhancing effects even more important.

This differentiation due to local interactions suggests two interrelated dynamics: path dependency and multiple equilibria. At its simplest, path dependence is the idea that history matters; but more specifically that self-reinforcement and positive feedbacks can lead to large differences in outcome at a later point in time (Page 2005)¹⁵. The idea of multiple equilibria is that there can be multiple different stable states that can emerge through local interactions. Another way to state this is that there can be more than one stable decision structure within a local population (Durlauf 2007). Because of path dependence and multiple equilibria, even similar neighborhoods can have different outcomes in the presence of local interactions.

What does this mean in practice? Let us return to the example of local interactions on employment. If having employed neighbors makes you more likely to have a job (independent of other factors), then the local interaction effect can cause the development of different neighborhood systems. In neighborhoods with high levels of employment, the positive feedback would work to sustain and enhance the general level of employment in the neighborhood. In contrast, a low employment neighborhood would be excluded from this effect and would have a stable lower level of employment. In this case there is an information asymmetry *between* the local networks, with the

¹⁵ Page 2006 makes much more fine grained distinctions among different types of path dependence which are interesting, but not useful here.

neighborhood with greater employment having greater access to information about jobs and this information is mostly contained within that network. Without bridges from the low to high information networks, the cost of acquiring jobs is higher in the low information network and over time can create different stable levels of employment between them. Because of the differences in the networks, the social capital externalities of high resource or information rich networks will be constrained to members of those networks.

In general, we can highlight the importance of neighborhood membership by thinking of a neighborhood as providing access to a resource pool. Neighborhoods can limit the availability of resources for the development of individual social capital. The neighborhood can be thought of as ascribing a pool of resources available at a discount, and individual social capital will vary with the size of this pool of available social capital. Because of this resource pool effect, we can expect that individuals who are members of more resource rich neighborhoods will have more leveraging social capital due to the lower cost of obtaining high quality connections. The converse is also expected for poorer neighborhoods, which are expected to have fewer leveraging resources available, thus increasing the cost for individuals. The quality and usefulness of a social connection between actor A and actor B is dependent not only on the individual resources each possess, but also on the quality of the network to which they have access. So if B has access to C, the A has a lower cost to access C through her relationship with B. So in effect, the level of social capital, and its leverage, is dependent on the quality and amount of social capital over others in the group.

The idea of network members implies the inverse: network exclusion. The idea of exclusion is that individuals can be harmed from not having membership to these networks (Durlauf 2007). People can be denied access to resources, such as information or institutional access, because they are not members. The most basic idea of this is through preferential access. Members of a network can gain preferential access to some rationed resources, say private information or simply trust, which works to the benefit of the members of that network, but not to wider community. A crass example of this is insider trading, where some investors use private information to profit at the cost of those not in their networks. But the employment example serves as well: access to the private information on job availability obviously benefits the members of the network but may result in less efficient allocation of jobs or the exclusion of qualified persons from jobs. Taylor (2000) shows this in the context of the Old Boy Network.

In Taylor's (2000) model, members of the network rarely work with those outside to shield themselves from potentially unqualified trading or business partners. This exclusion from the resources greatly limits what outside, but capable, partners are able to achieve, in effect injuring their economic capability. And Fafchamps (2002) found a similar harm in market institutions in Africa, where newcomers were often excluded from trading networks since their reputations could not be verified.¹⁶ What these examples have in common is the rationing of both private information and trust in areas of asymmetric information, and their effect is to create bifurcated systems; one system of dense relations and trust and one of exclusion. Bowles and Gintis (2004) call this type of preferential access and attendant exclusion *parochialism* in the context of ethnic

¹⁶ In many ways this is the inverse of Greif 1993 which detailed how traders used reputation to police members of their network.

networks, but the dynamics are similar whether the networks are ethnically based or not. Network members tend to be protective of the gains in their network and resistant to sharing or access.

One of the most visible, and important, dynamics of exclusion in neighborhood networks is segregation. Segregation can be the result of self-organized choice—people choosing to live near people similar to themselves—and through institutions that sort people along racial and socio-economic lines, such as the housing market (Hoff and Sen 2005). Both processes mean that the social externalities are contained within the set apart group, and other groups are excluded through geographic isolation. Indeed some of the reasons that motivate individuals to move to economically segregated communities is to capture some of the externalities available in those neighborhoods, and they may construct barriers to entry to protect those externalities. For example, a wealthy community of homeowners may seek to protect their land values and character of their neighborhood by opposing the construction of affordable housing nearby (Fischel 2009). But this protective attempt to capture externalities has itself a spillover effect on other communities. First it denies members of other communities access to the resources of the well-to-do neighborhood and the social externalities. Second, the exclusion of membership may push less sociable individuals and behaviors into other communities, which could weaken positive social externalities, like cooperation, and increase behavior with high negative externalities, like crime, within the excluded communities. Third, this exclusion could lead to stable and entrenched inequality between the neighborhoods, as they reach different equilibriums within their networks.

Segregation of networks has effects on the access to resources and to the benefits of social externalities. These processes of membership and exclusion become compounded when we consider how they interact with social capital. The next two processes look at how network composition affects access to information and to norms through social learning and through social identity.

Social Learning

In chapter 2 we examine the role of social capital in the exchange of information between agents. People exchange information both about each other, sharing reputation, and about opportunities. This exchange generates knowledge spillovers and helps overcome problems of information asymmetries and incomplete information. The information exchange presented in chapter 2 focused on exchange between agents. But another form of information exchange also takes place through individual's interactions with their environment. This indirect process is known as social learning, where one where agents learn through observation of the actions of others. Through this process, individuals update their own expectations and actions based on what they observe from those to whom they are connected. I refer to the process of social observational learning as Bayesian social learning.¹⁷ Social learning processes, in general, refer to the sharing of private information or private beliefs among actors through interactions. Sometimes this is through observing the actions of others; sometimes it is through observing the outcomes or expressed knowledge of others (Chamly 2004: 4-5).

Social learning theory has its roots in clinical psychology, and was first developed by Rotter (1954) and was more fully developed later by Bandura (1978). Bandura's main

¹⁷ Again "Bayesian" is used in a non-technical sense to capture how individuals update their beliefs based on what they are able to learn and observe in the social environment.

assertion in his development of social learning theory is that behavior is best understood as arising from complex interactions between the environment, cognition, and behavior. A person's behavior depends on how an individual's expectations are shaped by both the environment and by reinforcement of previous behavior. In many ways, social learning is fully compatible with expected utility theory and rational choice, but it does not necessarily imply those approaches (Akers 1990). The key to social learning is that individuals draw inferences and abstract from observing the behavior and actions of others.

Social learning can lead to strongly conformist or herding behavior (Bannerjee 1992). Individuals copy the behavior of those who act before them. This can sometimes lead to cascading effects if the copying is widespread enough, as in the tipping model. There are two logics that can drive this behavior in rational actors that we call the evolutionary and cascading dynamics. The evolutionary dynamic is the copying of successful behavior. If an individual is perceived to have adopted a successful strategy, then others who observe that strategy will be more likely to adopt it. The opposite is also true. If an individual adopts a particular strategy which is not successful, then others may avoid the strategy. This is the evolutionary dynamic of herding behavior. The other dynamic is cascading. If observers see an individual acting in a particular fashion, it may signal that they have private information and prompt others to behave the same way, even to the point of ignoring their own private information. Both of these social learning dynamics interact with reputation. Individuals will most likely copy those with favorable reputations (Hirshleifer and Teoh 2003).

Hirshleifer and Teoh's (2003) review of the empirical research on social learning in financial markets shows how social learning can produce both herding and cascading behavior even in "fully rational" settings (26). They found that analysts and investors often herd in their discussions and forecasts of securities, firms often herd in investment and financing decisions and cascading behavior is common. These behaviors are often clustered around the behavior of those with strong reputations. Similarly, evidence shows that individuals are less likely to herd when they are experienced. For example, Hong, Kubik and Soloman (2000) found that less experienced stock analysts are less likely to deviate from consensus forecasts. Although social learning has been explicitly excluded from modeling in standard transaction cost theory (Williamson 1985), in situations with high transaction costs to acquire private information, or where reputation is at stake, herding and cascading behavior is a way to reduce these costs and act strategically with only partial information (Lee 1998; Romano 2007).

We can find the root of this behavior in the logic of information asymmetries. In a situation where actors may possess private information, such as with the stock market, then observing a particular behavior may signal that private information and lead others to adopt the same behavior. As individuals observe the behavior and outcomes of those around them, they update their own expectations. For example, observing an individual who works hard at school being rewarded by their ability to find a good job would lead others to take the same approach. Conversely, if individuals are observed not being rewarded for hard work, observers may lower their expectations of reward for their own work and decide not to put forth the effort. In both situations, aggregate behavior can converge within the observational set.

If people learn and change their behavior based on their observations, then it follows that individual's behavior be most strongly influenced by those they are mostly strongly connected. In a networked environment, both theory and empirical studies show that people learn from neighbors (Jackson 2008; Lamberson 2010). For example, a classic study on the adoption of a new drug by doctors, Coleman, Katz and Menzel (1956) found that adoption rates for new drugs was much higher for doctors who were "friends" of other adopters than for those who were not. With local differences in neighborhood networks, then individuals would be most likely to learn from others they are connected to in their neighborhood. This localized externality creates an endogenous peer effect. This can create a pattern of behavioral convergence within the network, but divergence between networks because of the localization of network differences.

For example, consider a repeated prisoner's dilemma game played among members of a neighborhood. Individual players in the game will quickly learn the strategy that their neighbor's adopt by observing their behavior. In a community with a high proportion of cooperators, then players will quickly learn that cooperation is a fairly safe strategy, and defectors can be punished by exclusion. In a neighborhood with a high proportion of defectors, then players will learn not to cooperate. The cost of cooperating will be much higher and will discourage those inclined to cooperate otherwise. Because social learning is not just from the behavior of other's but also based on past experiences, a player who switches neighborhoods may be resistant to swap strategies based on the strength of their expectations (Nowak 2006; Fu, Nowak and Hauert 2010). This can lead to dynamic systems of cooperation and defection, where strategy changes depending on the proportion of cooperators and defectors and how they are connected in the system.

The decision to cooperate or defect by an individual is based on their expectations of other players actions and awareness of other players past behavior.

In a less abstract sense, we can consider neighborhoods of different resource levels. In a neighborhood with a larger proportion of successful or trustworthy individuals, other members of the neighborhood would be more likely to adopt the successful individual's strategies. The density of successful people will increase the expectation of success in other's they are in contact with, reinforcing productivity enhancing norms such as discount rate, self-efficacy, and trust. Conversely, a neighborhood with a high proportion of less economically successful individuals could lower individual expectation of success and disincentivize cooperative behavior and norms. Because of the externalities, this system could be self-reinforcing with positive and negative feedback loops based on peers in the network. This social process of norm transmission and adoptance is taken up next when we consider social identity.

Social Identity

Social identity theory from behavioral economics shows how preferences and behaviors, and, even more fundamentally, identity, are transmitted socially. Akerlof and Kranton (2000; 2010) present identity as the sense of self—who you are and your sense of competence. But identity, in their view, is a social construct. It is formed, and changes, through social interaction and in response to social context. It is a thoroughly relational and process oriented idea of identity—not static or fixed, but constantly evolving through social interactions. The primary process is that of identification, where “a person learns a set of values (prescriptions) such that her actions should conform with some people and contrast with that of others” (Akerlof and Kranton 2000: 728). Social differentiation, the

difference between “Us” and “Them”, can be thought to be one basis for the boundedness or inclusivity of social networks.

Identity is not just a matter of tastes; it is fundamentally about how norms provide motivation for behavior. Akerlof and Kranton (2000) outline four key points in the operation of identity: “(1) people have identity-based payoffs derived from their own actions; (2) people have identity-based payoffs derived from others’ actions; (3) third parties can generate persistent changes in these payoffs; and (4) some people may choose their identity, but choice may be proscribed for others” (717). Because payoffs are based on identity rather than simple utility maximization, this conception allows for behavior that defies normal rational actor expectations, such as altruism and detrimental self-behavior. Also, because of point two, the existence of social identities creates externalities by creating meaning for and responses in others. This is because identities contain by definition what Akerlof and Kranton call “prescriptions”, which are understandings of appropriate behavior in different situations—in other words, norms. What this means is that people do things, in part, because they believe they are supposed to. It is part of who they think they are. It is about opinions on how they *should* or *should not* behave and views on how others *should* or *should not* behave (Akerlof and Kranton 2010). People gain satisfaction from conforming to their concept of self, but this satisfaction can be limited by others perceptions of their identity.

Individuals gain or lose utility based on how they behave in accordance with their ideal of self. So if my view of myself is that “I am a person who cooperates with others”, then I will be more likely to behave cooperatively. The actual utility I derive from my behavior will vary depending how well my behavior matches the ideal. If my

identity is that I am a cooperative person, then I will gain more utility from cooperating than someone who does not have the same identity. My behavior also creates an externality on others if I violate their expectations for my behavior. In this example, if others perceive my identity as that of a cooperator, then my violation of that expected behavior can cause a loss of utility, apart from the any actual loss in transactions, and may lead to reciprocity based on that utility loss.

Perception of identity is important for trust and trustworthiness. Recall that trust and trustworthiness are precursors to access to resources in networks. Economic experiments have shown that agents behave more cooperatively with people they perceive as belonging to their group, even if the exact members are unknown or unseen (Fershtman and Gneezy 2001). Perceptions of trustworthiness can depend on an agents subjective beliefs and perceptions of another's identity and how well they conform to expected norms in their behavior. The role that other's perception of an agent's identity in accessing networks and the social transmission of identities, and thus norms, in networks means that these are at least partially dependent on the agents social environment and peers.

On the one hand, social identities provide a source for the norms at the heart of social capital. We can see trust, cooperation, discount rate and self-efficacy as being determined by identity. On the other hand, social identities show how other's perception of identities can influence access to network resources. Social identities are based on *difference*—on creating distinctions among categories of people—and this means that other's expectations of an individual's behavior is based on their perception of that person's identity. The consequence of the identity externality is that people will most

often associate with people they perceive as similar to themselves (Akerlof and Kranton 2010), a phenomenon known in sociology and social networking literature as homophily (Jackson 2008). This lowers the cost to individuals of identity expectations, but can create dynamics of network exclusion where individuals can be excluded based on perceived identity membership. Identities then can be a source of network differences and network segregation.

Neighborhoods are important for two reasons. First, neighborhoods are one source of identity. If identities are social and learned from the environment, then much like the dynamics of social learning, the neighborhood network becomes a source for individuals to learn about existing social identities. This is not to say that neighborhoods limit identities, but that neighborhoods create a pool of easily accessible identities through the network. These identities are more readily available and may be more salient to members of a neighborhood due to social proximity. Second, because of the externalities of identity, neighborhoods can be one network of identity enforcement. Individuals who do not comply with widely accepted identity norms may be excluded or punished for not-complying with identity based norms. Conversely, individuals could have their identities reinforced through the social dynamics of the neighborhood. This endogenous supply and reinforcement of identity could create relatively stable neighborhood based identities within homogenous neighborhoods (Shayo 2009).

Because of this endogenous feedback of identity within the social network of the neighborhood, the localized effects could cause different packages of identities to be in force in different neighborhoods. Even identities that would seem to undermine economic success could be relatively stable as long as they are consistent with the social

environment (Shayo 2009). An example of this is the literature on oppositional identities in poor African-American communities. These identities are rooted in historical processes, experiences, and narratives of slavery and discrimination. These processes are also for working class and poor whites, whose very identity and perception of whiteness is rooted in its contrasting with African Americans (Roediger 1991). In poor, urban African American communities, identities are formed which specifically reject and oppose its perception of mainstream (white) culture, which is perceived as a continuing source of exclusion and oppression (Anderson 1990; Wilson 1987, 1996) The adoption of oppositional identities is driven by social difference, but Wilson (1996) also points to the lack of meaningful employment for working class blacks in cities and the exodus of the black middle class to creation of identities that support survival in deprived environments. The out-migration of the middle class from urban areas influences identity through a loss of role-models, but also reduces difference among blacks in neighborhoods thereby increasing the costs of being different (Akerlof and Kranton 2000).

Conclusion: Neighborhoods as Institutions

In the analysis above, I have examined neighborhoods through the lens of social interactions and as networks. Because social interactions by definition involve externalities, and these externalities are localized, that produces networks with stable, but different, resources and norms. Because of social learning and social identity, behaviors and norms can be transmitted within the neighborhood network as well as expectations for future success. Because of the externalities, these dynamics can be self-reinforcing and lead to multiple equilibria between neighborhoods and stable differences. In short,

neighborhoods are one source of social capital and membership in neighborhood networks conditions the social capital that an individual has access to.

The processes of localization, difference, learning and identity are interactive and dynamic. One way to think of neighborhoods is as institutions with different configurations of networks, rules, and identities. “Institutions are the humanly devised constraints that structure political, economic and social interaction” (North 1991: 97). Institutions also enable action through by reducing uncertainty and transaction costs. Institutions generate expectations for the behavior of others that influence how an actor will behave (Greif and Laitin 2004). Through learning, identity and network access dynamics, these institutions reproduce and reinforce themselves.

We can illustrate this by again returning to the prisoner’s dilemma game, this time repeated among neighbors. As Axelrod (2006) has shown, the expected number of iterations and the expected behavior of other players modify the payoff structure for the players. If the players are expected to only be in the game short term, as say a short term renter in a neighborhood would be, or if other players are expected not to cooperate, as in a fractured and disorganized neighborhood, then noncooperation has the highest long term payoff. If, however, the length of the game is not known or is expected to repeat for a long time and other agents are expected to cooperate, then cooperation is by far the most profitable strategy. This cooperative effect could be further enhanced by organizations in the neighborhood, such as community development corporations, that provide an organizational basis for cooperation. The existence of these types of organizations can be dependent on the social capital of residents, as some residents may be able to leverage their networks to create local political alliances and to attract public

resources to support neighborhoods (Massey and Denton 1993). But neighborhoods with greater cooperation and trust will be more likely to secure these types of resources, even without strong individual networks. Community cooperation is also enhanced if cooperation is a norm in the neighborhood, where cooperation or defection reinforces itself.

But more important than just cooperation is the distributional effect membership in different networks can have. Neighborhoods affect economic success indirectly through social capital. The types of connections people can form and the quality of those connections, as well as productivity-enhancing norms, are all influenced by neighborhoods. If everyone had access to networks of comparable size and quality, then there would be little distributional effect. But because of existing differences in status and income, and the tendency people of similar means and status to cluster together produces a differential access to social capital (Lin 2000). In effect, social stratification is replicated and reflected in social capital. This effect is compounded by the tendency of resource rich networks to have wider and more diverse contacts. As Lin (2000) states “Members of such networks enjoy access to information from and influence in diverse socioeconomic strata and positions. In contrast, members in resource-poor networks share a relatively restricted variety of information and influence” (787). Members of resource-rich networks may also have more access to identities, norms and behaviors that enhance success than members of resource-poor neighborhoods. Neighborhoods primarily affect economic success by setting the conditions for collective action to occur. These conditions are the social capital of the neighborhood.

CHAPTER 4 – MODELS

In chapters two and three, we developed a theory of how social capital and economic success are related and why neighborhoods matter for this relationship. Chapter two examined the relationship between economic success and social capital at the individual level through resources and norms and chapter three examined how neighborhood influences social capital through social interactions and network differences. In this chapter, we take the insights from those sections to model the relationships of economic success, social capital, and neighborhoods. This chapter is a link between the theory sections and chapter five on empirical tests of the models.

First I discuss the sticky issue of measuring social capital, and define my measures. Measurement has been a source of contention in social capital research, and to build validity into my measures, I take a multi-dimensional approach using latent variables. Next, I briefly describe the data set for the study, as the measures are informed and shaped by the available data. After measurement and data, we move to the actual models. The empirical portion of this dissertation looks at several models that have a very similar structure. Each model has several relationships of interest, and to explain the relationships I break the model into parts. First I outline the full model to provide context for the specific hypotheses and to explain the unifying structure and elements. Then I explain the main hypotheses in the model between economic success and social capital at the individual

level and then between the neighborhood and the individual. Finally, we come full circle and put all the pieces back together in the full model.

Measurement – Capturing multiple dimensions

In chapter 2, we made the distinction between bridging and bonding social capital and looked at the theoretical effects of each. Social capital is a multi-dimensional concept, particularly along the lines of network composition and which norms are associated with them. This is the theoretical dividing line between bridging and bonding social capital. But this begs the question, in an empirical study, how do we measure social capital in a way that captures this multidimensionality? The approach I take here is one of latent variables. But before we get to the latent variable approach, it is helpful to compare it to the way social capital has been measured by others.

Social capital is an abstract concept that requires some interpretation. This allows for a great deal of variability and subjectivity in measurement, which is inevitably contested. The operationalization is dependent on how one conceptualizes social capital. As Fukuyama (2001) states, “one of the greatest weaknesses of the social capital concept is the absence of consensus on how to measure it” (12). There has been a great deal of variability and inconsistency between studies in how to measure it (Durlauf 2002; Liu and Besser 2003). In a fairly comprehensive review of operationalizations of social capital, Durlauf (2002) shows that measures have often blended functional and causal concepts. However, if we accept that social capital is an “essentially contested concept” (Woolcock 2010: 470), then variability and contention in how it is measured should be expected. Woolcock (2010) argues that though social capital measurement has undergone improvement and refinement, there will probably never be true consensus.

Social capital has typically been measured using one of three broad approaches, each with their own advantages and drawbacks. First there are the single variable approaches, which identify social capital primarily with one outcome of dimension, such as trust or group membership, and use a single variable to measure it. The two most common single variables have been trust, typically based on survey questions about how much the respondent trusts others (Glaeser et al. 2000; Kolankiewicz 1996; Fukuyama 1995; Fukuyama 1997) and organizational membership (Baum and Ziersch 2003; O'Connell 2003; Price 2002; Warde et al. 2003; Wollebaek and Selle 2003). The advantage of this approach is that it is relatively simple, easy to understand, and clear. Single variable approaches assume that there is an empirical correlation among different possible measures of social capital and use that single variable as proxy. These approaches fulfill what Halpern (1999) says is the need for a “quick and dirty” approach to social capital. Single indicators are appealing because they are intuitive, and I measure economic success using a single indicator variable in this study. Single indicators have a drawback that is inherent in their simplicity. As a proxy, they assume a consistent correlation with the various dimensions of social capital. Due to the multidimensional nature of social capital, single variable approaches may not capture its complexity or the different possible configurations (Adam and Roncevic 2003).

A second approach to measuring social capital is the use of composite measures. Frequently referred to as either indexes or factors, these measures share the feature of creating a single indicator from multiple observed data points. The idea is to simplify the complexity to be able to make general statements. Composite measures are common in the social capital literature. The idea behind this is that social capital is a theoretical

construct—it is abstract—that underlies the observable outcomes of any single indicator. It is not directly observable in the traditional sense. Instead, composite variables are measured by indicators, which are observable outcomes which are thought to point to the underlying concept. For example, since we can't measure bonding social capital directly, we may measure instead the number of close personal friendships, time spent with friends, or an individual's level of trust toward their own identity group (Kim et. al 2006); which are theoretical observable indicators of the underlying concept.

Composite variables are constructed using a variety of methods. The simplest of these methods use pre-defined additive formula rules for combining multiple indicators. This approach in the social capital literature is exemplified by Putnam's (2000) social capital index based on 14 indicators of social capital in the U.S. such as number of club members, voter turnout, number of public meetings, fraction of people in state who served on committees and more. At the high end of the complexity spectrum, Narayan and Cassidy (1997) use a 26-item survey instrument to measure social capital at the individual level along seven conceptual dimensions in Ghana and Uganda. The advantages of the formula-based indexes are that they are information rich and clearly define the relationships among the indicators, making them more transparent. They have the disadvantage of relying on strong assumptions of the structure of the correlations in the data and the interpretability of the final measure.

A different method to construct composite measures uses regression techniques to construct latent variables. The main statistical technique employed in this study, structural equation modeling, is used because of the way it handles latent variables (see chapter 5). Like the formulaic approach, the latent variable approaches construct an

index from the observable outcomes. Instead of predefining the relationship among indicators, however, they use regression techniques such as factor analysis. The assumption of these approaches is that correlations among observed variables are the result of some other unobserved variable, and that these relationships can be defined empirically, using regression. It has fewer assumptions than the rule-based approach and uses the most information of all the approaches. Specific relationships among the indicators are not as transparent as the additive approach and it shares the interpretive complexity of all composite approaches. The distinction between these practices of measurement is not as clear in reality, as most indexing approaches use some form of empirical technique either for index construction or validation.

This study uses the measurement instrument from the Project on Human Development in Chicago Neighborhoods (PHDCN) Community Survey (Earls et. al 2005). The PHDCN is an interdisciplinary survey intended to study the role of families and neighborhoods on adolescent development (Sampson 2012). The community survey portion of the study looks at social conditions in neighborhoods and includes a large number of social capital related questions among other indicators and demographic questions. PHDCN features many variables related to social capital and the socioeconomic status of the respondent, as well as detailed neighborhood variables. For over a decade, Robert Sampson and colleagues have used the PHDCN data to investigate the relationship of social capital related concepts to violent crime (Sampson et. al. 1997; Morenoff et. al. 2001), childhood development and well-being (Sampson et. al. 2008a), the social monitoring of children's behavior (Sampson et. al. 2002), among others. The

variables in this dataset reflect a more specific conceptualization of social capital than other studies that just rely on trust or organizational membership.

The PHDCN instrument has been used in a number of studies that use it in new contexts (Dorsey and Forehand, 2003; Drukker et al 2003; Lochner et. al. 2003; Rankin and Quane, 2002; Subramanian et al. 2003; Brisson and Usher 2005; Brisson and Usher 2007). For example Drukker et al. (2003) use it to study the social capital effect on neighborhoods. Dorsey and Forehand (2003) conduct a SEM analysis using the PHDCN instrument to study how social capital relates to child psychological adjustment. Brisson and Usher (2004; 2007) use the instrument to test social capital relationship with homeownership and other neighborhood variables. The largest study to replicate PHDCN is the Los Angeles Family and Neighborhood Study (Pebley 2011). The replication of PHDCN in these studies shows that there is a level of consensus around the validity and acceptability of the measurement instrument used here.

The Measures

To capture the multiple dimensions of social capital, I use three factors to capture the bridging and bonding nature of social capital: *bridges*, *cooperation*, and *cohesion*.¹⁸ These measures are drawn directly from measures developed in the PHDCN (Sampson et.al. 1999: 639). I have changed the names slightly from the ones used in the original study to represent more clearly their relationships to the overall concept of social capital. The neighborhood level of social capital is measured using the same instrument, but uses the mean level of each response.

¹⁸ The questions used to construct these measures are reported in table 5.1 in chapter 5.

Bridges is used to engage two dimensions of bridging social capital. This concept follows most closely with traditional measures of social capital and captures both voluntary group memberships and political and civic engagement. The overall latent variable of *bridges* has two sub-dimensions of *membership* and *engagement*. Membership is simply a count of the number of different civic and social groups an individual is a member of, while *engagement* is a measure of active civic participation in and outside of groups. *Bridges* tries to capture the nature of bridging social capital as wide networks and contacts external to the neighborhood and immediate relationships. The idea is that people who are civically engaged and actively participating in voluntary organizations have a greater amount of bridging social capital and access to the resources that come with bridging networks. Also implied is that these voluntary associations indicate cooperative norms, though those norms are not directly measured. Overall, *bridges* measures an individual's engagement with wider, bridging networks.

Bonding social capital is measured along two separate dimensions. The first is *cooperation* which measures the reciprocated exchange of favors between an individual and their neighbors. This represents the active cooperation of an individual neighbor, and measures explicitly cooperative and reciprocal behavior, and implicitly the norms that underlie this behavior. The second is *cohesion*, which measures an individual's trust in their neighbors and the general view of social cohesion in the neighborhood. Both *cooperation* and *cohesion* measure bonding social capital because they look at particularized trust and cooperation. Overall, the measures' different dimensions of social capital affect economic success.

Measuring Economic Success

Unlike social capital, I use a single indicator to measure *economic success*: income. Economic success is a multi-dimensional concept. Unlike social capital, however, economic success can be easily measured by its outcomes. The assumption here is that income is an outcome indicator of economic success. While related concepts, such as poverty, have complex non-income dimensions (Klasen 2008), I avoid looking at poverty directly and instead opt to look at the simpler dimension of income. Income is widely used to measure economic deprivation and economic “well-being” in the United States because it is widely reported in larger samples and is easy to interpret and understand (Meyer and Sullivan 2003). Unlike social capital, income is directly measurable. Income in this study is household income, but this is due to the limitations of the PHDCN rather than design choices. Household income works as a proxy for individual income, though, because the two are closely correlated. At the neighborhood level, we use median household income for aggregate economic success.

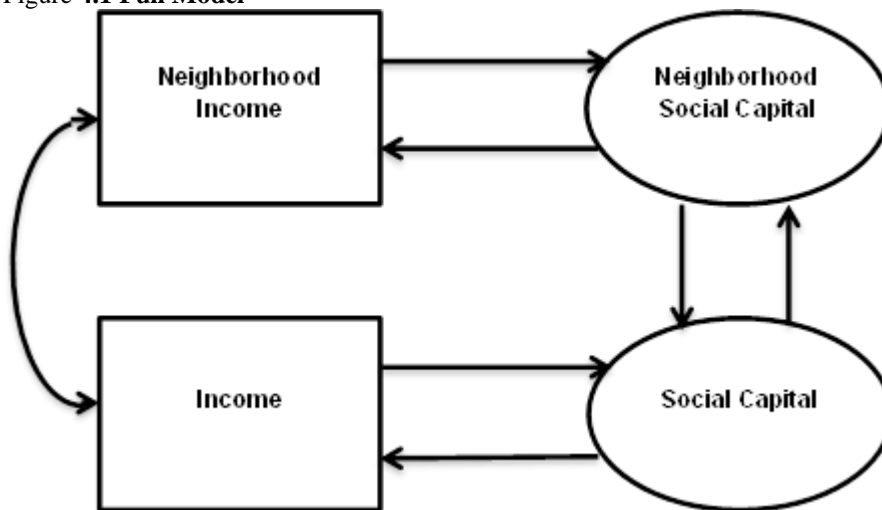
Model

Overall Model

The overall argument of the dissertation is that living in a poor or affluent neighborhood affects individual economic success through social capital. The neighborhood level of economic success conditions the social resources available for an individual to achieve economic success. I detail the mechanisms in more detail below, but logic is this: Neighborhoods form a pool of available resources, such as information access and available identities, to which individuals in the community have differential access. Access to these communal resources has a probabilistic effect on the resources

that an individual has direct access to—living in a social capital rich neighborhood increases the likelihood that an individual will have access to more social resources of higher quality. Access to these resources increases the likelihood that an individual will be economically successful. The relationship also has an element of mutual causality, or endogeneity. Economic success increases an individual’s access to social capital resources while higher collective levels of social capital create more aggregate success.

Figure 4.1 Full Model

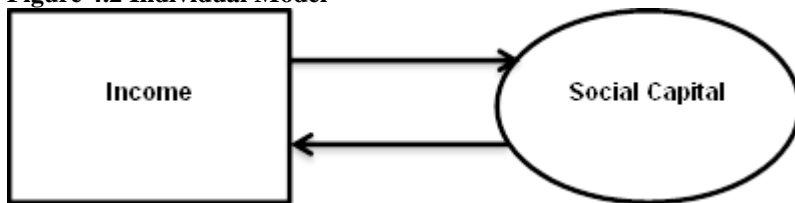


The basic outlines of these relationships can be seen in Figure 4.1. The basic structure is the same for all three concepts of social capital. While each of these concepts is meant to capture a different aspect of social capital, the logic of the relationships is the same. Bridging is hypothesized to have a similar relationship with economic success as bonding, though they operate through slightly different mechanisms. *Bridges, cohesion,* and *cooperation* are modeled to have the same structural relationship with economic success and the aggregate variables, though, as detailed below, the magnitude of the relationship may be different. In what follows below, I break the model down and

explain the reasoning behind the specific interactions. First I will look at the individual level relationship between economic success and social capital, then the aggregate relationship between these variables, and finally the relationship between individual and community.

Individual Economic Success

Figure 4.2 Individual Model



The core element of the model is the bi-directional relationship between individual economic success and social capital. In chapter two, I examined the theoretical relationship between social capital and economic success; here, I apply that theory to develop and explain hypotheses which can be tested empirically in the next chapter. As an organizing method, I present each of the key relationships as a hypothesis, and then explain the reasoning that underlies it.

Social Capital to Income

H1. Social Capital has a direct positive relationship to economic success.

As we saw in chapter two, social capital is believed to influence economic success. Social capital helps individuals overcome social dilemmas of cooperation that lead to economic success. This operates through incentive-enhancing norms (Bowles, Gintis, and Osborne 2002) and through providing instrumental resources that directly

economic success. Though they operate in similar ways, I will discuss bridging and bonding differences separately.

Bridging social capital is the resource that is usually connected with economic success, because it represents wider connections with the world. Bridges are most closely associated with overcoming information asymmetries with the labor market. Through these diverse connections, individuals have access to information on a wider range of opportunities at a lower cost. These diverse connections also provide a degree of information about the individual to potential economic partners (like employers) through the network. This provides economic partners access to the individual's reputation through lower cost mechanisms, thus increasing the chance that the individual will have access to profitable economic partnerships and through access to institutional structures. Also, bridges create greater opportunity for access to knowledge externalities which enhance individual productivity and innovation.

Bridging social capital also influences economic success through norms. Implied in measuring bridges as group membership and political engagement are the norms which underlie these behaviors. Diverse group membership and engagement imply norms of generalized trust and cooperation that enhance economic success through the willingness to work with others. Also implied is a norm of self-efficacy, because they have an active engagement with the external environment and self-directed agency. These norms and the instrumental resources both serve to enhance economic success directly. Because of this, the hypothesized relationship is positive.

The bridging social capital concepts of cooperation and cohesions both measure, in different ways, the willingness and activity of working with one's close neighbors, a

much more circumscribed conception of social capital. Higher levels of these concepts are also believed to positively affect economic success, and these mechanisms are very similar to those above. Cohesion taps directly the norm of trust in one's neighbors and the norm of cooperation. This is different from the more generalized trust embedded in bridging social capital¹⁹. Particularized trust is also economically enhancing, because it creates, albeit more limited, basis for cooperative behavior.

The concept of cooperation captures more directly the behavioral element of neighborhood trust, and looks at how closely connected the individual is in their neighborhood and their active cooperation with others. This taps, implicitly, the same norms of trust and cooperation as cohesion, but also the thickness of connections and the resources available in the local network. There are two dimensions of these connections that affect economic success. First is the resource dimension. Neighborhood cooperation captures the element of social support resources. These resources act as compliments to achieving economic success through providing social supports that enable people to be more productive in other parts of their lives. These close connections also overcome some of the same information asymmetries as bridging resources, providing information about jobs and about the individual's reputation, but in a more limited capacity. The second dimension is norms. We have already mentioned how the cooperation concept taps particularized cooperation and trust, but it also the norm of reciprocity through general neighborhood cooperation. Just as these norms are economic-enhancing when generalized, they also increase economic success within more limited circles. Both cooperation and cohesion are believed to enhance economic success positively, though

¹⁹ Generalized trust is the norm most often associated with economic success (Fukuyama 1995; Halpern 2005).

the relationship may have a smaller magnitude than with bridges because of the more limited nature of the connections.

H2 The relationship between economic success and social capital is endogenous.

Just as social capital increases economic success, economic success is believed to have a reciprocal, i.e. endogenous, relationship to social capital. The hypothesis is that the endogenous relationship is mutually positive. What this means is that social capital increases economic success and that economic success increases social capital in a positive feedback loop. Higher levels of all forms of social capital increase income levels, and those income levels increase or sustain social capital. Endogeneity is both a theoretical and methodological issue. The theoretical problem of endogeneity was discussed in chapter two. The methodological issue of endogeneity, which can bias coefficient estimation, is discussed in the methodology section of chapter five.

Underlying all three forms of social capital is a feedback loop with economic success that endogenously reinforces success. What I mean by this is that when individuals are rewarded economically for adopting particular norms or behaviors, they are more likely to continue or enhance those behaviors. For example, when an individual is able to obtain a job or profit through their bridging networks, they are given an incentive to build and maintain those networks. Profitable cooperative behavior increases the likelihood that an individual will engage in similar behavior in the future. Positive economic reinforcement strengthens the norms and behaviors that helped generate that success in the first place. Along these lines, economic success is hypothesized to have a particular enhancing effect on *bridges*. Greater economic success provides new opportunities to build social capital as it increases the number of potential new

connections to which an individual has access and the probability that they will build and engage in wider networks, and also the availability of information about the individual in the network.

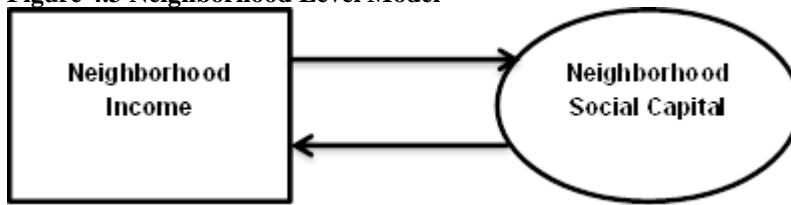
The bonding social capital concepts may have a more particular relationship with economic success. Because bonding social capital can substitute for bridges in overcoming information asymmetries, and because bonding networks tend to be composed of people of similar income levels and backgrounds—they exhibit homophily—economic success is hypothesized to increase the amount of resources available in close-knit networks and for the bonds to provide easier access to higher quality resources when they are available. Economic success also decreases the need for instrumental material support through the bonding network. There are two possible effects of this. First, this may mean that these relationships are less strained by need and therefore can grow stronger. The second, and counter to the first, is that since the need for these relationships is less, economically successful individuals will be less likely to cultivate close bonds with their neighbors. The overall relationship, however, is hypothesized to be positive for all social capital variables.

The Neighborhood

H3 Aggregate neighborhood social capital positively affects aggregate economic success.

H4 Aggregate neighborhood economic success has a reciprocal and endogenous relationship with aggregate neighborhood social capital.

Figure 4.3 Neighborhood Level Model

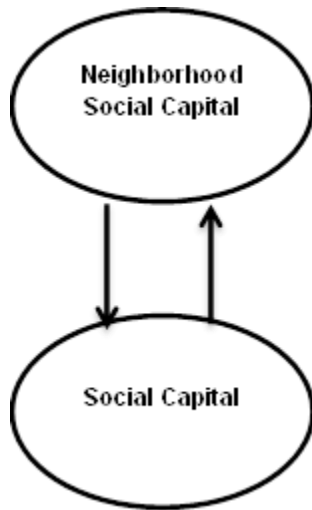


The relationship between aggregate measures of economic success and aggregate social capital is hypothesized to be similar in both direction and magnitude as for the individual level. The mechanisms by which this works is very similar to what was described above. Aggregate pools of resources increase the probability of economic success of neighborhood residents and neighborhoods with more general levels of trust and cooperation will benefit in aggregate. Social capital operates the same way, in aggregate, as it does at the individual level. The interesting point is not that these dynamics are mirrored, but comes when we consider the relationship between the levels, but it needs to be explicitly modeled.

H5 Aggregate social capital directly affects individual social capital.

This assertion forms the second key point of the dissertation, and is important for understanding the relationship between neighborhood economic conditions and individual success. The dynamics were explored more closely in chapter three, but will briefly be reiterated here. Figure 4.4 shows the link between neighborhood and individual social capital.

Figure 4.4 – Neighborhood and Individual Model



There are two primary dynamics by which neighborhood income operate on individual income as mediated by social capital: creating pools of resources and social learning. The first is relatively easy. Neighborhood social capital represents a pool of socially embedded resources that individuals have potential access to as members of that neighborhood. Because the aggregate level of economic success helps define what resources are available in aggregate, i.e. the “pool”, it indirectly affects the cost at which an individual can obtain access to these resources. For example, it is much easier for an individual to obtain information about jobs through their network if that network is rich in job information. It is not as important for the individual to have direct access to a person with the information that can benefit them, as social capital allows them to access it through indirect connections. Therefore the resource density of the network raises, probabilistically, the likelihood that individuals will have access to those resources that benefit them.

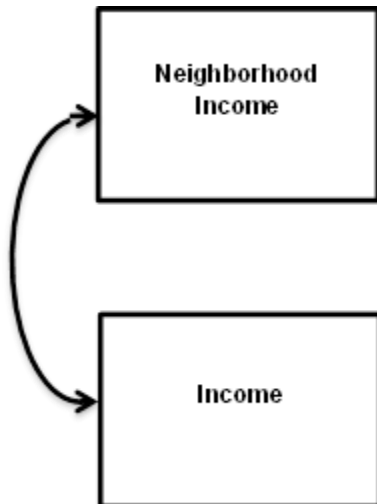
The second dynamic is through social learning. Individuals learn through watching others in their environment, and neighborhoods are an important environment for this. First, neighborhoods provide a pool of easily available identities for individuals to adopt. These identities are essentially formed by the aggregate norms of others in the neighborhood. Second, individuals watch the strategies and outcomes adopted by others in their neighborhood. An individual is more likely to adopt behaviors that they bring success to others. The converse of this is observing lack of success may reduce their willingness to adopt those norms or attitudes that could be economically-enhancing. So the observation of poverty may reduce the willingness to adopt cooperative norms and behaviors. Finally, the existence of cooperative behaviors through social networks in the environment reduces the risk of free-riding. The trust and cooperation of others reduces the cost on individuals for cooperation and reduces the risk of free-riding. People will still free-ride on their behaviors, but the individual burden will be much less. In this way, aggregate social capital breeds more of the same behavior in individuals. Finally, in high social capital networks, individuals might face sanctions if they don't adhere to the norms in those networks, creating an incentive to build their social capital.

The flipside of the neighborhoods' social capital on the individual is the individual's social capital on the neighborhood, which is the endogenous group effect. Just as the aggregate affects the individual, the individual's social capital affects the overall. What this means is that individual's cultivation of their social capital, by building networks and acting cooperatively, will likely influence other's to do the same. Because of these dynamics, both aggregate to individual and individual to aggregate, I hypothesize that the relationship between these levels of social capital is both positive

and reciprocal. This means that increased aggregate levels of social capital will increase individual social capital and vice versa.

This reciprocal relationship should exist for all types of social capital, but it may be of different magnitude depending on type. Because cohesion and cooperation are closely tied with behavior and norms directed at and generated by the neighborhood, there should be a greater endogenous effect for these concepts. This means that the magnitude of the effect should be greater for these than for bridging social capital. Bonding may be more directly connected with the behavior and attitudes of others in the neighborhood. Since bridges are less directly tied to the neighborhood, by definition, the social endogenous effect should be of less magnitude, but still present and positive.

Figure 4.5 – Income Covariance Model



One final connection is needed between the individual and neighborhood levels of the model, and that is a connection between median neighborhood income and individual income. Empirically, neighborhood and individual income levels covary strongly, as the

segregation literature shows (Reardon and Bischoff 2011). The curved line in Figure 4.5 represents this covariance. The implication is that part of the correlation between personal and neighborhood income is not represented within the model. This means that there are other factors which could cause the correlation between the income measures, including filtering by the housing market, discriminatory housing practices, or self-selection by individuals into economically segregated communities. The self-selection problem is often posed as a foil to neighborhood research (Jencks and Meyer 1990). The problem that self-selection introduces is that if enough similar individuals choose to live near people similar to themselves, neighborhood effects are really just the correlation of individual effects among people in the neighborhood. To use Manki's (2000), typology, self-selection means that neighborhood effects are correlational instead of endogenous or contextual. Enough observational and experimental research now exists, however, that we can be comfortable assuming that neighborhoods have a causal effect independent of self-selection bias.²⁰ The correlation between these levels represents that there may be unobserved self-selection or other unobserved factors which cause correlation between neighborhood and individual income.

The overall model, if valid, presents a narrative on the role of social connections in economic success. The degree to which individuals are able to obtain economic success is partially dependent on their social connections and social resources. These social connections give individuals different access to the tools (resources), attitudes and behaviors (norms) increase their chance of success. Because these are social based though, they are embedded in communities. The neighborhood is one of the more important communities for providing these resources because they provide and

²⁰ See Sampson (2012) for a review.

immediate and close (proximal) pool for individuals to draw resources from and opportunities to learn. Because rich and poor communities differ in what is available, individual economic success can be profoundly affected by the economic conditions of the neighborhood.

Individual Level Controls

In addition to the main variables of interest, a number of variables are believed to affect both social capital and economic success. These are education, age, marital status, and race. Education is very closely associated with economic success and is usually used as a measure of human capital, making individuals more productive and able to obtain higher quality jobs. Education also directly influences social capital variables, because it provides one arena for building stable relationships and influences the economic enhancing-norms through educational experiences. Age is a factor because young people often have not had the time and experience to build economic success and have had fewer opportunities to build their social networks. The elderly cannot work as much as those, and therefore have decreased incomes, but may have a lower opportunity cost for participating in organizations and cooperating with their neighbors. Employment has an obvious relationship with income, but is also thought to affect social capital by giving individuals another pool to draw from. Race is a significant factor in both. Because of discrimination and de facto social segregation, race has to be accounted for in both income and social capital, as African Americans consistently earn less than whites, and social separation may mean more circumscribed networks for African Americans. In addition to African Americans, I include a variable for Hispanic. Gender and marital

status are the last major controls. Empirically, women consistently earn less than men. Also, gender may play a role in social capital dynamics, since women and men have different everyday life dynamics and networks (Sapiro 2006: 153). Marital status is included to capture the idea that marriage allows for a division of labor in the household and support structure that allows individual to be more economically successful and lowers the opportunity cost of social capital.

Social capital is instrumented with church and housing tenure. The instrumental variables approach is described more in the next chapter, but instrumental variables are needed to separate endogenous effects. Church attendance is not correlated with income level and is thought to relate to social capital because it shows social engagement, social networking, and some adherence to important norms. Housing tenure is measured by the number a years living in the neighborhood and influences social capital by providing a stable basis for building relationships through repeated interactions with neighbors. In our sample, tenure has a minimal correlation with income. Income is instrumented with occupational prestige.

Neighborhood level controls

In the neighborhood model, we also have a number of controls. A few of these mirror the controls at the individual level and have the same reasoning, including the proportion of people with college degrees, the proportion of female-headed households, proportion employed, and the proportion African American. Female-headed households are important because, in the aggregate, this is a predictor of neighborhood poverty. We also use housing tenure as an instrument for neighborhood social capital. Housing tenure

is measured at the neighborhood level as the proportion of people living the neighborhood for five years or more, and is thought to instrument social capital by providing a stable basis for building networks and relationships.

Conclusion

The models in this chapter represent the main hypotheses of the dissertation. Higher social capital is hypothesized to increase income, and income to increase social capital. The same relationship is hypothesized to exist at the aggregate neighborhood level. Neighborhood social capital is hypothesized to link aggregate neighborhood income to individual income through social capital. In the next chapter, we test this model empirically.

CHAPTER 5 – RESULTS

This chapter presents the empirical results for this dissertation. Whereas chapter four developed models that linked neighborhoods, social capital and economic success, here we test those models empirically. The chapter proceeds by first describing the data set for the analysis, which comes from the Project on Human Development in Chicago Neighborhoods. Next, I give describe the statistical methods for the analysis, and follow with the results of the models. I present six different models, each to test a different portion of the bigger picture and different type of social capital. This leads to a final model, which I refer to as the unitary model, which uses a single latent measure of social capital and is used as the basis for discussing and interpreting the results in the final section.

Data

The data set for this dissertation is the Project on Human Development in Chicago Neighborhoods (PHDCN) community survey (Earls et al.). The PHDCN is a large scale, cross-sectional survey focusing on Chicago and was directed by the Harvard School for Public Health. The survey sampled 8,782 individuals on health, socioeconomic status, community participation, and neighborhood conditions among others. Responses were household interviews of adult residents aged 18 or older. Key survey questions assessed

respondents' community involvement, their normative beliefs about their own and other's behavior, and neighborhood characteristics and conditions.

The sampling design of the PHCDN Community Survey was designed to generate a cross-section of Chicago's neighborhoods, and then of people within those neighborhoods. The directors of the study defined neighborhoods ecologically, and reduced Chicago's 847 census tracts to 343 *neighborhood clusters* (Sampson et. al 1997). These neighborhood units were constructed by combining census tracts through local knowledge and geographic layout of the city. Each neighborhood cluster has about 8,000 people, is geographically contiguous and approximates local neighborhoods. By defining Chicago neighborhoods in this manner, the data has more validity in its definition of neighborhoods than by simply using census tracts, as it conforms closer to local understandings of neighborhoods. In the data set, all 343 clusters are sampled. The sampling method followed a three step process, where city blocks were sampled within the clusters, dwellings were sampled within the blocks and finally one adult was sampled for each dwelling (Earls et al. N.D.).²¹ The geographic focus on Chicago limits some of the generalizability of the empirical findings, but also provides a control on potential confounding variables such as regional variation in social capital, regional variation in industrial mix and unemployment, and metropolitan institutional structures.

PHDCN features many variables related to social capital and the socioeconomic status of the respondent, as well as detailed neighborhood variables. For over a decade, Robert Sampson and colleagues have used the PHDCN data to investigate the

²¹ The non-independence of the sampling method potentially introduces the problem of heteroscedasticity into the analysis. The main issue with heteroscedasticity is that it reduces the validity of the standard errors and therefor makes inference from significance tests suspect. To correct for this, estimates in this analysis were corrected by using clustered robust standard errors. See the technical appendix for more information.

relationship of social capital related concepts to violent crime (Sampson et. al. 1997; Morenoff et. al. 2001), Childhood development and well-being (Sampson et. al. 2008a), the social monitoring of children's behavior (Sampson et. al. 2002), among others. The variables in this dataset reflect a more specific conceptualization of social capital than other studies which just rely on trust or organizational membership. Of particular interest are the latent social capital variables identified in Sampson et. al. (1999: 639). These variables include *reciprocated exchange*, measured by five items of social exchange such as favors, *voluntary association*, a measurement of involvement in a number of civic and voluntary groups and *social cohesion*, a measure of trust in neighbors measured by survey items of the helpfulness of neighborhoods and trustworthiness. I use these three latent variables as my primary social capital variables but have renamed reciprocated exchange to *cooperation*, voluntary association to *engagement* and social cohesion as simply *cohesion* and added used a fourth, *memberships* as explained in chapter four. Table 5.1 shows a summary of the questions for each social capital measure. These questions are measured on a five point likert scale, except for the membership questions, which are measured dichotomously. In addition to social capital responses, the data set includes socio-economic and demographic variables. For our success variable, we use household income, which was measured on a 15 category scale. In this analysis I will refer to success and its variable *incvalue* interchangeably. Table 5.2 presents a summary of the variables used in this study. The neighborhood variables were aggregated from the individual responses by neighborhood cluster.

Table 5.1 Social Capital Variables

<p>Cohesion</p> <ul style="list-style-type: none"> • Q11b – This is a close-knit neighborhood • Q11e – People are willing to help neighbors • Q11f – People in the neighborhood get along • Q11k – People in the neighborhood share the same values • Q11m – People in the neighborhood can be trusted 	<p>Cooperation</p> <ul style="list-style-type: none"> • Q18 – How often do people in neighborhood do favors for each other • Q19 – When a neighbor is not home, how often do you and other neighbors watch over their property • Q20 – How often do you and other people in neighborhood ask advice about personal things • Q21 – How often do you and other people in the neighborhood have get-togethers where other people in neighborhood are invited • Q22 – How often do you and people in the neighborhood visit in each other’s homes or on the street
<p>Engagement</p> <ul style="list-style-type: none"> • Q13a – Have you, or any household member, spoken with a local politician or elected local official about a neighborhood problem. • Q13b – Have you, or any household member, talked to a person or group causing a problem in the neighborhood • Q13c – Have you, or any household member, attended a meeting of a block or neighborhood group about a neighborhood problem or improvement • Q13d – Have you, or any household member, talked to a local religious leader or minister to help with a neighborhood problem or with neighborhood improvement • Q13e – Have you, or any household member, gotten together with neighbors to do something about a neighborhood problem or to organize neighborhood improvement. 	<p>Membership</p> <p>Do you or other household members belong to:</p> <ul style="list-style-type: none"> • Q24 Any kind of neighborhood watch program • Q25 A block group, tenant association, or community council • Q26 – a business or civic group such as Masons, Elks, or Rotary Club • Q27 – Ethnic or nationality club • Q28 – neighborhood ward group or other local political organizations

Table 5.2 Summary Statistics

Variable	Description	Mean	SD	Min	Max
Individual Variables					
incvalue	Categorical measure of income in real dollars	27694.55	28451.31	0	150000
old	Dummy for age 65 or older	0.252	0.434	0	1
young	Dummy for age 25 or younger	0.227	0.419	0	1
edu	Education in years	12.0307	3.12	0	17
hispanic	Dummy for race = Hispanic	0.25	0.433	0	1
black	Dummy for race = African American	0.396	0.489	0	1
sepdiv	Dummy for separated or divorced	0.165	0.371	0	1
female	Dummy for Gender = Female	0.590	0.492	0	1
married	Dummy for married	0.373	0.484	0	1
employed	Dummy variable for if respondent currently has a job	0.579	0.494	0	1
tenure	Years lived in neighborhood	10.389	11.966	0	81.5
church	Dummy for belongs to a religious organization	0.57	0.495	0	1
prestige	respondents occupational prestige	40.57	13.324	17	86
Neighborhood Variables					
n_income	median income in neighborhood cluster	28088.19	12883.42	0	95500
nbagrad	proportion of respondents with a bachelor's degree	0.286	0.189	0	1
n_black	proportion of respondents who are African American	0.391	0.402	0	1
n_femalehouse	proportion of single, separated or divorced women respondents	0.278	0.138	0	1
n_employed	proportion of employed respondents	0.58	0.161	0	1
n_tenure5	proportion of respondents living 5 years or more in neighborhood	0.545	0.173	0	1

The PHDCN measurement instrument and indicators have been used in a number of studies, which support its validity and reliability (Dorsey and Forehand, 2003; Drukker et al 2003; Lochner et. al. 2003; Rankin and Quane, 2002; Subramanian et al. 2003; Brisson and Usher 2005; Brisson and Usher 2007). For example Drukker et al. (2003) use it to study the social capital effect on neighborhoods. Dorsey and Forehand (2003)

conduct and SEM analysis using the PHDCN instrument study how social capital relates to child psychological adjustment. Brisson and Usher (2004; 2007) use the instrument to test social capital relationship with homeownership and other neighborhood variables.

Methodology

The main methodological tool for this study is Structural equation modeling (SEM). SEM is a family of related statistical techniques that primarily combines confirmatory factor analysis (CFA) path modeling and regression techniques. SEM uses various models to depict theoretical relationships among observed variables and provides a quantitative test of the theoretical model (Shumaker and Lomax 2004: 2). The greatest advantage of these techniques is that they allow statistical modeling and testing of complex relationships and phenomena. I also supplement the base SEM techniques of CFA and structural modeling with an instrumental variables approach, using a second-stage least squares regression (2SLS) to test the endogeneity hypothesis. This intent of using multiple methods, as well as multiple models of social capital, is to increase the robustness of the findings. In the rest of this section I describe the statistical methods in more detail and provide an overview of the models.

CFA

Confirmatory factor analysis (CFA) is a theory driven confirmatory technique. It is related to other forms of factor analysis, but differs in that most other factor techniques are exploratory, in that they seek to find inductively covariate relationships in the data. In contrast, CFA starts with the theoretical construct and hypothesized relationships. It then constructs a model of these relationships, called the measurement model, and tests

how well the hypothesized covariances of the population fits the observed covariances (Schreiber et. al. 2010).

The main theoretical constructs for this study are *bridges*, *cohesion*, and *cooperation*. As I outlined in chapter four, these constructs were derived the literature. Because these measures have been developed and tested by prior studies (see Sampson et al 1999 and Sampson 2012), CFA is used primarily to confirm the validity of these measures. The CFA technique is used here to provide validity to overall model and show that the constructs hold up empirically. Figures 5.1, 5.2 and 5.3 show the measurement models graphically. The ovals represent the latent, unobserved social capital constructs. The boxes show the actual observed variables, which are hypothesized to indicate the latent variables. The straight arrows indicate causality to show the latent variable causes the indicator (or alternatively is measure by those indicators), while curved lines indicate covariance between variables.

Figure 5.1 Bridge Measurement Model

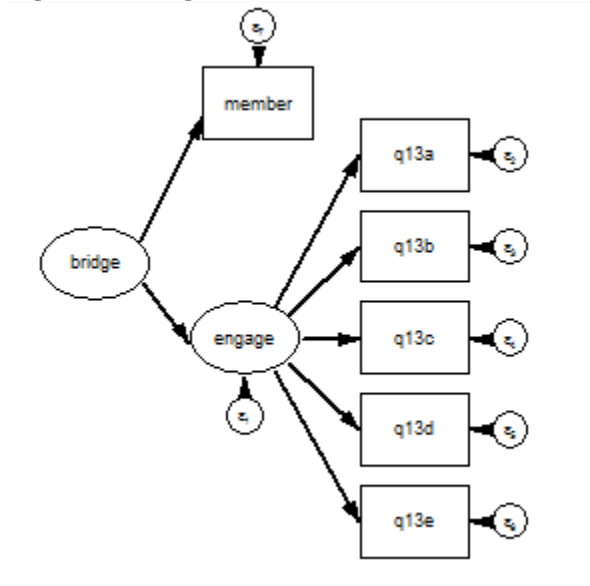


Figure 5.2 Cooperation Measurement Model

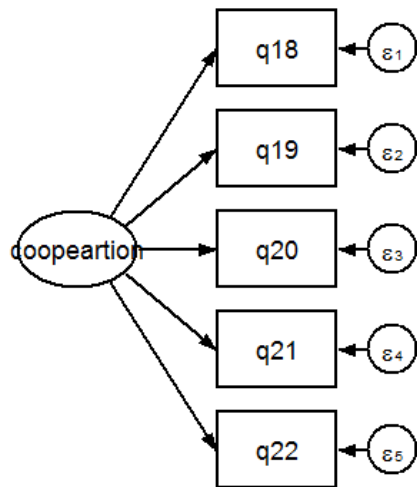
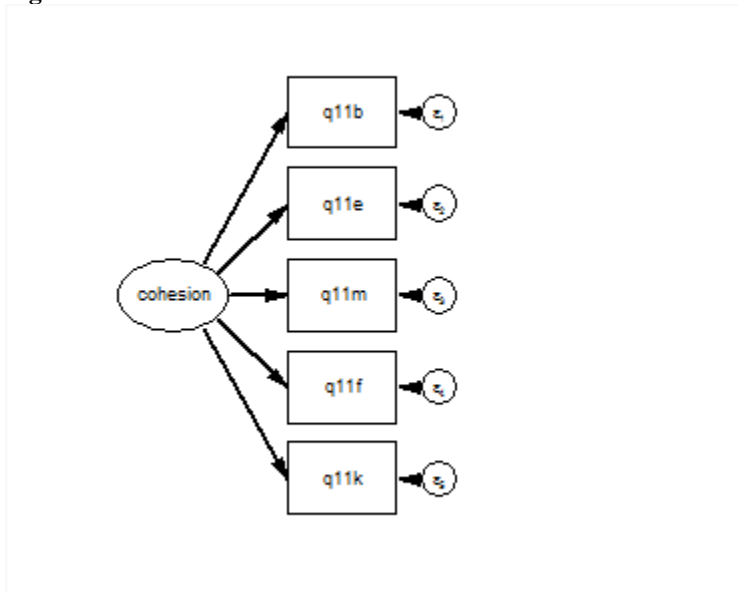


Figure 5.3 Cohesion Measurement Model



2SLS

In order to test the endogeneity hypothesis, I use a two-stage least squares regression (2SLS). Social capital and economic success are modeled as endogenous—they have some degree of mutual causality. Endogeneity can cause biased statistical estimates, which can cause trouble for understanding relationships (Timpone 2003). The main statistical technique employed in this dissertation, SEM, is justified in part because it can model endogeneity and latent variables at the same time. 2SLS, or instrumental variable regression, is a separate but related technique for modeling endogeneity which I use to supplement the SEM process. The advantage of 2SLS is that it allows the testing of endogeneity specifically through the Durbin-White-Hausman test (DWH).²² With this test, we can specifically test the hypothesis that social capital and economic success are endogenous, which lends greater validity to the structural model. The disadvantage to 2SLS regression is that it doesn't allow us to model latent measurement variables within the model. To perform it, we first generate predicted factor scores from the CFA model and then use them as instrumented predictors in the 2SLS regression.

SEM

CFA and 2SLS are used to test specific assumption in this analysis, namely the empirical validity of the social capital constructs and the assumption of endogeneity. Structural equation modeling is used, however, to test the main theoretical relationships

²² See Baum, Schaffer and Stillman (2003) for an overview of this technique. The technique was originally developed through Durbin (1954), Hausman (1978) and Wu (1973).

of interest. SEM combines the measurement technique of the CFA with a structural model. In a structural model, causal relationships among variables is specified in advance and are tested using to see how closely the relationships match the available data (Shor 2004: 152). These causal relationships are specified before analysis and are most often depicted diagrammatically. Figures 5.4 through 5.9 show the structural model of the hypothesized relationships for each of the social capital constructs. These diagrams represent relationships in the same way as the CFA models: ovals represent unobserved, latent variables, rectangles observed variables, and the arrows causal relationships.

Figure 5.4 Individual Bridges SEM Model

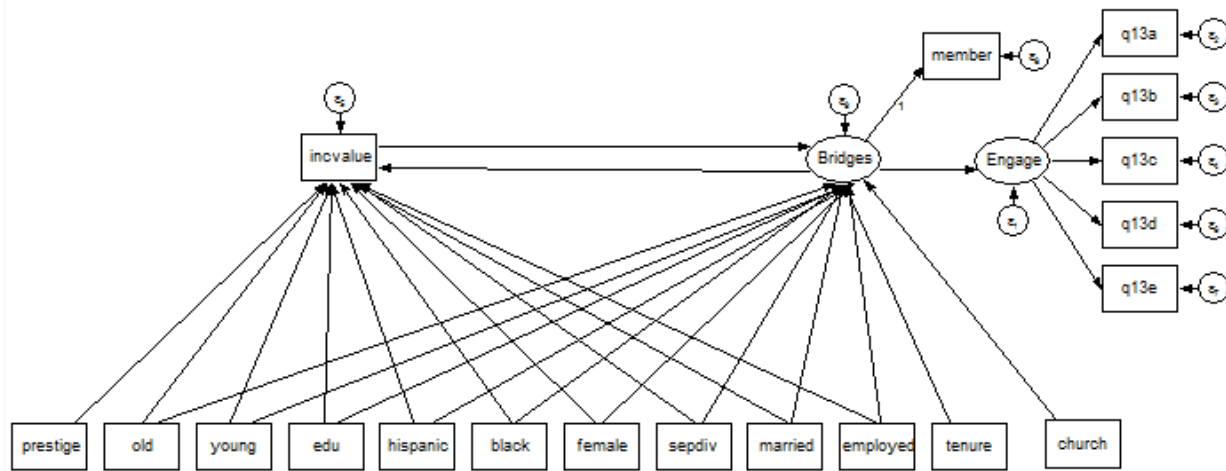


Figure 5.5 Individual Cooperation SEM Model

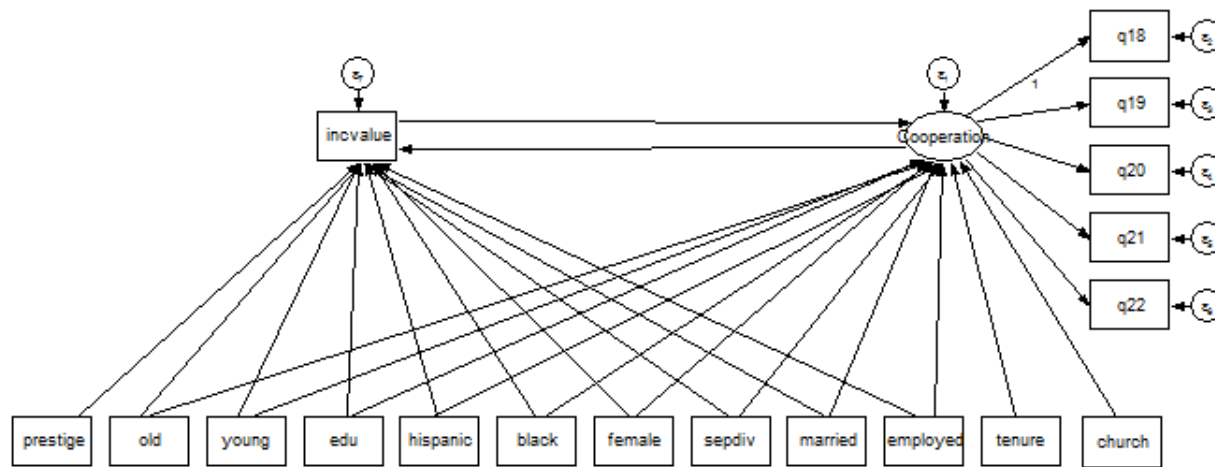


Figure 5.6 Individual Cohesion SEM Model

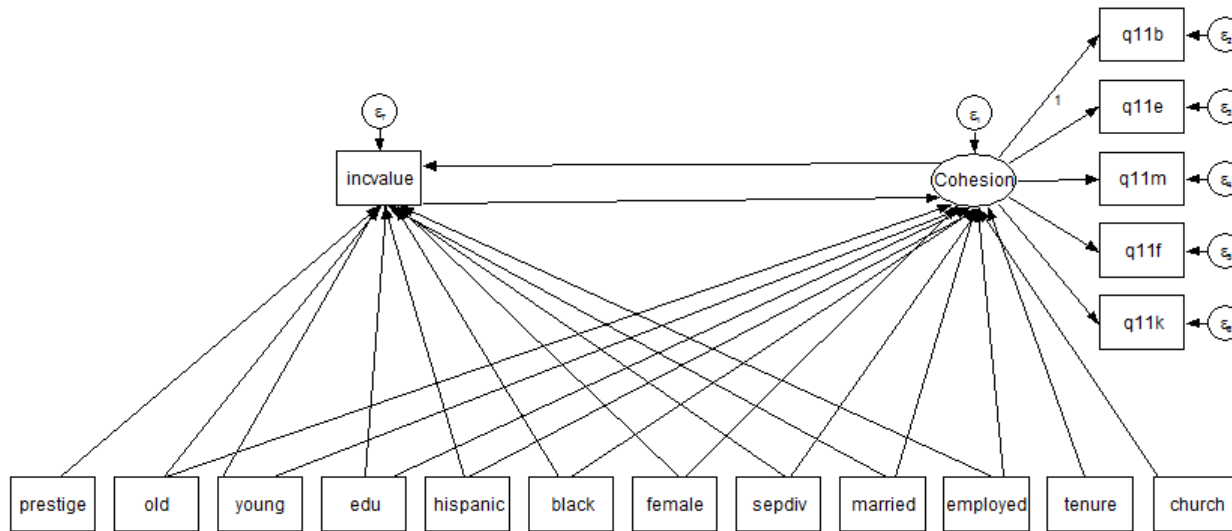


Figure 5.7 Neighborhood Bridges SEM Model

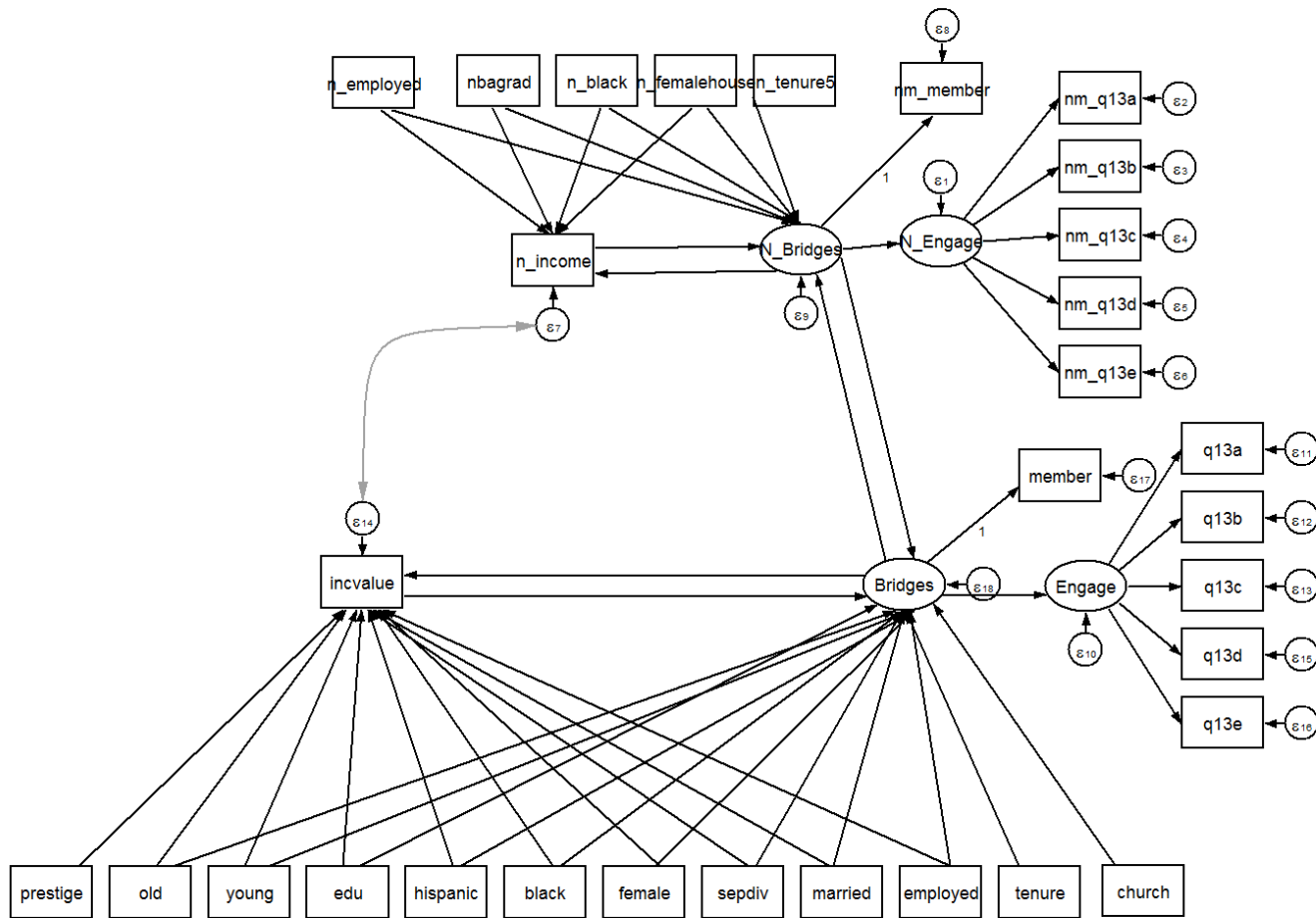


Figure 5.8 Neighborhood Cooperation SEM Model

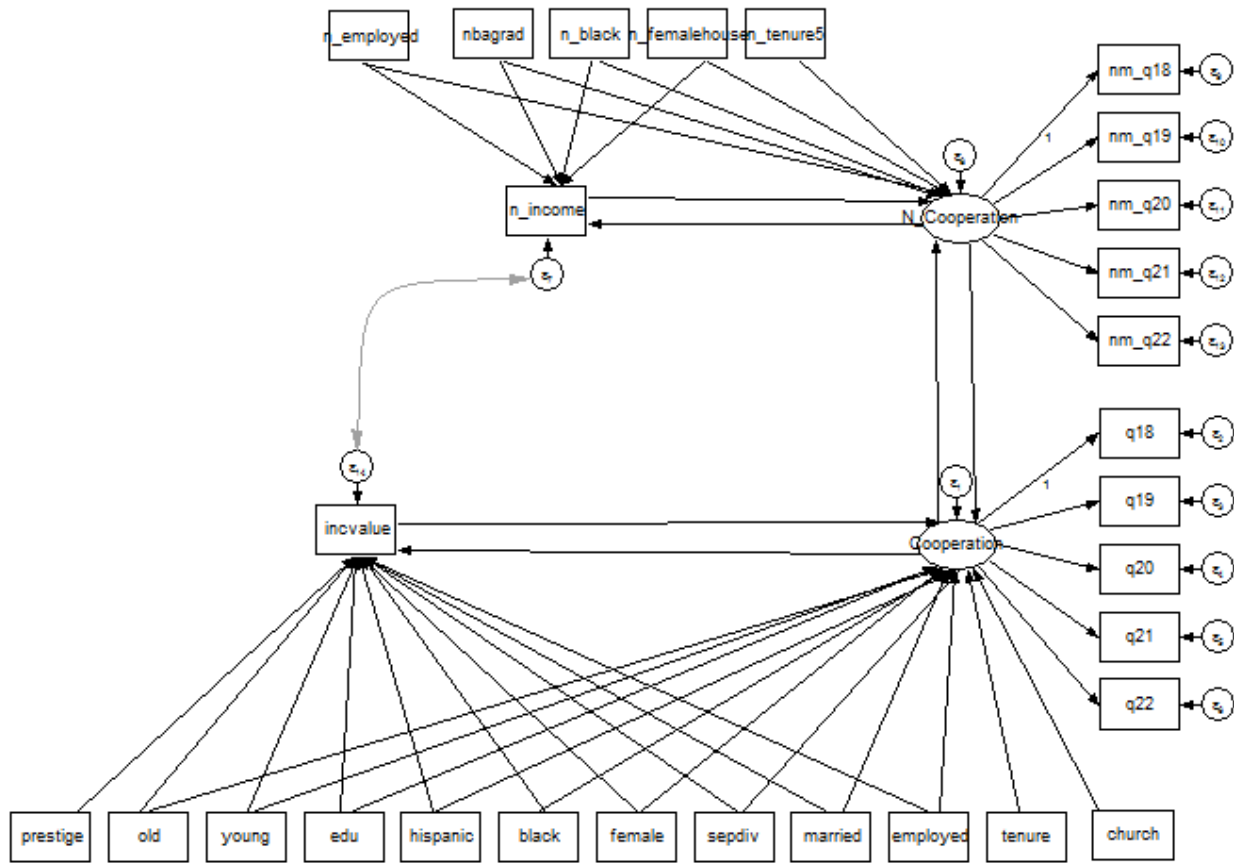
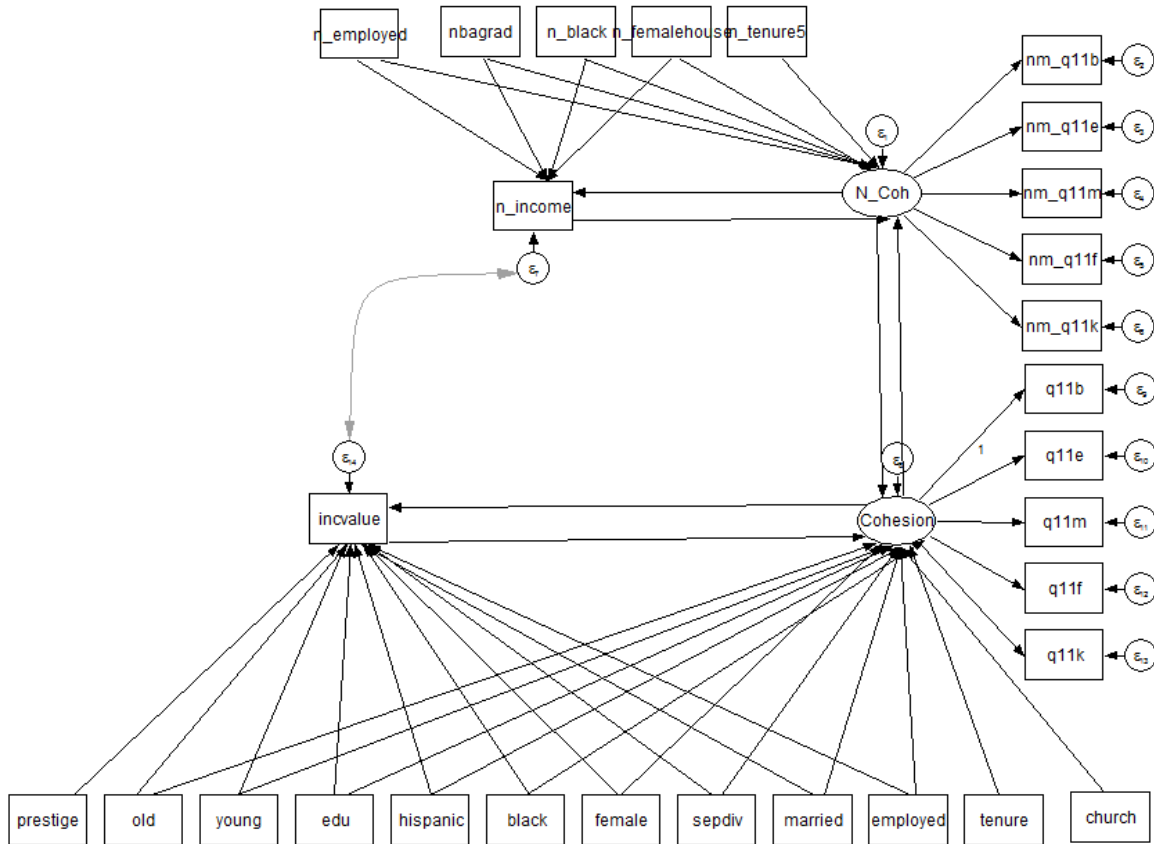


Figure 5.9 Neighborhood Cohesion SEM Model



SEM is most useful for addressing questions about causality, measurement, and causality when variables are not well measured (Hoyle 1994). The major strengths of the method are the explicit modeling of causal relationships; tests that allow models to be rejected and competing models can be compared. In the structural model, a regression coefficient is estimated for each relationship. The advantage in this technique is that specific and more complex causal relationships between variables can be modeled and estimated in ways not normally available in more common multiple regression techniques. As Hoyle and Smith (1994) state, “Unlike the goal of analysis of variance (ANOVA) or multiple regression, which is to model individual observation, the primary aim of structural equation modeling is to model covariances, which entails proposing a set of relations(i.e. a model) and evaluating their consistency with the relationship manifest in an observed covariance matrix”(429). For example, it allows us to model endogeneity specifically within the model, through reciprocal causal paths.

One of the primary advantages that the structural model gives us is that it can test hypotheses about mediation. Mediation is when the “causal effect of some variable X on an outcome Y is explained by some intervening variable M ”(Shrout and Bolger 2002: 422). SEM allows us to model, analyze, and estimate both the direct and indirect effect of one variable on another. For example, we can estimate the indirect effect of neighborhood level of bridging social capital on individual *incvalue* even though there isn't a direct path.

While SEM models causal relationships specifically, it cannot be said to test that causality specifically (Kline 2011). SEM, like most statistical techniques, is rather a disconfirmatory technique to tell how well the model fits the data. As Bollen (1989)

states, “If a model is consistent with reality, then the data should be consistent with the model. But, if the data are consistent with the model, this does not imply that the model corresponds to reality” (68).

Measurement Results

Table 5.3 presents results from the CFA analysis. I performed the CFA analysis separately for each of the social capital variables.

Table 5.3 – CFA Results

	Cooperation			Cohesion			Bridge		
Log pseudolikelihood	-45281.027			-51357.804			-22757.996		
Alpha	0.802			0.732			0.777		
Observations	7128			7949			7776		
	Observed	Coefficient	Robust SE	Observed	Coefficient	Robust SE	Observed	Coefficient	Robust SE
	q18	0.769	0.009	q11b	0.650	0.011	Engage	0.540	0.011
	q19	0.652	0.011	q11e	0.757	0.009	Memberships	0.960	0.013
	q20	0.659	0.010	q11f	0.674	0.011	(Engage Variables)		
	q21	0.590	0.013	q11k	0.479	0.017	q13a	0.634	0.012
	q22	0.687	0.011	q11m	0.432	0.016	q13b	0.506	0.015
							q13c	0.793	0.008
							q13d	0.480	0.014
							q13e	0.777	0.010
SRMR	0.039			0.026			0.017		
CD	0.814			0.775			0.925		
Note: All coefficients significant at the 0.01 level.									

All of the coefficients were significant, and both the alpha for interscale reliability and fit statistics are acceptable, so all of the models will be used without modification for the rest of the analysis. Because the 2SLS method doesn't compute measurement models internally, The CFA results were used to predict factor scores for each social capital variable.

2SLS Results

Tables 5.4 and 5.5 present the results from the 2SLS regressions. In models 1, 2 and 3, each of the main social capital variables are regressed on *income*. Social capital is instrumented with *church* and *tenure*. Table 5.4 shows the individual level results. Each of the social capital variables were run in separate models in order to test the endogeneity of each with *incvalue*. "Endogeneity test" reports the results from DWH test, which has the null hypothesis that the variables are exogenous. Since the p-value for each of these tests is very small, we can reject the null, which means that social capital and income are indeed endogenous. Table 5.5 shows the 2sls results at the neighborhood level. Models 4, 5 and 6 regress neighborhood social capital, calculated as the mean of individual social capital in the neighborhood cluster, on the median neighborhood income, *n_income*. Neighborhood social capital is instrumented with *n_tenure5*. Because these models are at the neighborhood level, they are regressed with non-clustered robust errors. The endogeneity tests mirror those at the individual level, creating stronger support that the endogeneity finding is robust.

Table 5.4 2SLS Regression of Social Capital on Income

Dependent = incvalue	Model (1) bridge	Model (2) cohesion	Model (3) cooperation
Observation	7527	7527	7527
R ²	0.2041	0.0848	0.1465
bridge	36168.65*** (5417.464)	n/a	n/a
cohesion	n/a	25096.00*** (4098.993)	n/a
cooperation	n/a	n/a	25096.00*** (2725.596)
edu	1858.789 *** (165.4733)	1984.705*** (162.460)	2071.101*** (154.0133)
young	-179.716 (917.985)	1187.188 (1127.652)	-1182.779 (875.7165)
old	-1370.931 (927.785)	1181.764*** (1117.341)	-313.9709 (948.9779)
Hispanic	927.7856*** (1044.172)	-5019.398*** (1181.764)	-6028.067*** (1108.226)
black	-8840.698*** (1001.205)	-4286.435*** (1269.436)	-7187.444*** (1055.621)
female	-3176.333*** (604.116)	-2792.582*** (649.377)	-2423.248 *** (614.6922)
sepdv	-1381.033* (729.688)	816.2681 (849.379)	-361.3895 (774.698)
married	9456.832*** (798.254)	10148.15*** (787.668)	9944.134*** (785.717)
employed	11158.30*** (642.197)	9909.94*** (773.1136)	11950.86*** (662.391)
Constant	2636.22 (2200.983)	-1350.019 (2083.839)	-1807.64 (2036.475)
Endogeneity Test F(1, 342)	25.3652***	30.5266***	31.4118***
First-Stage Adjusted R2	0.1270	0.083	0.062
First-Stage Partial R2	0.0612	0.022	0.0357

*p < .10, **p < .05, ***p < .01, clustered robust standard errors are in parenthesis. Bridge, Cooperation, and Cohesion instrumented with *church* and *tenure*. 1st stage regressions are in the technical appendix.

Table 5.5 2SLS Regression of Neighborhood Social Capital on Neighborhood Income

Dependent – n_income	Model (4) n_bridges	Model (5) n_cohesion	Model (6) n_cooperation
Observation	8782	8782	8782
R ²	.	0.4667	0.2601
n_bridges	159376.10*** (8093.789)	n/a	n/a
n_cooperation	n/a	26464.48*** (835.268)	n/a
n_cohesion	n/a	n/a	52216.16*** (1928.422)
nbagrad	26114.75*** (1213.334)	21206.54*** (900.656)	21101.02*** (1012.609)
n_employed	18186.85*** (1441.726)	17174.20*** (811.443)	27959.90*** (962.729)
n_black	-7866.809*** (679.413)	-344.281 (291.845)	848.077** (362.232)
n_femalehouse	2460.335 (1528.608)	3526.429*** (1275.09)	-4332.897*** (1285.364)
Constant	12456.77*** (1023.443)	11216.50*** (532.475)	6713.541** (639.893)
Endogeneity Test; F(1, 8774)	1021.35***	662.812***	959.523***
First-Stage Adjusted R2	0.0861	0.3491	0.2096
First-Stage Partial R2	0.0429	0.1537	0.1188

*p < .1, **p < .05, ***p < .01, robust standard errors are in parenthesis. Bridge, Cooperation, and Cohesion instrumented with *n_tenure5*. First stage regressions are in the Technical Appendix.

SEM Results

Individual Level Results

The main individual level hypothesis is that social capital increases economic success and that there is a reciprocal relationship. To examine this, I have run 6 models,

two for each of the social capital variables. Figures 5.10, 5.11, 5.12 and table 5.6 report the SEM results for the model at the individual level only, while figures 5.13, 5.14, 5.15 and table 5.7 report the results for the full model. The diagrammatic figures report standardized direct regression coefficients. The tables report both the standardized and unstandardized effects for the structural model.²³ In this section I will discuss the results of the individual level models. The next section will examine the full models.

The first set of three models look at individual level dynamics, with one model for each for *bridges* (model 1), *cooperation* (model 2) and *cohesion* (model 3). In each of these models, the relationship between the social capital and *incvalue* is modeled as reciprocal, with *church* and *tenure* as instrumental variables for social capital. *Prestige* instruments *incvalue*. Also included in the model are socio-demographic variables which are believed to affect both. All three of the individual models have an acceptable degree of fit.²⁴ Figures 5.10, 5.11, 5.12 and table 5.6 report the model results.

²³ I omit the measurement model results for clarity.

²⁴ Fit statistics, stability indices and equation level fit statistics are in the technical appendix.

Figure 5.10 Individual Level Bridges SEM Results

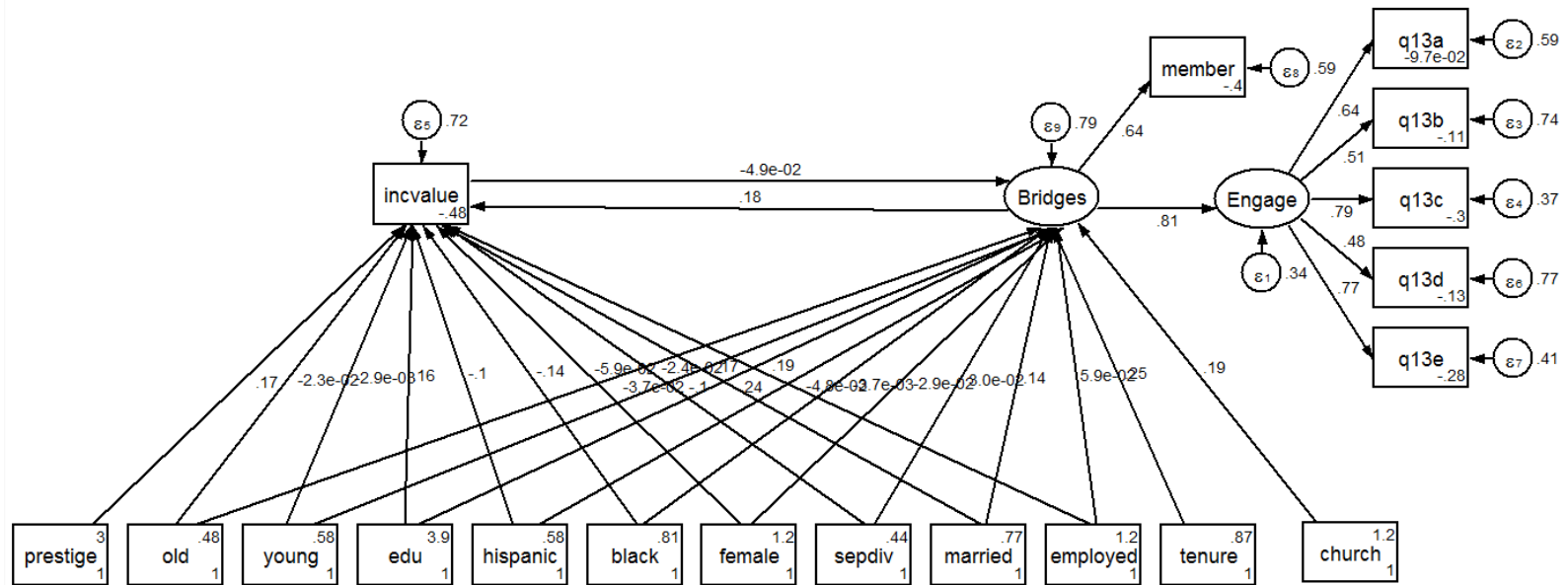


Figure 5.11 Individual Level Cooperation Results

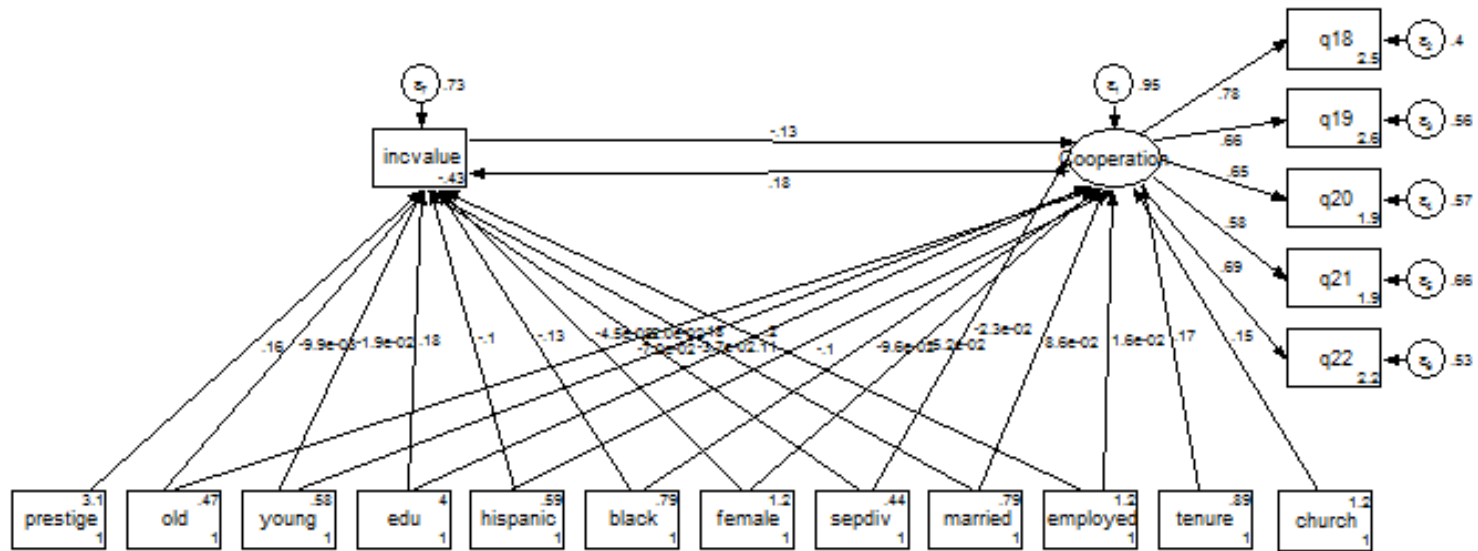


Figure 5.12 Individual Level Cohesion SEM Results

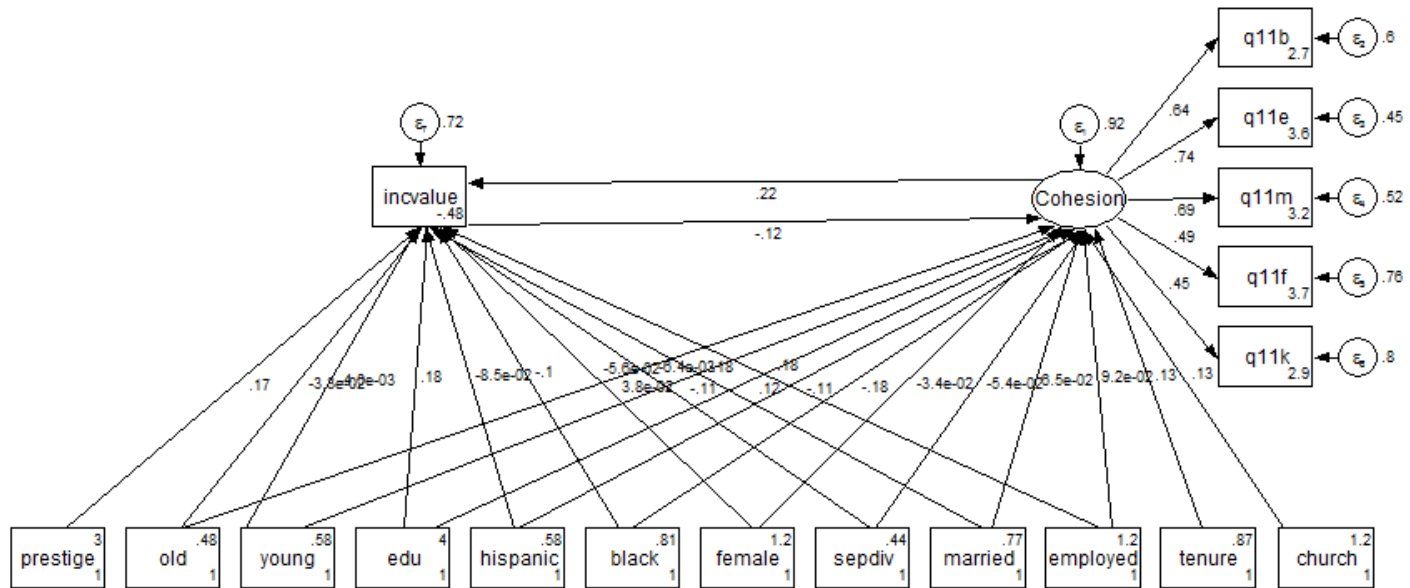


Table 5.6 Individual Level SEM Results

	Model (1) Bridge		Model (2) Cooperation		Model (3) Cohesion	
Observations	7256		6644		7349	
Log pseudolikelihood	-214512.72		-219269.63		-243411.23	
	incvalue	bridge (SC)	incvalue	cooperation (SC)	incvalue	cohesion (SC)
SC*	11846.15*** 0.181 (2436.732)	N/A	6964.826*** 0.184 (1847.845)	N/A	9130.528*** 0.221 (2238.06)	N/A
incvaue	N/A	-0.001 -0.049 (0.001)	N/A	-0.001** -0.129 (0.001)	N/A	-0.001*** -0.117 (0.001)
edu	1411.475*** 0.156 (140.188)	0.034*** 0.245 (0.003)	1644.096*** 0.179 (140.581)	0.027*** 0.113 (0.005)	1646.837*** 0.180 (132.633)	0.027*** 0.120 (0.005)
old	-1696.574* -0.023 (898.352)	-0.042* -0.037 (0.022)	-731.617 -0.009 (957.416)	-0.138*** -0.070 (0.036)	-2402.158** -0.033 (939.667)	0.068** 0.038 (0.028)
young	-187.925 -0.003 (889.692)	-0.102*** -0.102 (0.015)	-1215.136 -0.018 (878.488)	-0.065** -0.037 (0.025)	-261.346 -0.004 (960.676)	-0.169*** -0.106 (0.025)
female	-3391.788*** -0.059 (599.208)	-0.025* -0.029 (0.013)	-2637.518*** -0.045 (600.251)	-0.080*** -0.052 (0.023)	-3274.466*** -0.056 (589.774)	-0.048** -0.034 (0.020)
black	-7971.859*** -0.138 (940.265)	-0.003 -0.004 (0.019)	-7754.538*** -0.131 (1006.300)	-0.149*** -0.096 (0.036)	-5879.185*** -0.101 (1045.417)	-0.250*** -0.178 (0.036)
hispanic	-6828.459*** -0.104 (977.130)	-0.048** -0.048 (0.021)	-6854.999*** 0.104 (1046.589)	-0.180*** -0.103 (0.041)	-5575.006*** -0.085 (981.118)	-0.169*** -0.106 (0.037)
married	9863.003*** 0.168 (753.521)	0.126*** 0.141 (0.019)	10344.23*** 0.175 (792.5191)	0.134*** 0.086 (0.030)	10739.45*** 0.182 (723.582)	0.092*** 0.065 (0.029)
sepdv	-1824.496*** -0.024 (697.363)	0.035** 0.030 (0.017)	-1567.914** -0.020 (725.400)	-0.047*** -0.022 (0.031)	-491.930 -0.006 (739.937)	-0.100*** -0.054 (0.027)
employed	10753.62*** 0.186 (633.260)	0.051*** 0.058 (0.015)	11840.14*** 0.203 (662.632)	0.025 0.016 (0.032)	10364.04*** 0.179 (668.649)	0.128*** 0.092 (0.030)
prestige	356.600*** 0.168 (27.443)	N/A	349.744*** 0.162 (29.128)	N/A	361.945 0.169 (26.976)	N/A
tenure	N/A	0.009*** 0.254 (0.001)	N/A	0.011*** 0.168 (0.001)	N/A	0.007*** 0.125 (0.001)
church	N/A	0.164*** 0.187 (0.014)	N/A	0.234*** 0.153 (0.024)	N/A	0.182*** 0.131 (0.021)
Constant	-13572.67*** -0.478 (1943.764)	N/A	-12438.110*** -0.434 (2200.491)	N/A	-13700.24 *** -0.481 (2283.856)	N/A

*p <.10, **p <.05, ***p <.01. SC is for the social capital variable used in each model. Each table entry in the table reports the un-standardized coefficient with the significance level and the standardized coefficient. Clustered robust standard errors shown in parentheses.

In all three models, the statistically significant socio-demographic variables have the expected signs for both *incvalue* and the social capital variables. Years of education increases both success and social capital. Young people have lower social capital compared to middle aged individuals. On success, young people also have lower incomes, but this is not significant in models 1 and 3. Older people have lower incomes than middle aged, but on average have slightly higher levels of bridging social capital and cohesion, but not a significant level of difference on cooperation. African Americans have lower incomes and lower social capital than other racial categories, as do female headed households. Religious organization membership increases all three types of social capital.

The main hypothesized relationship is that social capital increases economic success, and the results are consistent with this hypothesis. All three types of social capital increase economic success and are significant. Interpreting the magnitude of the effect is tricky because of the nature of the factor scales. A one unit increase in *bridges* increases *success* by 11846.15; cooperation increases it 6964.826, and cohesion 9130.528. The magnitude of this effect is surprisingly large, and is higher than for any of the socio-demographic variables and larger than education. The standardized coefficients also show a large magnitude of the effect. One standard deviation change in bridging social capital changes income by 0.181 standard deviations, cooperation changes it 0.184 and cohesion by 0.221. The magnitude of this effect is higher than for any of the socio-demographic variables except for employment, though education is close in magnitude. In models 1 and 2, employment is the only variable with a larger magnitude.

The second key relationship is the reciprocal effect of the success on social capital. In the 2SLS section, we tested the endogeneity of success and social capital and found that it was endogenous. Drawing on the literature, the hypothesized relationship was that income would increase social capital. But the surprising result is that the relationship was in fact negative. This relationship is true for all three types of social capital and is significant. Because of the difference in the scales, the unstandardized coefficients for success on social capital are very small, but the standardized coefficients are not. For each standard deviation change in success, bridges *decreases* -0.049, cooperation decreases -0.129, and cohesion -0.117. This effect is relatively small for bridges, especially when compared to the effect size of education and tenure. For cooperation and cohesion, the effect size is on par, in absolute magnitude, with education, tenure and church attendance.

Full Model

The second set of models looks at how the neighborhood level affects the individual. In these models, the individual model was retained for each of the social capital variables and expanded to include the neighborhood level variables. The hypothesized connection between the individual and neighborhood level is social capital, and this relationship is modeled as endogenous. Also endogenous is the relationship between aggregate neighborhood level social capital and the median income level of the neighborhood. Also included in the model are neighborhood variables that affect both.

The structure of the model is the same for each of the neighborhood level social capital variables. All of the models had an acceptable level of fit, and were stable.²⁵

Figures 5.13, 5.14, 5.15 and table 5.7 show the results from the full models. In all three neighborhood models the statistically significant socio-demographic variables have the expected sign. Most of the individual level coefficients are similar in magnitude, direction, and significance as in the individual models. The significant neighborhood contextual variables have the expected sign. One surprise was that the proportion of female headed households was not significant with regards to neighborhood income. Also, proportion African American was weakly significant only in the bridges model, where it decreases neighborhood income, but not significant in the others. The proportion of college graduates (nbagrad) and employed (n_employed) increase neighborhood income and social capital as expected.

²⁵ See technical appendix.

Figure 5.13 Neighborhood Bridges SEM Results

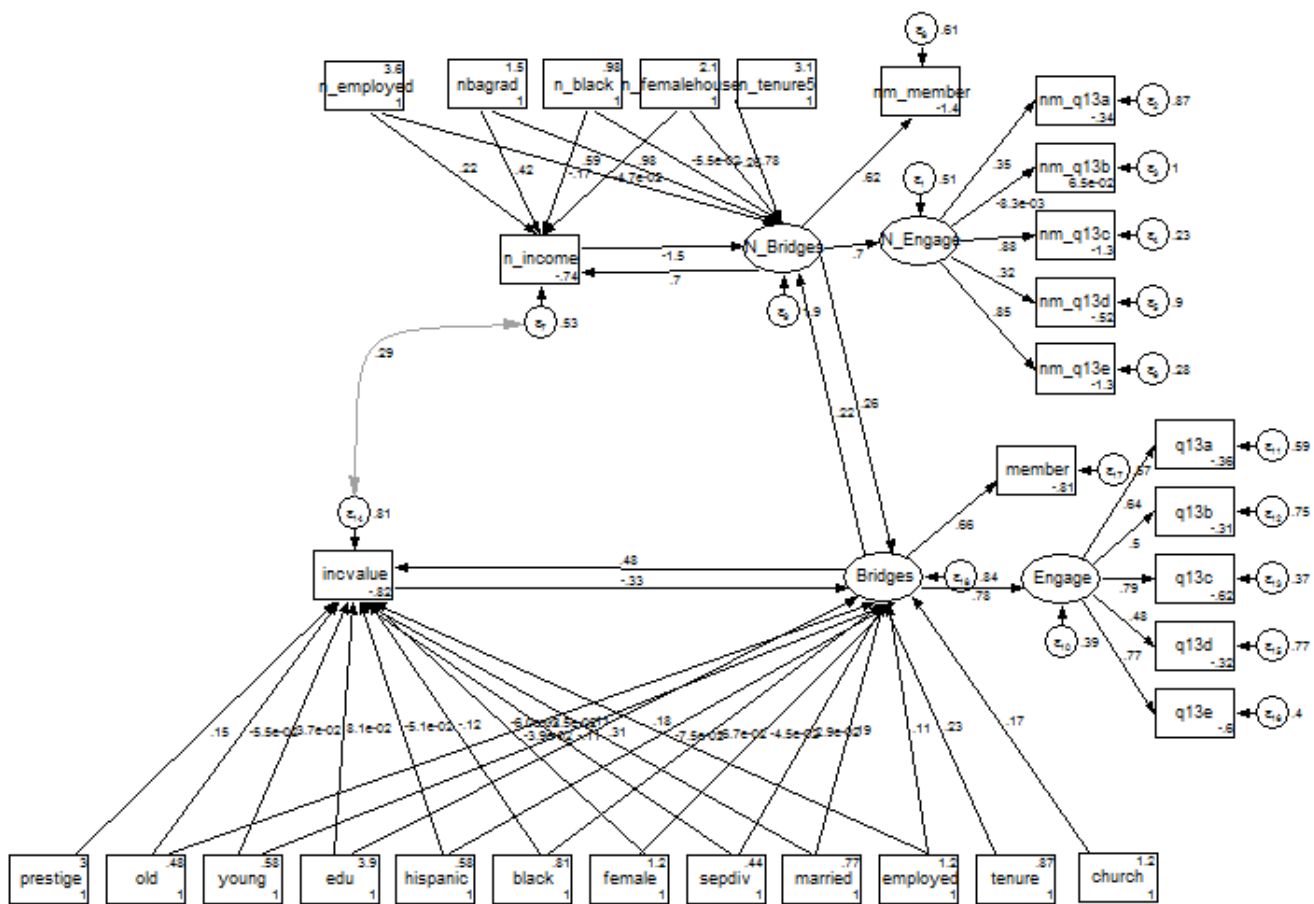


Figure 5.14 Neighborhood Cooperation SEM Results

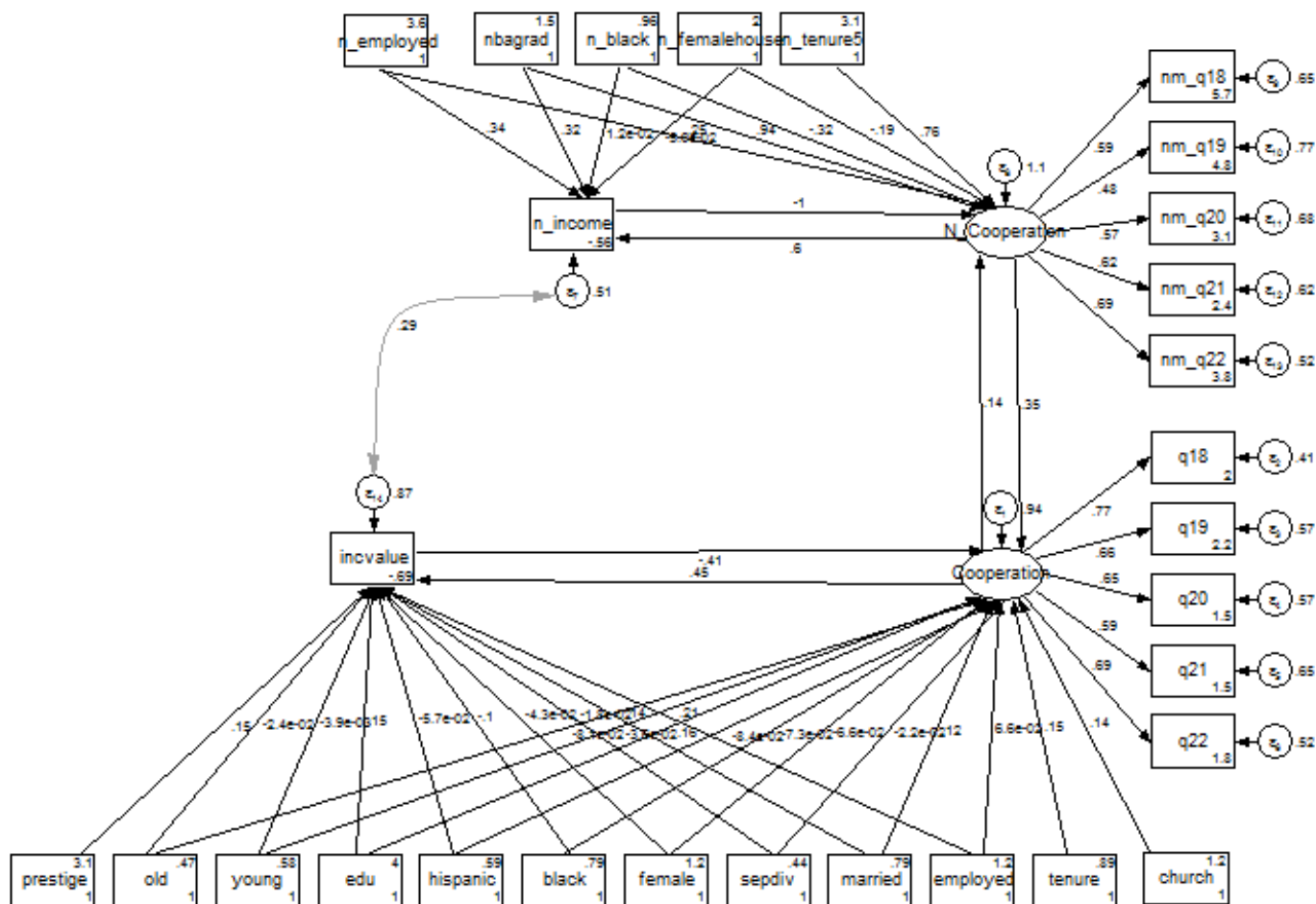


Table 5.7 Full Model SEM Results

	Model (4) Bridge		Model (5) Cooperation		Model (6) Cohesion	
Observations	7318		6644		7418	
Log pseudolikelihood	-168905.26		-292191.9		-255673.44	
	incvalue	bridge (SC)	incvalue	cooperation (SC)	incvalue	cohesion (SC)
incvalue	N/A	-0.001*** -0.334 (0.010)	N/A	-0.001*** -0.406 (0.001)	N/A	-0.001*** -0.396 (0.001)
SC*	30168.83*** 0.479 (5007.197)	N/A	16761.6*** 0.447 (1965.472)	N/A	20367.3*** 0.490 (2073.516)	N/A
NSC*	N/A	.946*** 0.260 (0.301)	N/A	1.047*** 0.346 (0.132)	N/A	0.756*** 0.445 (0.072)
edu	728.866*** 0.081 (219.585)	0.043*** 0.305 (0.004)	2296.413*** 0.147 (184.6302)	0.038*** 0.160 (0.004)	1347.355*** 0.149 (137.300)	0.031*** 0.142 (0.004)
old	-4007.464*** -0.055 (1125.011)	-0.044* -0.039 (0.023)	-1783.56* -0.024 (955.651)	-0.158*** -0.080 (0.030)	-4338.444*** -0.060 (958.519)	-0.001 -0.001 (0.026)
young	2424.105** 0.037 (1098.478)	-0.111*** -0.108 (0.017)	-251.115 -0.003 (898.134)	-0.063** -0.036 (0.025)	1946.827** 0.030 (920.999)	-0.161*** -0.103 (0.023)
female	-3438.99*** -0.060 (647.889)	-0.040*** -0.045 (0.023)	-2468.162*** -0.043 (635.569)	-0.100*** -0.065 (0.023)	-3284.481*** -0.057 (624.78)	-0.060*** -0.043 (0.019)
black	-6935.076*** -0.121 (1055.094)	-0.061*** -0.067 (0.022)	-5934.346*** -0.102 (1087.401)	-0.112*** -0.072 (0.029)	-2724.101*** -0.047 (1023.623)	-0.060*** -0.096 (0.019)
hispanic	-3326.982*** -0.051 (1229.376)	-0.077*** -0.075 (0.023)	-3694.441*** -0.057 (1074.602)	-0.145*** -0.084 (0.037)	-2274.762** -0.035 (1029.669)	-0.100*** -0.064 (0.032)
married	6505.693*** 0.112 (1131.993)	0.172*** 0.187 (0.021)	8291.949*** 0.142 (814.950)	0.192*** 0.123 (0.028)	9149.257*** 0.157 (739.126)	0.121*** 0.086 (0.023)
sepddiv	-2687.728*** -0.035 (837.357)	0.034** 0.029 (0.018)	-1346.017 -0.017 (827.411)	-0.045 -0.022 (0.029)	580.866 0.008 (856.471)	-0.102*** -0.056 (0.024)
employed	0.176	0.096*** 0.106 (0.022)	12065.16*** 0.211 (739.984)	0.101*** 0.066 (0.029)	9525.82*** 0.167 (733.521)	0.154*** 0.112 (0.024)
prestige	323.550*** 0.153 (27.967)	N/A	309.860*** 0.146 (29.415)	N/A	328.565*** 0.156 (27.430)	N/A

tenure	N/A	0.009*** 0.230 (0.001)	N/A	0.009*** 0.150 (0.001)	N/A	0.006*** 0.110 (0.001)
church	N/A	0.152*** 0.169 (0.014)	N/A	0.207*** 0.136 (0.023)	N/A	0.148*** 0.108 (0.018)
Constant	-23031.09*** -0.820 (5446.01)	N/A	7502.221 ** (3362.273)	N/A	-25761.55*** -0.916 (3998.691)	N/A
	n_income	n_bridges (NSC)	n_income	n_cooperation (NSC)	n_income	n_cohesion (NSC)
SC*	N/A	0.061*** .222 (0.017)	N/A	0.046*** 0.140 (0.009)	N/A	0.097*** 0.164 (0.017)
n_income	N/A	-0.001* -1.490 (0.001)	N/A	-0.001*** -1.006 (0.001)	N/A	-0.001*** -0.667 (0.001)
NSC*	72275.13*** 0.702 (19940.11)	N/A	31145.87*** 0.604 (45898.284)	N/A	20340.47*** 0.638 (3362.84)	N/A
tenure5	N/A	0.550*** 0.777 (0.196)	N/A	1.086*** 0.759 (0.195)	N/A	1.452*** 0.632 (0.237)
nbgrad	26677.09*** 0.418 (4411.391)	0.643*** 0.978 (0.334)	21764.58*** 0.321 (4376.796)	1.230*** 0.936 (0.249)	20761.82*** 0.305 (3898.033)	1.542*** 0.722 (0.330)
n_black	-5474.80** -0.123 (2531.493)	-0.016 -0.054 (0.035)	367.1173 0.011 (1810.95)	-0.198*** -0.320 (0.068)	-121.052 -0.004 (1451.124)	-0.229*** -0.231 (0.085)
n_femalehouse	-4368.198 -0.069 (5321.357)	-0.233 -0.259 (0.145)	-4653.029 -0.049 (5058.378)	-0.347 ** -0.191 (0.160)	2392.895 -0.026 (4910.254)	-0.795*** -0.272 (0.181)
n_employed	17090.81*** 0.219 (5876.891)	0.449*** 0.592 (0.221)	26689.39 *** 0.339 (4354.717)	0.385* 0.252 (0.203)	16935.64*** 0.216 (3875.068)	0.876*** 0.356 (0.255)
Constant	-9369.21 -0.742 (7157.92)	N/A	-7128.87 -0.686 (4998.248)	N/A	-6924.866 -0.546 (4363.10)	N/A

*p <.10, **p < .05, ***p < .01. SC and NSC are for the social capital variable used in each model. . Each table entry in the table reports the un-standardized coefficient with the significance level and the standardized coefficient. Bridges Clustered robust standard errors shown in parentheses.

As in the individual level models, we see an opposite reciprocal relationship between individual social capital and individual economic success in the neighborhood models. The effect, however, is larger in magnitude in all three of these models than for their corresponding individual level models. In the bridges model, bridges increases success by 30168.83 for each unit change; in cooperation the change is 16761.60 and in cohesion 20367.30. The standardized effect is also relatively large, with bridges changing success 0.479, cooperation 0.447, and cohesion 0.490. The negative effect of income on social capital is also mirrored in these models, with the standardized effect of success on bridges is -0.334, on cooperation -0.406, and on cohesion -0.396.

On the neighborhood side of models 4, 5 and 6, we find that aggregate social capital has a significant, positive and relatively large effect on median income. The opposite is, however, not true. In all of the models, neighborhood income decreased aggregate social capital, and the magnitude was relatively large, however this relationship was not significant at the 5% level for Bridges. Neighborhood bridges increases neighborhood income by 72275.13(0.702 standardized), neighborhood cooperation by 31145.87 (0.604 standardized), and neighborhood cohesion 20340.47 (0.638 standardized). The standardized coefficient for neighborhood income is -1.490 for bridges, -1.006 for cooperation and -0.667 for cohesion. These relationships are similar in direction as the individual level, but the relative magnitudes are much larger. In each model, neighborhood income has a larger magnitude of effect than neighborhood social capital, whereas at the individual level, the social capital coefficients have larger magnitudes than income.

The links between levels are significant also. In all three models, the covariance between income and neighborhood income is positive and significant. The reciprocal path for individual and neighborhood social capital is positive and significant at the 1% level for all three models. In models the full cooperation and cohesion models, neighborhood social capital have approximately double the magnitude of the reciprocal relationship. In the bridges model, the neighborhood social capital's effect on individual social capital is larger but closer in magnitude to the reciprocal effect. In models 4 and 5, neighborhood social capital has a larger magnitude effect than any of the other variables except for income. In model 6, the neighborhood social capital peer effect is larger than that of income.

In each of these models, we find very similar dynamics. This suggests that even by measuring social as separate constructs, they each tap a similar underlying concept. Therefore, it makes sense to run one final model which combines the social capital concepts into a single latent variable. Model 7, the unitary model, combines all three of the other social capital variables into a single latent variable. The path diagram and results of this model are presented in figure 5.16 and table 5.8. For model 7, we used the predicted factor scores for each of the social capital constructs and scaled the *social capital* latent variable to cohesion at both the individual and neighborhood level.

Figure 5.16 Unitary Model SEM Results

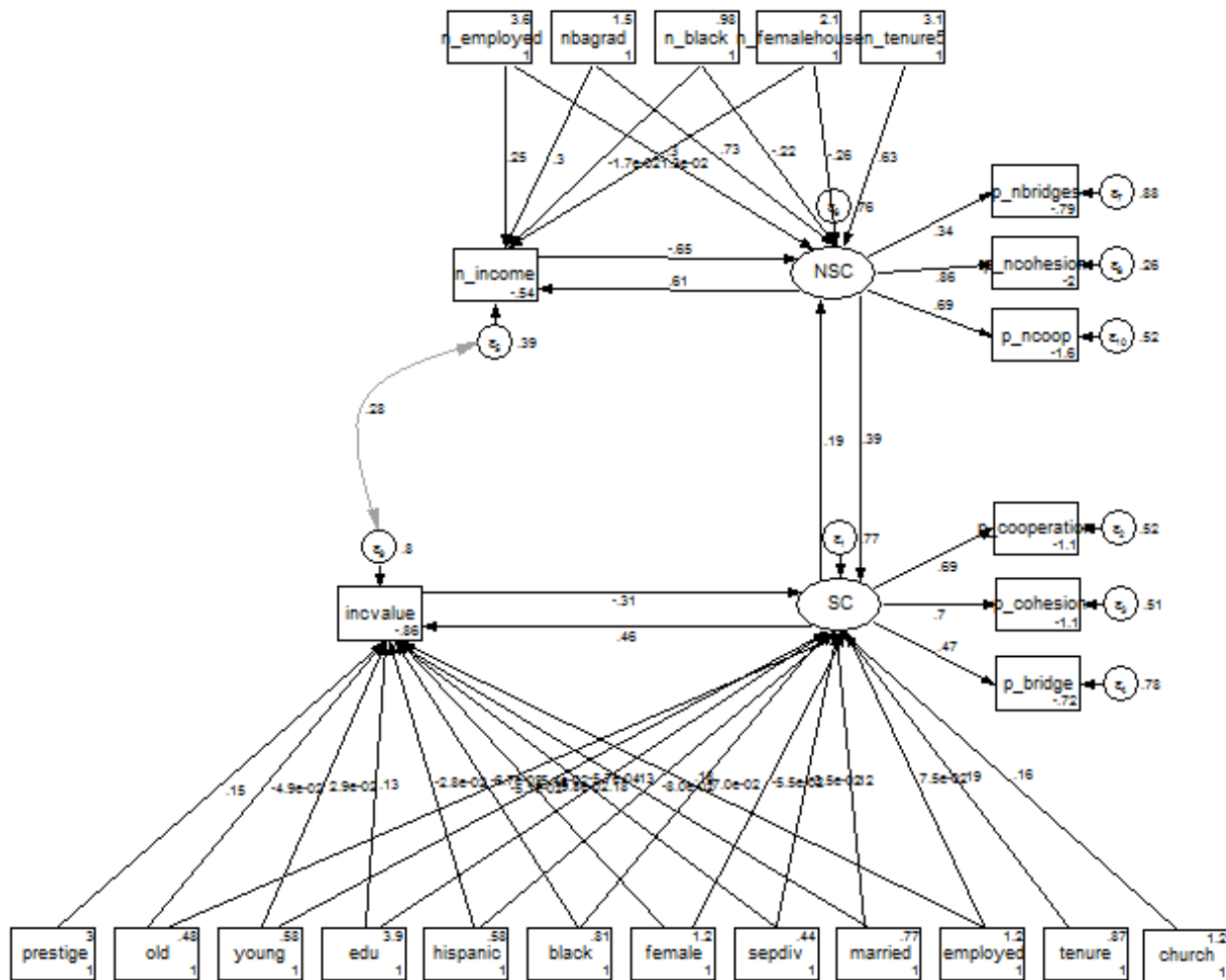


Table 5.8 Unitary Model SEM Results

Model (7) Unitary					
Observations	7527		Log pseudolikelihood	--263401.91	
Individual Variables	incvalue	SC	Individual Variables	incvalue	SC
	B β (SE)	B β (SE)		B β (SE)	B β (SE)
incvalue	N/A	-0.001*** -0.314 (0.001)	hispanic	-1819.776 -0.028 (1039.727)	-0.079*** -0.079 (0.021)
SC	29827.91*** 0.457 (3027.627)	N/A	married	7806.346*** 0.134 (773.829)	0.107*** 0.119 (0.015)
NSC	N/A	0.545*** 0.394 (0.050)	sepdv	-43.271 -0.001 (810.671)	-0.040*** -0.035 (0.015)
edu	1133.514*** 0.126 (142.317)	0.025*** 0.180 (0.002)	employed	10376.29*** 0.182 (695.516)	0.065*** 0.075 (0.016)
old	-3501.39*** -0.048 (897.832)	-0.057*** -0.051 (0.017)	prestige	320.830*** 0.152 (26.501)	N/A
young	1888.018** 0.029 (916.195)	-0.097*** -0.098 (0.015)	tenure	N/A	0.006*** 0.185 (0.001)
female	-3106.234*** -0.054 (604.798)	-0.047*** -0.055 (0.013)	church	N/A	0.141*** 0.163 (0.012)
black	-3856.668*** -0.067 (1053.681)	-0.061*** -0.070 (0.017)			
Neighborhood Variables	n_income	NSC	Neighborhood Variables	n_income	NSC
SC	N/A	0.139*** 0.192 (0.020)	nbagrad	20082.42*** 0.295 (3883.969)	1.222*** 0.734 (0.257)
n_income	N/A	-0.001* -0.650 (0.001)	n_black	-523.949 -0.016 (1474.185)	-0.166 -0.216 (0.063)
NSC	24836.40*** 0.609 (3200.078)	N/A	n_femalehous e	1167.669 0.012 (4782.499)	-0.583 -0.256 (0.165)
tenure	N/A	1.134*** 0.632 (0.153)	n_employed	19815.09*** 0.254 (3704.059)	0.573*** 0.300 (0.202)

*p < .10, **p < .05, ***p < .01 Each table entry in the table reports the un-standardized coefficient with the significance level and the standardized coefficient. Clustered robust standard errors are in parentheses.

In model 7, all of the significant control variables are in the expected direction, and are similar in magnitude to the other models. The main variables of interest also mirror the dynamics in the separate models. At the individual level, income reduces social capital, but social capital increases income with a larger magnitude. At the neighborhood level, neighborhood social capital increases neighborhood income and neighborhood income decreases social capital, but this time income has a larger relative effect than social capital. The links between levels are also similar and significant. Neighborhood social capital increases individual social capital at approximately twice the magnitude of the reciprocal effect, and the errors of income and neighborhood income have a positive and significant covariance.

Model 8 replicates the unitary model, 7, but splits the analysis into income groups. Table 5.9 reports differences in key variables between different income groups.²⁶ SEM analysis allows for calculating coefficients for separately by groups, so we can compare differences across them. The groups are defined by income quartiles in 1995, with poor being the bottom quartile, those earning \$15,000 or less, and affluent being the top quartile, or those earning 65,000 or more.²⁷ The rationale for this is that because of existing network segregation, the dynamics for social capital may be different for different income groups. This is motivated by the bulk of research into concentrated poverty.²⁸ Discussion of these results and the unitary model are discussed below.

²⁶ The full table of results is in the technical appendix.

²⁷ Income quartiles for the state of Illinois in 1994 are from Bureau of the Census (1995).

²⁸ See chapter 3 for a brief review.

Table 5.9 Group Model SEM Results

Observations			7527		
Log pseudolikelihood			-252078.72		
Individual Variables	incvalue	SC	Neighborhood Variables	n_income	NSC
SC			NSC		
Poor	0.366*** (0.072)	N/A	Poor	0.641*** (0.049)	N/A
Middle	0.395*** (0.039)	N/A	Middle	0.595*** (0.027)	N/A
Affluent	0.043 (0.080)	N/A	Affluent	0.567*** (0.041)	N/A
incvalue			n_income		
Poor	N/A	-0.298*** (0.071)	Poor	N/A	-0.860*** (0.145)
Middle	N/A	-0.235*** (0.040)	Middle	N/A	-0.528*** (0.083)
Affluent	N/A	0.034*** (0.075)	Affluent	N/A	-0.585*** (0.141)
edu			SC		
Poor	0.099*** (0.022)	0.132*** (0.028)	Poor	N/A	0.193*** (0.042)
Middle	0.097*** (0.023)	0.124*** (0.022)	Middle	N/A	0.109*** (0.033)
Affluent	0.071* (0.042)	0.039 (0.035)	Affluent	N/A	0.055 (0.060)
employed			n_employed		
Poor	0.214*** (0.021)	0.011 (0.028)	Poor	0.443*** (0.024)	0.430*** (0.067)
Middle	0.108*** (0.016)	0.041* (0.021)	Middle	0.211*** (0.016)	0.278*** (0.032)
Affluent	-0.152*** (0.042)	-0.026 (0.042)	Affluent	0.100*** (0.028)	0.365*** (0.043)
NSC			nbagrad		
Poor	0.319*** (0.034)	N/A	Poor	0.150*** (0.027)	0.668*** (0.065)
Middle	0.400*** (0.028)	N/A	Middle	0.330*** (0.022)	0.692*** (0.054)
Affluent	0.358*** (0.045)	N/A	Affluent	0.525*** (0.030)	0.666*** (0.108)
tenure			n_tenure5		
Poor	0.218*** (0.025)	N/A	Poor	N/A	0.608*** (0.041)
Middle	0.187*** (0.022)	N/A	Middle	N/A	0.661*** (0.032)
Affluent	0.097** (0.046)	N/A	Affluent	N/A	0.868*** (0.065)

*p <.10, **p <.05, ***p <.01. Reports standardized coefficients for selected variables. Clustered robust standard errors shown in parentheses. Full results are reported in the technical appendix.

Discussion

Now we move from describing the empirical results of the models to interpreting them. Because of the number of models presented and the complexity, I will focus on models 7 and 8. The results of the factor analysis, 2SLS and individual level models demonstrate the overall validity of the aggregate models. This section of the chapter will focus on interpreting the results presented above on two fronts. First it will evaluate the hypotheses developed in chapter four and second present substantive interpretations of the results.

One of the assumptions of this analysis was that the different types of social capital may have different dynamics. However, models 4, 5 and 6 show that this assumption was not entirely valid. Though the models have slightly different coefficient magnitudes and significance levels, on the whole the direction and magnitudes of the regression coefficients were remarkably similar. This is the primary justification for the unitary model which combines all three dimensions of social capital into a single latent variable.

The first and most central hypothesis, **H1**, is that social capital positively affects income. In all of the models this relationship is positive and significant. The magnitude of the effect is also large. In fact, it is larger than any of the socio-demographic control variables, even education, which was surprising. The second hypothesis, **H2**, that the relationship between social capital and success is endogenous can also be retained. This was demonstrated in the 2SLS regressions and also in the full SEM models. The direction of the reciprocal relationship, from income back to social capital, was unexpected however. The prediction was that this relationship was positive; however in

all of the models it was actually negative. This is an interesting finding with regards to the previous literature on two fronts. First it confirms the endogeneity of success and social capital, which is important for modeling. But second, and more importantly, it shows the relationship between income and social capital in a clearer light. Most studies that have looked at income or aggregate economic indicators have found a positive correlation between them.²⁹ My results show that this correlation exists, but that it has a more complex relationship. If we were to model the relationship without the endogenous relationship, we would find them positively correlated. My results show that this correlation is due to the fact that social capital has a greater magnitude of effect than income, and therefore they rise together. Without modeling the reciprocal effect, this relationship would appear different.

At the neighborhood level, we find strong evidence for **H3**, that aggregate income positively affects economic success. We also found some evidence for **H4** that neighborhood income and neighborhood economic success had a reciprocal relationship, but, like the individual level, found that neighborhood income had a negative effect on neighborhood social capital, instead of the expected relationship was positive. At the neighborhood level, though, the relative magnitude of neighborhood income is larger than that of neighborhood social capital.

The interpretation of social capital is relatively straightforward as it fits the expected result. Increasing social capital increases economic success. Social capital is has the largest magnitude of all the predictors for income, more than twice that of any of the other variables alone, a finding we will come back to in the next chapter. The effect of income on social capital is not as straightforward. All other things being equal, a gain

²⁹ See chapter one for a review.

in income actually decreases social capital. What are we to make of this? The first, and obvious, consequence is that income by itself does not generate social capital. Income by itself does not lead or mean more cooperative norms or more social connections. It actually suggests that without other factors, such as increasing education, increasing income erodes social capital. This erosion is even stronger at the neighborhood level.

Why does this dynamic exist? There may be a couple of answers. The first is that recent experiments have shown that power and income actually reduce individuals' trust and reciprocity. Economic success can breed a cynical view on others' actions (Inesi et. al. 2012). Another interpretation is that economic success is a substitute for social capital. This means that as economic success increases, the demand for social capital actually decreases. This could be because of the corrupting effect mentioned above, or it could simply be because it is easier for individuals to buy what they need rather than working cooperatively. If we extend this logic, then individual substitution would create a peer effect that would reduce further cooperation. The results on neighborhood income show that this social interaction is more detrimental to aggregate social capital than individual. However, the opposite relationship would not be true from the results. They show that increased social capital increases income, which suggests that it is a one-way complement since the opposite is not also true.³⁰ This suggests that this relationship is endogenously stable, because income counteracts the effect of social capital. The positive feedback of social capital is dampened, meaning that social capital and income might be relatively stable over time without some other factor changing.

The results also support the final hypothesis, **H5**, that aggregate social capital is directly related to individual social capital. The reciprocal effect, from individual to

³⁰ I borrow the concept of one-way complementary goods from Yalcin et. al. (2012).

neighborhood, is also significant. However, the magnitude of neighborhood social capital on individual social capital is approximately double that of the individual on the neighborhood. This suggests that there is a strong peer effect in social capital; that individual social capital is determined in part by the social capital of peers in the neighborhood. The standardized neighborhood social capital coefficient is the single largest predictor in magnitude for individual social capital, even larger than the negative effect of personal income. The reciprocal dynamics are different. Individual social capital actually has the smallest magnitude of the predictors of neighborhood social capital. The largest magnitude predictors are the proportion of college graduates, followed by neighborhood income and neighborhood tenure; each of which over three times in magnitude of effect.

The group model, model 8, asks if the dynamics for social capital are different at different income levels. The rationale for this is that income segregation may create different social capital dynamics at different income levels. This is the implication of the neighborhood effects literature which suggests that concentrated poverty has its own dynamic (e.g. Wilson 1996) as well as more recent work which suggests that the rich might have different dynamics (Putnam 2012). There are indeed differences, but they are mostly differences of the affluent from the other two groups. First, for all three groups social capital has a positive effect on income, but for the affluent, this effect is not significant. The magnitude of this effect is also small compared to middle income individuals. For individual social capital, income has a negative effect on the social capital of the poor and middle income groups, but the effect is not significant for the affluent. This suggests that for the highest income groups, the social capital and income

have don't have a meaningful effect, but that it is an important relationship for the other two groups. For the poor and middle income, social capital is still the largest predictor of income. For all three groups, neighborhood social capital is still a significant predictor of individual social capital and the largest in magnitude.

Other differences in groups exist at the neighborhood level. Neighborhood social capital has a positive and significant effect on neighborhood income with very similar magnitudes for all three groups, similar to the unitary model. Also, all three models show a negative and significant effect of neighborhood income on neighborhood social capital. However the magnitudes of these show something surprising. For middle and affluent individuals, the magnitudes of these effects are relatively similar and very close to the magnitude of neighborhood social capital on neighborhood income. However for poor individuals the negative effect of neighborhood income on neighborhood social capital is larger in magnitude than that for the other groups, and also larger in magnitude than the effect of social capital on income. This suggests that increased neighborhood income has a more undermining effect on the aggregate social capital of the poor than for other groups. One way to interpret this is that poor individuals in higher income neighborhoods are more isolated and therefore have lower social capital in the aggregate. In fact, neighborhood income is the largest magnitude predictor for aggregate social capital for the poor, while proportion of college graduates and neighborhood tenure are larger magnitude predictors for the other income groups.

Conclusion

This chapter has presented the data, methodology and empirical results of the study. We found evidence to support most of the hypotheses presented in chapter four,

but that found that the effect of income on social capital was in the opposite direction than predicted. This may be due to social capital and income having different substitution and complementary effects or due to income decreasing trust. The results also show slightly different dynamics for different income groups, but more was similar than different. In the next chapter, we will use the results and interpretations presented here to provide policy recommendations.

CHAPTER 6 – POLICY

What are we to do with the results found in chapter five? Ideally, empirical research can serve to inform policy choices. In this chapter, I will use the empirical results and theoretical analysis to draw some implications for policy and to review existing programs in light of these results. The hope is that understanding social capital and income dynamics can help craft more effective policy.

The analysis in the preceding chapters has focused on the concept of *economic success*. Success is operationalized as income. In this chapter though, we will focus on low incomes and poverty. This is a fine grained distinction, but it makes the policy goals clear. If we were to focus on income in the aggregate, or general income success, what we would really be focused on is economic growth. However, this economic growth could come for any segment of the population, such as the affluent increasing income without income growth for poor and middle income individuals. Implicit in the theoretical discussion and the empirical analysis is that social capital is one mechanism by which inequality develops and is reinforced between groups. Therefore, we focus on policies aimed at increasing lower incomes and alleviating poverty.

There is one assumption that underlies this entire discussion about policy. While I am arguing that social capital is an important policy variable for understanding economic opportunity, this assumes in part the existence of those opportunities. Social capital allows access to those opportunities that exist as well as identifying and exploiting

unrealized opportunities. For example, using social capital to gain an advantage in the labor market assumes that there is a functioning labor market and that jobs exist to be found; access to institutional resources only matters if there are functioning institutions. However, in economies where there is more competition for limited resources, social capital may make the difference in who can access and use those resources. In short, social capital is not a cure-all for economic success, but is one important factor among others.

Here I focus on urban policy in the U.S. designed to help alleviate poverty and improve lower incomes. Most U.S. urban policy is designed to reduce concentrated poverty, based on the idea that concentration of poor people in urban areas creates additional disadvantages beyond those of a lack of income.³¹ In the following sections, I outline two different dimensions of policy, policy targets and policy scale. I then review the dominant paradigm for urban poverty policy, housing mobility policy, concentrating on the logic of the policy and how it interacts with social capital. The chapter ends with a broad outline three alternative strategies for developing social capital.

Two Dimensions of Policy

There are at least two dimensions that need to be considered for policy recommendations for reducing poverty. Table 6.1 shows the dimensions in a 2x2 matrix, with examples of policies along each dimension. The first dimension is on the target of intervention—whether it is better to intervene on social capital or income. Where is intervention more effective? The second dimension is based on scale, and specifically the distinction between people-based versus place-based policies. This dimension is

³¹ This policy parallels research on neighborhood effects discussed in chapter two.

more concerned with the nature of policies and whether it is better to direct policies to individuals directly or to neighborhoods.

Table 6.1 People- and Place-Based Policies

	Income	Social Capital
People-Based	Income supports, jobs programs	Housing mobility, social capital substitution
Place-Based	Neighborhood economic development	Neighborhood housing stability, Neighborhood cohesion

Table 6.2 shows the relative magnitudes of the policy relevant variables from the unitary social capital model³². The policy relevant variables are ones that can be influenced through intervention and are statistically significant. These relative magnitudes help point to where policy interventions may be most effective and most efficient. The assumption here is that policy intervention is possible on these variables and the ultimate goal is a sustainable increase in income.

Table 6.2 Policy Relevant Variables

	Income	Social Capital	Neighborhood Social Capital
Income	--	-0.314	--
Social Capital	0.458	--	--
Neighborhood Social Capital	--	0.394	--
Education	0.126	0.180	--
Employed	0.182	0.075	--
Housing Tenure	--	0.185	--
% Employed	--	--	0.300

³² See chapter five for a discussion of the various models and for definitions of the variables. I use the standardized coefficients to allow comparison between the effects.

% College	--	--	0.734
Neighborhood Tenure	--	--	0.633
Neighborhood Median Income	--	--	-0.650

The first question is whether redistribution should directly target income or social capital. Because of the opposite signs for income and social capital, the answer seems fairly clear. If, everything else being equal, income decreases social capital but social capital increases income, this suggests that increasing social capital would have a net positive benefit. Policies that increase social connectedness would have a multiplier effect on income, because the positive effect of social capital is greater than the negative effect of income. Because of the negative reciprocal effect, increasing income alone without increasing social capital may not be sustainable. If we look at relative magnitudes of social capital compared to education and employment, we find that social capital has the largest magnitude effect on income. The implication, then, is that increasing social capital should be a goal of policy.

Both the theory and the empirical results suggest that income and social capital are deeply and complexly intertwined. And while social capital may be the more effective object of intervention, the theory shows that a prerequisite of social is stability and a minimal level of economic security, which means that basic income supports may be a necessity for the creation of social capital. What it does suggest is that beyond minimal levels of economic security, it may be more effective to construct policies to increase social capital than to provide more income benefits.

The second policy dimension is people-based verses place-based policies. In its simplest form, people-based policies are those that are targeted toward helping

individuals regardless of where they live, while place-based policies are aimed at improving the places in which people live. A finer grained way to think of the distinction is in whom the policy targets: people-based policies target individuals and households while place-based policies target neighborhoods. The debate between these dimensions is one of the longer standing divides in urban development policy.³³ For social capital, the question comes to: Should policy try to increase social capital, and thus economic outcomes, through policies targeting individuals and families or through policies that target neighborhoods?

Economic theory offers some guide to answering this question. Partridge and Rickman (2006; 2007) outline the economic arguments for people or place based policies. Strong arguments for people based policies assume long-run spatial equilibrium—that people will move to where opportunity is. With spatial equilibrium, policy to help poor areas would entice more qualified people to move or commute to the area to take advantage of the policy than for the intended beneficiaries. Also these policies assume no, or low, transaction costs for moving. The spatial equilibrium assumption, however, goes against the logic of social capital and neighborhoods. The dynamics of localization (Özgür 2010), social distance (Akerlof 1997) and path dependency (Page 2005) are all rooted in *disequilibrium*.³⁴ They are the mechanisms by which differences between neighborhoods develop and are sustained. Social capital also raises the transaction costs of moving. This cost goes up for two reasons. First is the opportunity cost of creating social capital. Social capital is created through repeated interactions that provide a foundation for future interactions (Ostrom 2005). Secondly,

³³ See Crane and Manville (2008) for a recent evaluation of the debate.

³⁴ See chapter three.

social identity theory (Akerlof and Kranton 2010) suggests that joining new groups imposes identity costs on the mover based on their social distance from the new group. Partridge and Rickman (2006; 2007) argue that place based policies make more sense with strong spatial variation and transaction costs, simply because people based policies may be ineffective or miss the actual problem.

Empirically, social capital is the largest predictor of income while neighborhood social capital is the largest predictor of social capital. This implies a strong peer effect. Because neighborhood social capital is mediated by individual social capital, a one standard deviation increase in neighborhood social capital increases income by approximately 0.180.³⁵ The effect of neighborhood social capital is moderate when compared with the larger magnitude change that a similar increase in individual social capital would make. Yet since individual social capital is dependent on peer networks in neighborhood social capital, the most direct way of influencing it is by changing neighborhood social capital. This is where the people- vs. place-based policies come in. Neighborhood social capital can be changed for an individual either by policies that aim to create more social capital in the areas in which they live (place-based) or by moving people into different neighborhoods or by creating access to networks beyond the neighborhoods (people-based). Contemporary urban policies for alleviating poverty have focused on the latter: moving people through space. We can see the tensions in people vs. place policies by looking at the effects of current policy.

Moving People

³⁵ Indirect effects are calculated by multiplying the coefficients of variables in the structural path.

The most prominent type of contemporary urban policies in the US are people-based policies based on moving people spatially. Labeled variously as poverty deconcentration or dispersal, these policies seek to address problems rooted in neighborhood structures by moving low income people out of high poverty neighborhoods and into mixed or middle-income neighborhoods, usually in suburban areas. These policies are so prominent in urban policy that they have been characterized as a consensus or as a “mobility paradigm”, though this consensus is facing serious criticism and challenges both theoretically and for programmatic results (Imbroscio 2008; 2012; Steinberg 2010).

The most prominent and high profile programs within this “mobility paradigm” are Moving to Opportunity (MTO) and HOPE VI. Both of these programs focus on moving poor people in public housing in high-poverty urban neighborhoods. MTO, based on the Gautreaux program in Chicago, provides housing vouchers to move into more integrated neighborhoods, while HOPE VI focused on redeveloping distressed public housing. The redevelopment efforts of HOPE VI create mixed-income and privately-owned units to replace the public housing and result in far fewer low-income housing units, effectively forcing deconcentration (Goetz 2004). Participation in MTO is voluntary and participants must move to low-poverty, low-minority areas, whereas in HOPE VI participation is involuntary (the housing is torn down), and there is no restriction for the housing vouchers. The premise behind these programs is to address concentrated poverty as a causal force in sustaining and creating impoverished persons (Steinberg 2010). Almost two decades of empirical research into the effectiveness programs have generated ambiguous results. While the programs have resulted in higher

sense of safety and neighborhood satisfaction for the participants, they have made no impact in improving employment, income, or self-sufficiency (Goetz and Chapple 2010; Turney et al. 2006; Kling et al. 2007). Other indicators of economic success and stability, such as health and education attainment, also show little improvement (Goetz and Chapple 2010). While it may be that these specific programs have flawed designs, they serve to illustrate people-based mobility policies as an idea type.

How can these types of policies help improve social capital? The naïve view of mobility policies is that by moving to a less poor neighborhood, individuals would have greater access to social capital and therefore to more economic opportunities and productive norms. The empirical results of this dissertation did find that aggregate neighborhood social capital was the largest predictor of individual social capital. But there are both theoretical and empirical considerations here that undercut the idea that simply moving into higher income neighborhoods would improve individual social capital. Mobility policies have two flawed assumptions. The first is that it assumes that higher income neighborhoods have more social capital. While it is true that higher median income neighborhoods are positively correlated with higher social capital, the SEM results show that this correlation is in part spurious—higher levels of social capital are due to the higher levels of other factors, largest among them education and housing tenure that are associated with both social capital and median income. The results showed that controlling for these factors increased median-neighborhood income actually decreases neighborhood social capital.

The second flawed assumption is that individuals will be integrated into neighborhood social networks simply by relocating there. Both the empirical results and

theory show that this may not be true. Looking at table 6.2 again, one major source of individual social capital outside of neighborhood social capital is housing tenure. Theoretically this makes sense, as trust and cooperation are based in part on repeated interactions and accumulated knowledge of people's behaviors and reputations. Social capital is built on time. By moving people around in space, these programs disrupt these foundations of social capital, forcing movers to build new networks and establish new relationships with their neighbors. Existing residents may be slow to accept newcomers into their social networks because of the uncertainty or may defensively protect their networks from newcomers. Despite this, social learning theory (Chamly 2004) suggests that movers may benefit from a higher social capital environment anyway, by imitating behaviors in the environment. This could work in the opposite direction too, however, because if residents are excluded from social networks, they may learn the futility of attempting to cooperate with their neighbors. Social identity theory (Akerlof and Kranton 2010) suggests that closure and acceptance in new neighborhood contexts may depend on how proscribed and chosen identities among residents and movers are built as compatible. The greater social distance between the mover and the residents, the harder it may be to integrate into the existing neighborhood network. Studies look at the social capital of movers in MTO and HOPE VI generally show that the social capital of movers is not increased, but actually reduced by moving (Greenbaum et. al. 2008; Curley 2009). Movers have difficulty establishing new ties and miss their old networks, while homeowners are resistant to associating with poorer newcomers. Also, by disrupting established support networks, moving may actually be detrimental to economic success (Curley 2009).

The role of stability in neighborhood social capital points to a potential pernicious effect of mobility policies: further neighborhood destabilization. Housing tenure is one of the largest determinants of neighborhood social capital. By moving individuals from their neighborhoods, mobility policies disrupt existing neighborhood networks by reducing the overall stability of the residents. Even if mobility policies generated positive gains for individuals who moved, they generate an externality on the neighborhood from which people are displaced by reducing tenure and stability and therefore potentially negatively impacting the social capital of those left behind. By prioritizing individual gains through mobility, these policies, inadvertently, deprioritize and delegitimize existing networks of the poor and can further destabilize troubled neighborhoods. Furthermore, mobility programs like HOPE VI which redevelop the vacated space can further disrupt communities by encouraging gentrification and pricing out even those not directly moved by the program (Goetz 2011). These externalities when combined with the difficulty of movers to integrate into new networks mean that mobility policies may actually result in a net reduction of social capital. If they are meant to promote social capital, then they may actually be counterproductive. This means that we need to consider alternative policies.

Alternatives to Mobility

If individual mobility programs are problematic, then what are alternatives for building social capital? One starting point is to recognize the importance of the neighborhoods and communities in which people already live. Evidence shows that poor people, even in public housing, greatly value their communities and that they see those communities as a positive force in their lives (Manzo et al 2008; Gibson 2007). By

recognizing the value of these communities, we can use existing networks as a basis for designing policies to improve social capital. This suggests that policies to address low incomes through the vehicle of social capital must first respect existing networks and communities and as a principle seek to build social capital where people live, rather than move people to where there is social capital. This suggests a place-based approach, but that is not necessarily the case. Unfortunately, there is no single program that I am aware of that can serve as a model for a social capital building program. Instead I focus on some strategies that can serve to guide policy development. These strategies can be divided into place-based and people-based, but the guiding principle is that a mixture of place and people based may be necessary, which is the dominant view among advocates of place-based policies (Partridge and Rickman 2007). The place-based strategies can be categorized as neighborhood stabilization and neighborhood linkage policies. The person-based strategies can be categorized as social capital substitution programs.

The first place-based strategy would be neighborhood stabilization. By this, I mean programs that seek to address some of the causes of social capital by enhancing neighborhood stability. Housing tenure is large predictor of aggregate social capital, which makes sense both intuitively and with regards to theory. Cooperation and trust can be built through repeated interactions which also reduce uncertainty regarding ones neighbors. Promoting a stable community provides a basis for the construction of social capital. Policies of these types would focus on primarily on creating stable housing and could take many forms. For example, community land trusts or community based financing could be used to reduce foreclosures and promote stable home-ownership in

poor communities. These policies require recognizing that network stability is a prerequisite of building social capital.

The second group of strategies I call neighborhood linkage strategies. This group of strategies would seek to enhance social capital by building purposeful linkages among people within a neighborhood and linkages between neighborhoods. These strategies would involve community organization efforts to foster cooperation on projects and to build community capacity for collective action. At the most basic level, these policies could take the form of trying to promote community cohesion through creating community contact, for example through creating safe public space or through community forums. More active strategies would seek to promote active participation in community cooperative activities and engagement. An important part of this strategy would be to build linkages between neighborhoods, by promoting exchange, contact and cooperation among residents of different neighborhoods.

These place-based policies have both advantages and drawbacks. The advantage is that they seek to build social capital by addressing its basic components as rooted in the community by directly promoting participation, cooperation and stability. The trade-off, however, is that these policies affect income in a very indirect manner and are not targeted to those who may be the neediest. They also require a longer time-frame—building social capital through neighborhood based programs will take time and a sustained commitment. Also, because of the reinforcing nature of peer effects, it may be that some neighborhoods could be resistant to efforts to build social capital.

The final set of policy strategies are person-based, but focus on education and employment instead of mobility. They would focus on building substitutes for social

capital. This means, in effect, building institutions to fill the role of social capital, particularly in the labor market. Since on the instrumental resources that social capital provides individuals is information in about the labor market, one way to build policy to address the lack of this type of social capital would be to design institutions that would provide the same type of labor market linkages normally provided informally through social capital. For example, job programs that seek to connect individuals to work opportunities. These policies would seek to address gaps or deficiencies in social capital with minimal disruptions to existing networks or support structures. These person-based policies could avoid some of the destabilizing effects of mobility policies, while still seeking to build social capital directly at the individual level. But as with all policies, there are trade-offs. These social capital substitution strategies would have the advantage of being more directly connected to economic success at the individual level, and therefore more effective at the individual level in the short-run. However, because of the weaker links from individual social capital to aggregate social capital, they would not have the positive spillover benefits of the place-based policies. Also, because of the large magnitude of neighborhood social capital for individual social capital, neighborhood conditions could diminish the longer-term effectiveness of these policies.

Conclusion

In this chapter, we have briefly looked at different policies to build social capital. The dominant policy consensus around poverty deconcentration is counter-productive because it works against the logic of social capital by destabilizing neighborhoods and by not integrating movers into new networks. As an alternative, I sketched three broad strategies to build social capital where people live, both through place-based and people-

based policy strategies. An ideal approach to building social capital to improved economic success would combine aspects from all three of these broad strategies: combining neighborhood stabilization, building neighborhood capacities and supplementing individual social capital. A broad based plan would seek to add economic development into the mix to generate neighborhood based sources of economic stability.

CHAPTER 7 – CONCLUSION

This study set out to explore the relationship between social capital, neighborhoods and economics success. The aim of this dissertation has been to show the social component to economic success and to contextualize it by connecting it to neighborhoods. The aim of this chapter is to rearticulate and synthesize the main arguments and findings. Following that, I will state the main contributions of this study, look at its limitations and provide some avenues for further research.

The Argument and Findings

The argument for the connection between social capital, neighborhoods and economic success is incremental. For it to be credible, social capital must affect economic success and neighborhoods must affect social capital. Over the course of this dissertation, each of the links in this argument were built theoretically and tested empirically. Generally, the theoretical expectations were confirmed empirically, though there have been surprises.

If we abandon a normative view of it, social capital is fundamental to human endeavors (Ostrom 2000). Conceptually, social capital represents the social

networks in which people are embedded and the “stuff” that flows through those networks—behavioral norms and instrumental resources. Social capital provides resources that enable economic success and behavioral norms for cooperative action.

The first research question for this study was: What is the nature of the relationship between social capital and economic success? At the individual level, social capital affects economic success primarily by enabling collective action. The basic prisoner’s dilemma game shows that absent trust, reputation, information or other factors, cooperation is unlikely if there is an incentive for people to defect (Axelrod 2006). The norms and resources associated with social capital, such as trust, reputation, time preference, and information sharing fundamentally change the structure of the game so that it is no longer a prisoner’s dilemma. In effect, social capital lowers the transaction costs of cooperation. Trust, reputation, and information lower the risk that individuals take on in cooperative endeavors. The diffusion of information and access lower the transaction costs of new economic opportunities and new knowledge.

Empirically, we found that social capital does increase income as expected. This, by itself, replicates the large number of studies which find a link between social capital and income both at the individual and aggregate levels (for example see Narayan and Pritchett 1999; Putnam 1993). However, the magnitude of this effect was a little surprising—social capital was the single largest predictor of income in the model.

In addition to social capital affecting economic success; there is a reciprocal causal relationship from economic success to social capital. This endogenous relationship has been posed, but understudied empirically, in the social capital literature (Portes and Vickstrom 2011; Durlauf and Fafchamps 2005). Studies that look at the

determinants of social capital have generally found the relationship was positive (Glaeser et. al. 2000). The reasons for expecting a positive relationship are straightforward: Economic success reinforces the norms and behaviors that led to it. However, there is also an opportunity cost to developing social capital as building and maintaining network connections takes time and effort, which means that economically successful individuals face a higher opportunity cost of time. Successful individuals may not feel the need to build social capital if it offers only small marginal benefits.

The assumption of endogeneity drives the empirical methods of this study. Empirically, we confirmed this assumption, and found that income and social capital were indeed endogenous. The direction of this relationship is one of the more surprising findings of this research. While social capital increases income, income decreases social capital, everything else held equal. Also, the magnitude of this negative effect was relatively large. There are both methodological and substantive implications to this finding. First, it shows that the positive correlation between income and social capital is due to the larger effect of social capital on income, and also that this correlation is partially spurious, and is driven by confounding variables which increase both social capital and income such as education. The methodological implication of this is that endogeneity needs to be modeled statistically to produce unbiased results. Second, this finding suggests that in addition to the opportunity cost of social capital, there may be other dynamics in this relationship. The first is that higher income, and the market generally, may have a corrupting effect on social capital and undercuts social relationships. Also, while social capital compliments economic success, success may substitute for social capital as the resources provided by social capital may be purchased

through the market. The exact meaning of this finding is an unresolved puzzle from these findings, and warrants further study. The finding of endogeneity and the negative recursive relationship have important methodological and substantive implications for further studies which are examined below.

Social capital can be disaggregated into the qualitatively different types of bridging and bonding. These types of social capital theoretically operate differently on economic success, with bridging social capital providing individuals with social leverage resources to “get ahead” and bonding providing social support resources to “get by” (Briggs 1998). Empirically, the findings show that bonding and bridging social capital have relatively similar dynamics with regards to income empirically. The coefficients in the three social capital models used in this study—bridging, cooperation and cohesion—all had very similar magnitudes and directions, which means that fine-grained distinctions among types of social capital are not as important for modeling, but may still have substantive implications for policy.

The second and third research questions so closely interrelated, at least conceptually, that it makes more sense to discuss them together rather than separately. The second question was: What is the relationship between neighborhood social capital and neighborhood economic success? The third is: What is the relationship between neighborhoods and individual social capital? Neighborhoods are not just geographic containers of people, but social determined understandings and networks of social interactions. Importantly, neighborhoods are institutions with different configurations of networks, rules and identities. As institutions, neighborhoods structure social interaction

by creating repeated interactions, generating expectations of others behavior, creating shared identities and reducing uncertainty and transaction costs with others.

There are four interacting dynamics that are important for social capital in neighborhoods: localization, difference, learning and identity. By its nature, social capital is a type of social interaction, which means that it generates externalities (Manski 2000). Because of localization processes, these externalities can produce stable but different configurations social resources and norms. Because the benefits of social capital are localized in the neighborhood, neighborhoods will differentiate. If the differences between neighborhoods are big enough, which empirically they are, then individuals may try to protect their network resources through closure and exclusion. Social learning and social identity are important because they are the dynamics by which norms and informational resources are shared in neighborhood networks. This means that people will adopt the behaviors and norms of people with whom they have contact. Because neighborhoods are differentiated, and those differences a self-sustaining, this means that individuals have access to different levels of social capital. Because social capital is linked to economic success, this differentiation between neighborhoods can generate distributional inequalities.

Empirically interactions between aggregate social capital and neighborhood income mirrored the results at the individual level and are endogenous. One difference is that the absolute magnitude of the negative effect of neighborhood income on neighborhood social capital was larger than the positive magnitude of social capital on income. For neighborhood income, neighborhood social capital had the largest magnitude of effect. However, the most important factors for neighborhood social capital

were the proportion of college graduates and the proportion of households of five years or more in the neighborhood. The role of tenure reinforces that social capital is partially a function of stable and repeated interactions and that neighborhood stability is vital.

There is also a significant relationship between aggregate social capital and individual social capital. Individual social capital has a relatively small positive effect on the aggregate, but neighborhood social capital is the single largest predictor of individual social capital. This is consistent with the social interactions view of social capital, where and individual's norms and behaviors are partially dependent on those of people to whom they are connected. This evidence is consistent with the dynamics of localization, differentiation, learning and identity. What it shows is that social capital is not a quality of individuals, but of communities and the links between individuals.

Contributions

This research contributes to the literature on social capital and neighborhoods methodologically and substantively. Methodologically, there are two important contributions. The first is the use of structural equation modeling analysis to model the link between neighborhoods, social capital and economic success. Structural equation modeling allows for a nuanced picture of the relationship between the variables. SEM has been used to model relationships between variables of social capital (Brehm and Rahn 1997), or between neighborhood diversity and individual social capital (Fieldhouse and Cutts 2010), but this is the first study to use it to study the relationship between social capital and economic outcomes. The nuance of SEM allowed us to draw a more fine-grained picture of how neighborhoods, social capital and economic success are interrelated. The second methodological contribution is the modeling social capital and

income as endogenous. The endogeneity issue is recognized in the literature (see Durlauf and Fafchamps 2005), but it has not been implemented empirically to show the reciprocal relationship between social capital and income. Substantively, this modeling contribution led to the surprising result that income decreases social capital. Theoretically, this study has modestly contributed the literature by developing the conceptual links between neighborhood, social capital and economic success. I connected different literatures on norms, information asymmetries, local interactions, and identity economics to develop the conceptual framework for understanding the mechanisms by which social capital operates in neighborhoods and on economic success.

Recommendations for Future Research

This study also has several limitations. The first limitation is with the relationship between the conceptual framework and the empirical testing. Though I develop the conceptual framework in chapters two and three to explain the mechanisms linking neighborhoods to social capital and social capital to income, I don't test those mechanisms directly. Instead, the mechanisms are implied by the results. Future research could expand this conceptually by directly testing and modeling the mechanisms quantitatively or qualitatively.

A second limitation is with the finding of the negative impact of income on social capital. This finding needs more theoretical development to understand and needs to be replicated to verify its validity. Future research could expand on this finding by replicating it using other data sets and statistical methods and by developing a theory of

the negative impact of income on social capital. Replicating the general results of the model with other data sets is another avenue that future research could take.

Another limitation is modeling. Neighborhoods are only one network in which people are involved. It may be that other networks have important effects on social capital that are not captured by neighborhoods. Also, the role of the family is not represented in this model, which could potentially confound some of the social capital processes if the families are more important for norm transference than peers (Briggs 2005). Data limitations also forces sub-optimal choices, such as using household income as a proxy for individual income. And because the data is cross-sectional, we only have a picture of it at a moment in times, which could be improved with longitudinal data. The modeling and data aspects all provide avenues for future research.

Conclusion

Social capital enables economic success and is shaped by the neighborhoods we live in. Since social capital is property of the links between people, this reinforces the role of community in enabling and sustaining economic lives. Community and neighborhoods are important because they structure opportunities and provide resources lacking in other areas. Building and strengthening communities and neighborhoods means building and strengthening economic opportunities.

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TECHNICAL APPENDIX

Clustered Robust Standard Errors

The non-independence of the hierarchical sampling method in the PHDCN data set violates the assumption of independence of observations in regression analysis, and therefore needs to be corrected (Kline 2012). The main issue is that the non-random sampling method could introduce heteroskedasticity. The main issue with heteroskedasticity is that it reduces the validity of the standard errors and therefore makes inference from significance tests suspect. One method to correct for this violation is by using a hierarchical structural equation model, but in this study we take a different approach and use robust standard errors clustered by neighborhood cluster. This approach uses Huber-White standard errors clustered around neighborhood clusters. This approach indicates that observation may be correlated within neighborhoods, but independent between neighborhoods.³⁶ This method doesn't change the coefficient estimates, but takes into account the non-independence of the observations.

There are two exceptions to this use of clustered robust standard errors in this analysis. First, the neighborhood level 2sls models don't use clustered standard errors. They are unnecessary, since the regression is performed on data aggregated at the

³⁶ This is implemented in Stata with `vce(cluster)` option. This method limits some of the post-estimation commands.

neighborhood cluster. Instead I use the standard unclustered Huber-White estimator. The second exception is the generation of fit statistics. In order to evaluate model fit, all of the models were run without robust errors, so that more evaluations of model fit could be generated and evaluated. All of the estimates presented in the text, with the exception of these fit statistics (detailed below), were produced with the clustered robust standard errors.

SEM Factor Scaling

In order to estimate the SEM models consistently and for identification, we need to scale the latent variable factor (Bollen 1989). To do this, each latent variable is scaled to one its observed variables in the measurement portion of each of the SEM models. To do this, I set the regression coefficient for this path in each model to equal 1. Table TA.1 shows each latent variable and the measured variable it is scaled to. In the neighborhood portions of the models, the neighborhood social capital variables were scaled to the neighborhood mean of the same variable it was scaled to at the individual level. In models 7 and 8, social capital was scaled to the predicted factor score of cohesion.

Table TA.1 Latent Scaling Variables

Latent Variable	Models	Scaling variable
bridges	1,4	membership
cooperation	2,5	q18
cohesion	3,6	q11b
sc (model 7 and 8)	7,8	cohesion

Fit Statistics and Stability Index

One of the conventional methods of evaluating SEM models is by assessing overall model fit using various fit statistics (Schrieber et. al 2006). In this section I present the fit statistics for the SEM models in chapter 5. Because of the clustered nature of the data, most models were fit using clustered robust standard errors (described below) which limit the fit statistics which can be used to test the overall model. We use two fit statistics to test the model. The first is the coefficient of determination (CD), which indicates the proportion of the variance in the observations explained by the model. This is analogous to the common R-squared statistic used in multiple regression. The second is the standardized root mean square residual (SRMR), which is an absolute measure of fit, defined as the standardized difference between the observed and predicted correlations (Kenny 2012). The SMSR is an absolute measure of fit, with a value of 0 meaning perfect fit. A heuristic rule for interpretation is that a value of less than .08 is a good fit (Hu and Bentler 1999). In order to make the fit statistics more robust, the models were also run without robust errors to so that other statistics of fit could also be evaluated. Here I report the Chi², Tucker-Lewis Index (TLI), and the root mean square error of approximation (RMSEA). Heuristically, a model is considered good fitting if it has $TLI > .94$ or a $RMSEA < .08$ (Schrieber et. al 2006).

Tables TA.2 and TA.3 report the fit statistics for each of the models. Chi-square was significant for all three. The bridging model is the best fitting with $SRMR = 0.018$, $TLI = 0.98$, and $RMSEA = 0.025$. The cooperation and cohesion models fit slightly worse, but still have acceptable fits with cooperation having $SRMR = 0.034$, $TLI = 0.946$, $RMSEA = 0.044$ and cohesion having $SRMR = 0.024$, $TLI = 0.969$ and $RMSEA = 0.029$. Table TA.3 reports the fit statistics for the neighborhood models. Again all three have

significant chi-square statistic. The neighborhood bridging model has SRMR = 0.034, RMSEA = 0.031, and TLI = 0.935. Each of these is within the acceptable range, but indicate that the model is slightly less well fitting once we add in the neighborhood data. The neighborhood bonding models have a similar decrease in fit, neighborhood cooperation SRMR = 0.046, RMSEA = 0.045, and TLI = 0.954, while neighborhood cohesion has SRMR = 0.047, RMSEA = 0.055, and TLI = 0.883. Of these, all are within acceptable bounds, though the TLI score is a little below the fit cut-off. Part of this is due to TLI's sensitivity to model complexity. But because the other statistics are acceptable, and TLI is close, the models are retained.

Table TA.2 Individual Level SEM Fit Statistics

	(1) Bridges	(2) Cooperation	(3) Cohesion
SRMR	0.018	0.027	0.024
CD	0.390	0.287	-0.242
Non-Robust Fit Statistics			
Chi2 (model v. saturated)	668.093***	1300.777***	580.228***
TLI	0.983	0.957	0.969
RMSEA	0.018	0.031	0.029

Table TA.3 Neighborhood Level SEM Fit Statistics

	(1) N Bridges	(2) N Cooperation	(3) N Cohesion	(4)
SRMR	0.034	0.046	0.047	0.031
CD	-0.081	0.268	0.603	0.543
Non-Robust Fit Statistics				
Chi2 (model v. saturated)	4079.404***	6274.235 ***	6569.274***	3032.643
TLI	0.935	0.895	0.883	0.950
RMSEA	0.031	0.045	0.055	0.033

Table TA.3 reports the stability index and equation level fit statistics for each of the models. The stability index is the Bentler and Freeman (1983) eigenvalue stability index, which tests the stability of the non-recursive SEM models. In this case, all models were found to be stable. For equation goodness-of-fit, I use the Bentler-Raykov squared

multiple-correlation coefficient (Bentler and Raykov 2000). This is because R-Squared equation level fit statistics can be misleading and potentially nonsensical in non-recursive models, particularly ones with reciprocal causation. This statistic reports the squared correlation between the dependent variable and its prediction, and is interpreted the same as R-squared. Looking at the equation level fit in table TA.3 again, we see that the MC² statistics are much higher than what we had at the individual level. Neighborhood income in particular, has a relatively large MC² in each of the models. Adding the neighborhood level increased the MC for cooperation and cohesion at the individual level by a great amount, but decreased it slightly for success and for bridges social capital.

Table TA.4 Stability Indices and Equation Level Fit

Model	Stability Index	Dependent Variables ¹			
		incvalue	SC*	n_income	N SC*
(1) Bridges	0.263	0.284	0.206	N/A	N/A
(2) Cooperation	0.459	0.267	0.056	N/A	N/A
(3) Cohesion	0.160	0.147	0.002	N/A	N/A
(4) N Bridges	0.587	0.223	0.188	0.550	0.001
(5) N Cooperation	0.543	0.185	0.108	0.538	0.126
(6) N Cohesion	0.410	0.135	0.159	0.669	0.466
(7) Unitary	0.489	0.230	0.245	0.625	0.299

Reports the stability index and Bentler Raykove squared multiple correlation coefficients. SC* and NSC* refer to the social capital and neighborhood social capital variables in the models.

First Stage 2sls Regressions

Tables TA.5 and TA.6 report the first-stage regression coefficients for the 2SLS models reported in tables 5.4 and 5.5 in chapter 5.

Table TA.5 Individual Level 2sls First Stage Regression

Dependent	Model (1) bridge	Model (2) Cohesion	Model (3) Cooperation
Observation	7527	7527	7527
R²	0.1283	0.0845	0.0637
edu	0.014*** (0.001)	0.015*** (0.002)	0.016*** (0.003)
young	-0.049*** (0.007)	-0.128*** (0.018)	-0.046** (0.019)
old	-0.031*** (0.009)	0.064*** (0.065)	-0.011*** (0.023)
hispanic	-0.016* (0.009)	-0.120*** (0.021)	-0.111*** (0.023)
black	0.006 (0.007)	-0.173*** (0.017)	-0.081*** (0.018)
female	-0.007 (0.006)	-0.027* (0.020)	-0.058*** (0.0156)
sepdv	0.012 (0.008)	-0.073*** (0.021)	-0.035 (0.023)
married	0.053*** (0.007)	0.046*** (0.015)	0.077*** (0.017)
employed	0.017*** (0.017)	0.0716*** (0.016)	-0.013 (0.017)
church	0.075*** (0.006)	0.134*** (0.014)	0.180*** (0.015)
tenure	0.005*** (0.001)	0.005*** (0.001)	0.008*** (0.001)
Constant	-0.267*** (0.017)	-0.222*** (0.040)	-0.291*** (0.044)

*p < .1, **p < .05, ***p < .01, clustered robust standard errors are in parenthesis.

Table TA.6 Neighborhood Level 2sls First Stage Regression

Dependent	Model (4) n_bridge	Model (5) n_cohesion	Model (6) n_cooperation
Observation	8782	8782	8782
R²	0.0866	0.3495	0.2096
nbagrad	0.069*** (0.008)	0.602*** (0.018)	0.309*** (0.018)
n_employed	0.045*** (0.009)	0.307*** (0.027)	-0.051*** (0.016)
n_black	0.026*** (0.004)	-0.125*** (0.010)	-0.086*** (0.006)
n_femalehouse	-0.076*** (0.009)	-0.497*** (0.026)	-0.102*** (0.017)
n_tenure5	0.137*** (0.007)	0.826*** (0.019)	0.418*** (0.012)
Constant	-0.110*** (0.008)	-0.613*** (0.022)	-0.224*** (0.014)

*p < .1, **p < .05, ***p < .01, clustered robust standard errors are in parenthesis.

SEM Group Model

Table TA.7 reports the full results from model 8 reported in chapter 5.

Table TA.7 SEM Results for Group Model (8)

Observations		7527						
Log pseudolikelihood		-252078.72						
		Stand	Robust		Stand	Robust		
		Coef.	Std. Err.	P> z	Coef.	Std. Err.	P> z	
incvalue <-				SC <-				
SC					incvalue			
	Poor	0.366	0.072	0.000	Poor	-0.298	0.071	0.000
	Middle	0.395	0.039	0.000	Middle	-0.235	0.040	0.000
	Affluent	0.043	0.080	0.591	Affluent	0.034	0.075	0.654
prestige					NSC			
	Poor	0.005	0.019	0.809	Poor	0.319	0.034	0.000
	Middle	0.110	0.019	0.000	Middle	0.400	0.028	0.000
	Affluent	0.062	0.032	0.050	Affluent	0.358	0.045	0.000
old					old			
	Poor	0.063	0.024	0.007	Poor	0.016	0.030	0.594
	Middle	-0.074	0.018	0.000	Middle	-0.059	0.022	0.007
	Affluent	0.051	0.042	0.224	Affluent	-0.052	0.045	0.253
young					young			
	Poor	-0.024	0.024	0.318	Poor	-0.088	0.028	0.001
	Middle	0.022	0.017	0.191	Middle	-0.101	0.020	0.000
	Affluent	0.002	0.038	0.963	Affluent	-0.095	0.046	0.039
edu					edu			
	Poor	0.099	0.022	0.000	Poor	0.132	0.028	0.000
	Middle	0.097	0.023	0.000	Middle	0.124	0.022	0.000
	Affluent	0.071	0.042	0.086	Affluent	0.039	0.035	0.270
hispanic					Hispanic			
	Poor	0.062	0.027	0.023	Poor	0.018	0.034	0.591
	Middle	-0.029	0.023	0.196	Middle	-0.046	0.024	0.062
	Affluent	-0.049	0.033	0.140	Affluent	-0.085	0.038	0.026
black					black			
	Poor	-0.047	0.027	0.084	Poor	-0.034	0.029	0.238
	Middle	-0.013	0.019	0.499	Middle	-0.019	0.021	0.380
	Affluent	0.027	0.033	0.412	Affluent	-0.027	0.037	0.465
female					female			
	Poor	-0.074	0.020	0.000	Poor	-0.053	0.022	0.015
	Middle	-0.022	0.016	0.159	Middle	-0.058	0.020	0.003
	Affluent	-0.043	0.032	0.178	Affluent	0.003	0.037	0.940
sepdiv					sepdiv			
	Poor	-0.002	0.024	0.947	Poor	-0.017	0.027	0.534
	Middle	-0.012	0.017	0.488	Middle	-0.038	0.020	0.063
	Affluent	0.043	0.038	0.258	Affluent	-0.065	0.041	0.111
married					married			

	Poor	0.111	0.023	0.000		Poor	0.057	0.028	0.039
	Middle	0.087	0.018	0.000		Middle	0.065	0.020	0.001
	Affluent	0.049	0.040	0.220		Affluent	0.079	0.046	0.087
employed					employed				
	Poor	0.214	0.021	0.000		Poor	0.011	0.028	0.699
	Middle	0.108	0.016	0.000		Middle	0.041	0.021	0.056
	Affluent	-0.152	0.042	0.000		Affluent	-0.026	0.042	0.540
_cons					tenure				
	Poor	0.621	0.124	0.000		Poor	0.218	0.025	0.000
	Middle	1.022	0.119	0.000		Middle	0.187	0.022	0.000
	Affluent	2.386	0.304	0.000		Affluent	0.097	0.046	0.033
--					church				
	--	--	--	--		Poor	0.172	0.024	0.000
	--	--	--	--		Middle	0.172	0.019	0.000
	--	--	--	--		Affluent	0.121	0.043	0.005
n_income <-					NSC <-				
NSC					n_income				
	Poor	0.641	0.049	0.000		Poor	-0.860	0.145	0.000
	Middle	0.595	0.027	0.000		Middle	-0.528	0.083	0.000
	Affluent	0.567	0.041	0.000		Affluent	-0.585	0.141	0.000
--					SC				
	--	--	--	--		Poor	0.193	0.042	0.000
	--	--	--	--		Middle	0.109	0.033	0.001
	--	--	--	--		Affluent	0.055	0.060	0.357
n_employed					n_employed				
	Poor	0.443	0.024	0.000		Poor	0.430	0.067	0.000
	Middle	0.211	0.016	0.000		Middle	0.278	0.032	0.000
	Affluent	0.100	0.028	0.000		Affluent	0.365	0.043	0.000
nbagrad					nbagrad				
	Poor	0.150	0.027	0.000		Poor	0.668	0.065	0.000
	Middle	0.330	0.022	0.000		Middle	0.692	0.054	0.000
	Affluent	0.525	0.030	0.000		Affluent	0.666	0.108	0.000
n_black					n_black				
	Poor	-0.011	0.022	0.619		Poor	-0.151	0.033	0.000
	Middle	0.008	0.014	0.577		Middle	-0.234	0.027	0.000
	Affluent	-0.013	0.022	0.567		Affluent	-0.329	0.042	0.000
n_femalehouse					n_femalehouse				
	Poor	0.057	0.029	0.052		Poor	-0.282	0.029	0.000
	Middle	-0.018	0.017	0.294		Middle	-0.259	0.022	0.000
	Affluent	0.017	0.036	0.635		Affluent	-0.243	0.034	0.000
_cons					n_tenure5				
	Poor	-0.660	0.163	0.000		Poor	0.608	0.041	0.000
	Middle	-0.226	0.110	0.039		Middle	0.661	0.032	0.000
	Affluent	-0.469	0.192	0.015		Affluent	0.868	0.065	0.000

Arrows indicate dependent variable.

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