



Social capital: An analysis of factors influencing investment

David W. Shideler^{a,*}, David S. Kraybill^b

^a Oklahoma State University, 323 Agricultural Hall, Stillwater, OK 74078, USA

^b The Ohio State University, USA

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ABSTRACT

This paper investigates how individual and community characteristics affect individual social capital investment behavior. We assume a representative individual maximizes her net benefits from social capital by choosing the amount of social capital investment in each period of her lifecycle. The model parameters are estimated by fitting the model to observed data using computational techniques. Simulations determine how perturbations to individual and community characteristics affect individual social capital behavior. The results suggest that social capital investment occurs irrespective of future benefits, personal characteristics affect the level and variance of investment, and institutions matter in determining social capital investment behavior.

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1. Introduction

Recent research on social capital provides new understanding into private and corporate human behavior. Economists have used the concept of social capital to explain phenomena ranging from technology adoption to the formation of informal institutions. At the micro-level, studies of the effect of social capital have focused on agribusiness, international trade, household income, financial transactions, and the knowledge exchange between venture capitalists and new firms. [Fafchamps and Minten \(2002\)](#) show that agricultural traders with a larger network of contacts have higher sales and value added. [Wilson \(2000\)](#) and [Rauch \(2001\)](#) show that social capital enhances the competitiveness of firms by reducing contract enforcement costs, reducing uncertainty, and increasing information sharing. [Narayan and Pritchett \(1999\)](#) find that village social capital stocks contribute more to household income than does own-household social capital stock. [Schmid and Robison \(1995\)](#) demonstrate how social capital affects the probability of receiving a loan, the sale price of assets, and the willingness to share risk. [Maula et al. \(2003\)](#) find that social capital between a corporate venture capitalist and a new firm increases the knowledge exchange between the two organizations, especially when they are in complementary industries. [Lyons and Snoxell \(2005\)](#) examine the roles of inherited and self-created social capital in the survival

strategies of traders in two Nairobi markets. [Cainelli et al. \(2007\)](#) examine firm level research and development decisions and find evidence that social capital inclines firms to engage in innovative activity, though it is not a sufficient condition.

Social capital has been used to explain phenomena at aggregated levels, too, such as regions or nations. [Kraybill and Weber \(1995\)](#), [Castle \(1998\)](#), [Barkley \(1998\)](#) and [Rainey et al. \(2003\)](#) emphasize the importance of social capital in the growth of rural places in the US. Castle argues that social capital substitutes for formal institutions that would otherwise sustain a region and make it prosperous. Kraybill and Weber and Barkley use social capital to explain the success of endogenous development strategies in rural places, while Rainey et al. argue that social capital encourages economies of scale and other efficiencies that make rural places more competitive in a global economy. [Rupasingha et al. \(2000, 2002\)](#) find that positive social capital increases the growth rate of US counties. [Knack and Keefer \(1997\)](#) conclude that social capital manifested as trust and civic cooperation significantly influences a nation's economic performance. In an attempt to elucidate a definition of social capital, [Chamlee-Wright \(2008\)](#) uses the concept of social capital to explain the process of economic development stemming from entrepreneurial activity. [Rupasingha and Goetz \(2007\)](#) show that social capital decreases county-level poverty rates.

Despite the empirical and theoretical evidence that suggests social capital is a powerful concept to explain economic phenomena, few studies have examined how social capital is formed. The studies that exist use regression analysis in an attempt to identify factors that influence social capital formation. [Glaeser et al.](#)

* Corresponding author. Tel.: +1 405 744 6170; fax: +1 405 744 8210.
E-mail address: dave.shideler@okstate.edu (D.W. Shideler).

(2002), in addition to presenting a theoretical foundation for social capital, provide empirical evidence of factors influencing social capital. Their main conclusion was that more education led to higher social capital stocks; other factors that they analyzed include: age, race, gender, income, peer group effects and homeownership. Rupasingha et al. (2006) largely validate the results of Glaeser, Laibson and Sacerdote using county level data and an index of social capital consisting of voter participation rates, Census participation, and the numbers of membership and tax-exempt organizations. Bellemare and Kroger (2007) identify factors that relate to Dutchmen's social capital behavior by regressing experimental game outcomes on individual characteristics. Iyer et al. (2005) in the US and Fidrmuc and Gërshani (2008) in Europe both demonstrate the important role of national, economic and institutional factors which influence individual social capital behavior.

The present study differs from the above in its approach; rather than utilize regression techniques, which face well documented endogeneity and heteroskedasticity problems, we use computational techniques to model individual behavior over time. In addition to avoiding the stochastic problems associated with regression techniques, the method affords us two distinct benefits. First, intertemporal decisions are explicitly modeled, so that investment and stock levels are deterministically linked. Second, using computational techniques enables the researchers to perform counterfactual simulations; such simulations provide insights into how individuals would change their social capital investments when faced with various scenarios.

This paper provides a theoretical model of individual social capital investment and provides empirical estimates of how individuals' decisions to invest are affected by various factors. Following a discussion of social capital and the investment model, we discuss the computational methodology employed to estimate the parameters of a social capital investment model. The fifth section of the paper discusses the survey and secondary data used in our analysis. The sixth section presents our results, and we conclude with a discussion of limitations and policy implications.

2. Theoretical foundation

Much has been written critiquing the concept of social capital, attempting to rigorously define it and identify proxies for its measurement (Chamlee-Wright, 2008; Durkin, 2000; Durlauf, 2002; Glaeser et al., 2000; Paldam, 2000; Robison et al., 2002; Schmid, 2003; Wallis et al., 2004). A consensus is emerging among economists that social capital is best described as an impure public good, in that individuals face private incentives to create and preserve social capital but such behavior generates public benefits, or externalities, shared within the community. This section will review several significant contributions toward a theoretical foundation of social capital, and it concludes by presenting the theoretical model used in this analysis.

Collier (1998) was among the first to apply microeconomic theory in the analysis of social capital with an emphasis on the external benefits of social interaction. According to Collier, social capital is best described as social interaction that produces an externality, where either the interaction or the externality is durable. One significant contribution of Collier is that his definition isolates the pertinent social interactions for social capital: those that generate external costs or benefits. Additionally, Collier's emphasis on the externality component of social capital provides a link between social capital formation behavior at the individual level and aggregated social capital at the community level. Collier does not go so far as to classify social capital as an impure public good, but his conceptualization of social capital certainly foreshadows this line of thought.

Mancinelli and Mazzanti (2004) formally categorize social capital as an impure public good, drawing on Cornes and Sandler (1986) seminal work. Criticizing prior attempts to consistently define social capital within a microeconomic framework, they define social capital as "the equilibrium stock of the public component of an impure-public good, sustained by a set of private incentives" (312). They emphasize that its production is motivated by the private benefits which accrue to an agent, and therefore it is self-enforcing (i.e., not dependent on collective action). Nonetheless, they note that the resulting cooperative environment aids to sustain such incentives. The result is that Mancinelli and Mazzanti articulate the process of social capital formation and maintenance that joins individual investment behavior with the communal resource in a theoretically consistent framework.

The contributions of Collier and Mancinelli and Mazzanti provide guidance in selecting proxies for social capital investment at the micro-level. If social capital is the set of social interactions that generate externalities and persist over time, the stock of social capital at a point in time is a function of the quantity and quality of social interactions engaged in by the individual. A change in the quantity of interaction will lead to a change in the amount of social capital. The implication is that one proxy for investment in social capital is measuring the opportunities one has for social interaction (e.g., the amount of time one spends interacting with neighbors). A proxy for the stock of social capital is to measure the density of one's current social network (e.g., the number of friends one can confide in or the number of favors one performs for neighbors). We rely upon these concepts to develop the theoretical component of this work because they are useful for identifying proxies for social capital in empirical analysis.

Glaeser et al. (2002) (hereafter, GLS) modify the neoclassical capital investment model to include private and public components of social capital, as well as other characteristics relevant to it, in an attempt to model social capital accumulation in a dynamic context. As in the canonical model, an agent seeks to maximize his discounted lifetime net benefit from social capital. A modification made by GLS is to incorporate a mobility parameter to emphasize the place-specific nature of social capital. The mobility parameter allows for a decline in social capital upon relocation. The second modification GLS make is that they model the benefits from social capital as deriving from both individual and community social capital stocks. This modification captures the externality effect that links individual and community social capital stocks, as identified by Collier (1998) and Mancinelli and Mazzanti (2004). The neoclassical social capital investment model takes the following form:

$$V(S_0, \dots, S_T) = \max_{\{x_0, x_1, \dots, x_T\}} \sum_{t=0}^T \beta^t [S_t R(\hat{S}_t) - w_t C(I_t)] \quad (1)$$

$$\text{subject to } S_{t+1} = \phi \delta S_t + \kappa I_t \quad \forall t = 0, 1, \dots, T \quad \text{and } S_{T+1} = 0 \quad (2)$$

Net benefits, capturing both market and non-market benefits, from social capital are modeled as the interaction between an individual's social capital stock, S_t , and the social capital multiplier, R_t , less the cost of social interaction, $w_t C(I_t)$, where C is a convex function. The externality effect of other individuals' social capital stocks (i.e., their behavior) on the agent's utility and social capital investment decision is represented as \hat{S}_t . The social capital transition function is comprised of three components: a mobility parameter (ϕ), depreciation (δ) and investment (I). Social capital is retained at the rate of δ , so $(1 - \delta)$ represents the depreciation rate. The effect of mobility on social capital is captured by two parameters: the probability of relocation, θ , and the proportion of social capital retained after relocation, γ . The expected impact of mobility on social capital investment is summarized by $\phi = (1 - \theta + \theta \gamma)$. The parameter $\phi \delta$ can be interpreted as the expected retention of social capital.

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