Economic Modelling 37 (2014) 377–385

Contents lists available at ScienceDirect

Economic Modelling

journal homepage: www.elsevier.com/locate/ecmod

Gender differences in social capital investment: Theory and evidence ☆

Gareth.D. Leeves [a,*,1], Ric. Herbert [b]

[a] School of Business, Monash University Malaysia, Jln Lagoon Selatan, 46150 Bandar Sunway, Selangor, Malaysia
[b] Faculty of Science and Information Technology, University of Newcastle, Ourimbah Campus, NSW 2258, Australia

ARTICLE INFO

Article history:
Accepted 20 November 2013
Available online xxxx

JEL classification:
J28
I31

Keywords:
Social capital
Investment
Non-market returns
Compensating differentials

ABSTRACT

This paper analyses individual social capital investment by extending the investment model of Glaeser et al. (2002) to allow for differing types of social capital. A dynamic solution to the individual's maximisation problem illustrates differences in social capital investment dependent on the conversion factor of investment. An empirical section finds that females invest more and derive greater wellbeing from this type of social capital investment; consistent with a higher conversion factor. The findings have implications for the work–life balance policies within firms and provide another explanation for gender differences in earnings.

1. Introduction

Individual social capital can be viewed as a person's social characteristics (Glaeser et al., 2002); the social component of human capital. Social capital is an asset that requires investment of time and resources from the individual (Bourdieu, 1987; Glaeser et al., 2002). Sociological studies have identified distinct differences in gender social capital investment, with women over represented in community or domestic organisations associated with the arts, education and care-giving (Inglehart and Norris, 2003; McPherson and Smith-Lovin, 1986; Popielarz, 1999; Moore, 1990). Males were more likely to be found in political and economic associations and professional bodies. Information obtained from connections across male social networks tend to produce higher flows of useful knowledge that can be important for firm innovation (Levin and Cross, 2004; Ruef, 2002). Social capital investments in economic and professional associations that are populated with co-workers are also more likely to be sanctioned by the work organisation and may even be part of the worker's role. Thus, male social capital investments are more complementary to their human capital investment. Women are more likely to join social organisations where the networks are less extensive and more homogeneous. [2]

The weaker link between social capital investment and human capital investment for females can make it more difficult to attain a work–life balance. Women with career aspirations may defer having a family or have fewer children in order to balance work, social and family commitments. These choices have broader implications. They would contribute to the trend in declining fertility rates seen as a concern in many European countries and emerging economies like China (Cao and Wang, 2009b). For longer term economic growth it is considered that there is a need to achieve sustainable birth rates (Cao and Wang, 2009a).

The social capital investment decision is viewed as a standard investment calculation where the gains are weighed against the costs. The gains come in the form of market and non-market returns. The former include increased wages or improved employment prospects associated with greater social skills. Non-market returns include various benefits associated with a better quality of life through the relationships and networks that it builds. For example, social capital appears to be positively correlated with better health and wellbeing (Helliwell, 2006). Costs are the opportunity costs of time; the wage rate or the value of leisure time. Thus far, economic models of social capital investment have considered social capital investment as an homogeneous good.

In this paper, we extend the Glaeser et al., (2002) model of social capital investment to allow for different types of social capital related

☆ This paper uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this paper, however, are those of the authors and should not be attributed to either FaHCSIA or the Melbourne Institute.

* Corresponding author.
E-mail addresses: gareth.leeves@monash.edu (G.D. Leeves), Ric.Herbert@newcastle.edu.au (R. Herbert).
[1] Tel.: +60 3 5514 6279; fax: +60 3 5514 6192.

[2] Women have been noted to form fewer bridging or weak ties (Granovetter, 1983). These bridging ties are the links across networks that can provide valuable market information.

0264-9993/$ – see front matter © 2013 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.econmod.2013.11.030

to market and non-market returns. We solve the model and use simulations to provide a framework for understanding the observed gender differences in social capital investment; these differences are shown to be related to the extent to which investment is converted into part of the social capital stock. The empirical section assesses the differences in female and male investment in non-market social capital and the relationship with individual wellbeing and the trade-offs between investment and income.

Females appear to be more willing to trade off income for social capital acquisition (Fortin, 2005). Helliwell and Huang (2010) reported that workplace trust matters twice as much for females, in terms of income equivalent life satisfaction, whereas income matters more for males. Hence, in the empirical section of the paper we estimate the compensating differentials for social capital investment. We use an indicator of social capital investment related to non-market returns. Our data contains information on an individual's satisfaction with their engagement with the local community, this is arguably an appropriate measure as it encompasses both formal and informal local networks. The data is a panel, which enables us to control for individual time invariant fixed effects and we exploit variations in individual working schedules to examine the robustness of our results.

The rest of the paper is set out as follows. The next section outlines the dynamic solution to the investment model of social capital. Section 3 describes the empirical methodology employed. This is followed by a section describing the data source used. Section 5 presents the results and section six concludes.

2. Social capital investment model

We adapt the framework developed by Glaeser et al. (2002) which we will refer to as the GLS model. The GLS framework considers an individual's investment in social capital to maximise their returns. Social capital is a stock which depreciates over time and the individual invests in the social capital. We extend the framework to include different types of social capital and allow for decreasing returns to social capital growth from investment (Hayashi, 1982). Finally, we present the model in continuous time.

Let there be n types of social capital for the individual denoted by S. There is an aggregate per-capita social capital of each type $(\hat{S})$ and each individual receives a component of this given by $SR(\hat{S})$. $R(\hat{S})$ is a differentiable function with aggregate per social capital as its argument and $R'(\hat{S})>0$ to reflect "positive complementarities to the accumulation of social capital across individuals" (Glaeser et al., 2002). The individual's stock of social capital is given by

$$F(S_1, S_2, \ldots, S_n) = \sum_{j=1}^{n} S_j R\left(\hat{S}_j\right). \tag{1}$$

Investment in social capital (I) has a time cost $C(I)$ and there is an opportunity cost of time, w. So the costs of generating social capital for the individual are

$$G(S_1, S_2, \ldots, S_n) = w\sum_{j=1}^{n} C_j\left(I_j\right). \tag{2}$$

Individuals live for T periods with r being the discount rate. The optimisation problem for the individual is:

$$\max \int_0^T e^{-rt}\left[F(S_1, S_2, \ldots, S_n) - w\sum_{j=1}^{n} C_j\left(I_j\right)\right] dt \tag{3}$$

subject to

$$\dot{S}_j = \alpha_j S_j + \beta_j I_j - \gamma_j \frac{I_j^2}{S_j}, \qquad j = 1, 2, \ldots, n. \tag{4}$$

Thus, the individual has to make a decision on how much to invest in the various types of social capital. Here α_j incorporates the depreciation for each type of social capital; the depreciation rate is $1 - \alpha_j$ and the stock of capital falls $\alpha_j < 1$ of its value in the previous period. The other parameters (β_j and γ_j) determine the extent to which the investment grows social capital. The parameter β_j can be interpreted as the marginal amount of social interaction that is converted to social capital (Shideler and Kraybill, 2009) and γ_j measures the degree of diminishing returns to each type of social capital investment, which is represented by the term $\frac{I_j^2}{S_j}$ that captures the non-linear adjustment costs associated with increased investment (Hayashi, 1982). Solving this optimisation problem leads to the model:

$$\dot{S}_j = \left[\alpha_j + \beta_j \Lambda\left(\Psi_j\right) - \gamma_j\left(\Lambda\left(\Psi_j\right)\right)^2\right] S_j \tag{5}$$

$$\dot{\Psi}_j = \left[r - \alpha_j - \gamma_j\left(\Lambda\left(\Psi_j\right)\right)^2\right]\Psi_j - \frac{\partial F_j}{\partial S_j} \tag{6}$$

where

$$\Lambda\left(\Psi_j\right) = \frac{1}{2\gamma_j \Psi_j}\left(\beta_j \Psi_j - w\frac{\partial C_j}{\partial I_j}\right). \tag{7}$$

Details of the solution are contained in the Appendix. The state Eq. (5) shows the dynamics of social capital over the individual's lifetime. The co-state Eq. (6) can be interpreted as the shadow price of human capital. The individual will invest in social capital up to the point where marginal net return is zero. The boundary conditions are

$$S_j(0) = S_{0,j} \tag{8}$$

$$\Psi_j(T) = 0. \tag{9}$$

An individual has an initial endowment of S at birth, which will be the result of factors such as family characteristics and location. The stock of social capital is zero at death.

Let us assume there are two types of social capital: one that generates purely market returns S_M and one that generates only non-market returns S_{NM}. The stocks of each type of social capital are increasing with investment in that type but subject to diminishing returns.

$$\frac{\partial S_M}{\partial I_M} R\left(\hat{S}_M\right) > 0, \frac{\partial^2 S_M}{\partial I_M^2} R\left(\hat{S}_M\right) < 0, \frac{\partial S_{NM}}{\partial I_{NM}} R\left(\hat{S}_{NM}\right) > 0, \frac{\partial^2 S_{NM}}{\partial I_{NM}^2} R\left(\hat{S}_{NM}\right) < 0 \tag{10}$$

The stock of individual social capital with market returns is decreasing with investment in non-market social capital and vice versa. Each individual has a finite amount of time for social capital investment and greater time and resources allocated to the accumulation of S_{NM} is at the expense of investment in S_M.

$$\frac{\partial S_M}{\partial I_{NM}} R\left(\hat{S}_M\right) < 0, \frac{\partial^2 S_M}{\partial I_{NM}^2} R\left(\hat{S}_M\right) > 0, \frac{\partial S_{NM}}{\partial I_M} R\left(\hat{S}_{NM}\right) < 0, \frac{\partial^2 S_{NM}}{\partial I_M^2} R\left(\hat{S}_{NM}\right) > 0 \tag{11}$$

Based on earlier research, we identify gender differences in the social capital transition function (Eq. (4)) of S_{NM}. Specifically, for females the conversion rate of investment (β) in social capital with non-market