Social Capital in the creation of Human Capital and Economic Growth: A Productive Consumption Approach

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18 July 2006

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May, 2007

Abstract

Social capital is a broad term containing the social networks and norms that generate shared understandings, trust and reciprocity, which underpin cooperation and collective action for mutual benefits, and creates the base for economic prosperity. This study deals with the formation of social capital through development of human capital that is created from productive consumption. This paper attempts to formalize incorporation of social capital (SK). This paper sets up a one-sector growth model, where the engine of growth is capital accumulation. The production function for final output is of the AK – type, which uses aggregate capital as single input. Aggregate capital is represented by a Cobb-Douglas index comprising three types capital. Human capital accumulation results from productive consumption and an increase in social capital is driven by the existence of human capital. The optimal growth rate of consumption is derived and it is shown that both human capital and social capital accumulation affect the equilibrium growth rate. Finally, paper presents some empirical evidence on social capital and economic growth.

***Key* Words**: Social capital, human capital, economic growth, network, cooperation, collective action, trust and reciprocity.

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1. Introduction

The study of determining factors of economic growth in the literature mainly focuses on economic factors like relative stock of physical and/or human capital, trade, and available technology etc. Earlier studies omit a relevant dimension: social factors such as culture, social norms and regulations, which may act as pivotal role for promotion of economic growth and development. This paper addresses one of the issues that still remain open in the literature: the channels and mechanisms through which social factors affect macroeconomic performance. Recently, economists become more and more interested in the role of social culture/behaviour as an explanation for why some regions/countries are rich and others remain poor (Putnam et al. 1993). Several studies have investigated the impact of social culture, which includes social structure based on trustworthiness, norms, regulation, cooperation and networks. All these lead to develop a new concept - social capital (Bourdieu 1980, 1986; Coleman 1988, 1990; Putnam 1993, 2000; Fukuyama 1995).

The concept of social capital has a long history in the social sciences. Bourdieu (1980, 1986), Coleman (1988, 1990) and Putnam (1993, 1995, 2000) are credited for introducing the concept of social capital[1] and popularized it. Coleman (1990) defines social capital: '….social organization constitutes social capital, facilitating the achievement of goals that could not be achieved in its absence or could be achieved only at a higher cost.' Putnam et al (1993) provide similar characterization, '…social capital...refers to features of social organization, such as trust, norms, and networks that can improve the efficiency of society..'. According to them, social capital is a type of

[1] See also Lin 2001; Ostrom 2000; Cohen and Prusak 2001; Rose 2000; Bertrand and Mullainathan 2000; Beugelsdijk and Smulders 2004; Glaeser et al. 2000; Knack et al. 1997; Tau 2003; etc.

positive group externality that arises from social organization. Fukuyama (1995) argues that only certain shared norms and values should be regarded as social capital. '…Social capital can be defined simply as the existence of a certain set of informal rules or norms shared among members of a group that permits cooperation among them. … The norms that produce social capital .. must substantively include .. meeting of obligations, and reciprocity.' Putnam (2000) introduces the idea of social capital in terms of relations or interdependence between individuals: '…social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them.' 'Social capital may be defined operationally as resources embedded in social networks and accessed and used by actors for actions' (Lin 2001). So, the concept of social capital has two important components: (i) it represents resources embedded in social relations rather than individuals, and (ii) access and use of such resources reside with actors. Thus, social capital creates a common platform in which individuals can use membership and networks to secure benefits[2]. Social capital is the shared knowledge, understanding, norms, rules and expectations about patterns of interactions that groups of individuals bring to a recurrent activity (Ostrom 2000). Thus, social capital can be considered as the stock of active connections among individuals - the trust, mutual understanding, and shared values and behaviours that bind the members of human networks and make possible cooperative action (Cohen and Prusak 2001). Social capital is usually understood as referring to the values and norms prevailing within the community, to the networks that are based on those values and norms, and to the social trust that evolves through those common values and networks. Actually, social capital is

[2] Individuals are engaged in repeated interactions with others and everyday business, thereby, social transactions are less costly.

a broad term containing the social norms and networks that generate shared understandings, trust and reciprocity, which underpin co-operation and collective action for mutual benefits that helps to improve efficiency of the society. Social capital allows individuals to resolve collective problems more easily and individuals often might be better off if they cooperate, with everybody doing her/his own work[3]. Social capital (at individual level) also refers to a system of interpersonal networks (Dasgupta 2002), which enhances cooperation and collaboration that also helps to create the economic opportunities.

Considering social capital as a productive factor[4] Heller 1996, Ostrom 2000 and Rose 2000 point out that social capital contributes to economic growth by facilitating collaboration between individual interests towards the achievement of increased output. Several studies (Bertrand and Mullainathan (2000), Beugelsdijk and Smulders (2004), Bjornskov (2006), Glaeser et al. (2000), Alesina and Ferrara (2002), Miguel (2003), Knack et al. (1997), Sobel (2002), Tau (2003), Temple and Johson (1998), etc.) have discussed about the features of social capital and its contribution to economic growth. Knack and Keefer (1997), Temple and Johnson (1998) provide the evidences that high levels of trust and social participation are positively correlated with economic growth, after controlling other growth promoting factors. The growing literature claims that repeating trustful interactions in the economy do sediment in higher levels of generalized trust. This aggregated stock of trust is treated as input in the aggregate production

[3] Society obviously allows individual to act in certain ways and only within a collectively defined and supported area of freedom. Social capital has also been used to refer to the social and cultural capacity of individuals.

[4] Due to the changes in production methods immaterial factors of production, namely the role played by human and social capital in economy have been emphasized in the recent years. However, Solow (1995, 2000) and Sobel (2002) criticize the concept of social capital as a factor of production.

function (Crudelia 2006). Scholars like Miguel (2003), Mogues and Carter (2005), Rupasingha et al. (2006) study the relationship between the stock of social capital and its relation to economic development, especially, low crime rates and reduction of other social problems. It should also be noted that countries/regions with relatively higher stocks of social capital, in terms of generalized trust and widespread civic engagement seem to achieve higher levels of growth, compared to societies with low trust and low civicness (Putnam et al. 1993). So, social capital contributes to economic growth by focusing the importance of trust and cooperation within firm, industry, market and the state. Thus, social capital truly greases the wheels that allow nations to advance smoothly and creates the base for economic prosperity.

Social capital formation might be a desirable objective for policy–making[5]. Policy maker should aim to develop social norms, regulations, trust and cooperation with related ideas of social inclusion or school improvement through development of human capital that could be created from productive consumption. Following Steger (2002) consumption is used partly for the development of human capital in terms of education and health that increases the productivity of labour that has positive contribution to the output growth, which is revealed, on macroeconomic level. Development of human capital actually creates the base for social capital, which is nothing but the externality of human capital in Lucas (1988). The positive externalities associated with human capital are given prime importance in the new growth theories, and in most of these dynamic models externality result in social increasing returns to scale in the production sector. In Lucas (1988),

[5] Putnam's view seems to regard association between people as positive in its own right. Coleman's perspective emphasizes the use of social capital as a precursor of human capital. Bourdieu and Coleman agree that the notion of social capital can be converted into other forms of capital.

human capital is found to have positive external effect on aggregate production function[6]. The literature on finding education externalities has been revived in recent years, partly in the light of the new fashionable idea of social capital. According to Fukuyama, '....the area where government have the greatest direct ability to generate social capital is education'. There is a general view by proponents of social capital that education increases social capital[7]. Education is often cited as a key determinant of social capital[8] and this is well documented in the literature (Putnam (1995), Helliwell and Putnam, (1999), Alesina and La Ferrara (2000), Glaeser et al. (2002), Rupasingha et al. (2006)). However, usually the precise mechanism is not very clearly specified but often implicitly observed in the notion that schools impart good standards of behaviour, help to socialize young people and also enable them to engage in society by virtue of being better informed. Schools serve as institutional environments that favour informal associability

[6] However, there exist different opinions regarding the presence of external effect of human capital. In the presence of external effect the social and private return to human capital differs. There exists a substantial empirical literature relating human capital accumulation to economic growth. In 50s and 60s Gary Becker, Jacob Mincer, T.W. Schultz and other economists focussed on the role of education on economic development. Recently, Lucas (1988), Barro (1991), Mankiw, Romer and Weil (1992) linked education to economic growth.

[7] It should be mentioned that there are other features of education that also need to be taken under consideration. On the one hand, education can create a platform for interaction between individuals that leads to competition rather than cooperation. It can create an elitist class of educated people that enjoy higher social status and are characterised by closed and introvert networks, which do not support the type of mutual understandings and generalised norms that define social capital in this paper. Human capital in this sense allows for a social mobility that does not necessarily cultivate the mobilisation of social forces to serve widespread participation and public interst. This can lead to forms of 'anti-social' capital, such as special-interest groups, that are detrimental rather than conducive to development. On the other hand, individuals appear to invest in human capital as a form of productive consumption, while the trasmission of norms and networks, i.e., the creation of social capital, appears as a by-product of this investment decision. This tends to ignore the intrinsic value not only of social capital, but also of education, as people invest in both as values in themselves. The first point on education and competition can partly be overcome by assuming more access to human capital across peoples at all levels of education. The second point on the intrinsic value of education might require further assumptions concerning the impact of the social context on people's value (see, Becker (1996)).

[8] This also makes sense intuitively: The children who grow up in rich social capital environments may be schooling better. Children who grow up in families that have higher social capital (dinnertime conversations, family picnics, etc.) may be better educated. Communities that have higher social networks such as more parent-teacher associations may have higher school attendance.

amongst peers and fellow members. It should be noted that cooperative tendency build up social trust, which is created in the schooling system. Education's longstanding concern with association and quality of life in associations create the platform for interaction between individuals. Interaction enables people commit themselves to each other and make direct and indirect important contribution to the development of social networks[9] (e.g., trust, tolerance and reciprocity that are usually involved). Through dialogue and conversation among themselves, educated individuals are interested to develop cultural environment in which people can work together. Thus, social capital forms in the creation of human capital through schooling, which has been considered here as productive consumption. Education contributes to economic growth not only by building human capital but by instilling common norms and regulations that increase social cohesion (Gradstein and Justman 2000) also. So, the productive consumption on education stimulates to accumulate human capital through which a base is created for cooperation, which is capable to evolve norms, regulations, and social networks in the form of social capital that lead to economic growth and development (Temple and Johnson (1998), (Helliwell and Putnam (1999)). There is considerable evidence that communities with a good stock of social capital are more likely to be benefited from higher educational achievement, better health in terms of life expectancy, and better economic performance[10]. Thus, trustworthy and cooperative society helps faster economic growth.

[9] Educational achievement is likely to rise significantly, and the quality of day-to-day interaction is likely to be enhanced by a much greater emphasis on the cultivation of extra-curricula activity involving groups and teams. Thus, encouraging the development of associational life can also make a significant difference to the experience of being in different communities.

[10] Social capital is highly correlated with good educational outcomes, good health and good government (Putnam 2000).

Few studies (Rupasingha et al. 2006) have given attention how this social capital generates or what policies stimulate to form this capital. Bourdieu (1986) points out that economic, cultural and social capital together shape the permissible actions in any particular field of operation. Bourdieu (1986) observes these capitals as running together in class formations, and also as convertible[11]. Rupasingha et al (2006) identifies inputs into the production of social capital for the USA, using individual and community factors that are important determinants of social capital. The mechanism through which social capital is created is still opened. This study focuses on these untouched parts of the determinants of social capital in economic growth model.

This paper deals with this issue by combining the accumulation of social capital along with human capital, which in turn depends on productive consumption (Steger 2002). This paper introduces to stress the complementarity of social inputs with other (human) inputs in the aggregate growth process. The idea is that social capital creates pave the way for economic development in an under developed economy provided there is a sufficient (quality and quantity) stock of human capital to transmit the norms and networks that support reciprocity and cooperation as an externality to invest in education. The growth theorists, after Lucas (1988), have emphasized interactions amongst agents that may cause the social returns to human capital to exceed the private ones. Persons with greater skill may raise the productivity of others with whom they interact, and therefore, accumulation of human capital may increase total factor productivity in an economy. Truly, the value of social capital depends on its ability to create an efficient

[11] Cultural capital knows how to achieve one's goals and social capital knows people who could help one to do so. Social and cultural capitals gain their value because people with status recognize the value of each other's capital, so even though individuals utilize these capitals and they have collective effects.

means of production. This paper mainly internalizes educational externality in terms of social capital formation through development of human capital in the channel of productive consumption[12] and its impact on economic development in the framework of endogenous growth model[13].

This study is organized as follows: Section 2 builds up a model in the framework of endogenous growth model. Section 2.1 discusses how productive consumption develops human capital. Section 2.2 analyses how the developed human capital (or educated individuals) generate and accumulate social capital. Section 2.3 provides standard welfare function and optimizes it with respect to constraint. Section 2.4 analyses the results derived from our model. Section 3 provides empirical support for social capital. Section 4 discusses about the possible policies that help to develop social capital and lastly concludes.

2. Model

This section develops a model that analyses how consumption lead human development (or labour efficiency) improves productivity and thereby economic growth and development. Steger (2002) defines capital as the composition of physical and human capital, here I add the social capital to it for wider sense of capital that is discussed later.

[12] Take for example, the expenditure on public schooling, here education is publicly administered as well as publicly financed (Gradstein and Justman 2000) or creating social infrastructures. This consumption expenditure (activities) is classified as productive consumption that helps to develop human capital of a country/region and thereby economic development. Development economists (Steger 2002, Dasgupta and Marjit 2002) recognize the possibility of productive consumption that enables satisfaction of current needs and also increases productivity of labour.

[13] A good start might be Becker (1996), who studies the role of endogenous preferences in the formation of social capital. This brings me to the model.

2.1 Production

The representative household produces output, *y*, using composite capital, *k* consist of physical, human and social capital[14]. Under AK- type production technology, the intensive production[15] functional form is

$$y = f(k),\ f' = \text{Constant},\ f'' = 0 \text{ and } f(0)=0. \qquad (1)$$

The assumption of diminishing returns is replaced by constant returns, which is crucial for sustainable growth and also a broader interpretation of capital. One part of produced output is used for consumption and other part for investment.

The equation of motion of physical capital, k_p, is

$$\dot{k}_p = f(k) - c - \delta_p k_p \qquad (2)$$

Where δ_p is the depreciation rate of physical capital, and *c* is consumption, which plays a crucial role for acquiring human capital.

2.2 Human Capital

One part of consumption is used for the development of human capital in terms of health and education that increase the labour productivity. This type of productive consumption improves human capital of a country/region. Following Steger (2002) human capital enhancement function, $h(c)$, is strictly concave (such that, $h'(c) > 0$,

[14] Physical capital refers to physical tools that enhance productivity, human capital refers to individual's skill and knowledge that enhance productivity but social capital refers to relationship between individuals (i.e., interpersonal networks) which have also effects on productivity (Putnam et al. 1993, 2000). Social capital can be seen as an enabler of the productive use of human and physical capital.

[15] All variables are measured in terms of per capita. For simplicity, here I assume that population growth rate is zero.

$h''(c) < 0$ and $\lim_{c\to\infty} h(c) = \bar{h}(c)$ or $\lim_{c\to\infty} h'(c) = 0$ and $\lim_{c\to\infty} h''(c) = 0$). The equation of motion of human capital, k_h, (no depreciation in human capital) is

$$\dot{k}_h = h(c) \tag{3}$$

In this context, it should be mentioned that physical capital[16], k_p, is used to produce consumption goods and its accumulation requires, at least in part, the renunciation of consumption, while human capital, k_h, results from productive consumption (Steger 2002).

2.3 Social Capital

The educational process starts in a school that produces generally more informed individuals who promote social interactions and share the social responsibilities. Educated individuals have a better understanding of the positive impacts of associational activities and collective action on society than do those with less education (Rupasingha et al.2006). It is widely believed that education generates significant positive externalities and improves overall productivity in the economy. Lucas (1988) explains that these externalities are generated in the economy as aggregated human capital. This study tries to internalize these externalities in the form of social capital. This paper focuses on the case of schooling through which trust evolves. The improvements of social trust, reciprocity and cooperation are the basis for formation of social capital. Truly, social capital[17] is embedded in human capital and education fosters its accumulation.

[16] k_p could be equally interpreted as physical and human capital that requires the renunciation of consumption for its accumulation (Steger 2002).

[17] Gary Becker (1975, 1996) provides a theoretical basis for economic analysis of the formation of social capital.

Social capital of an economy definitely depends on available stock of human capital. So, social capital formation should be a function of human capital[18], i.e., $S = \phi(k_h)$, with usual property $\phi' > 0$ and $\phi'' < 0$. The equation of motion of social capital, k_s, is

$$\dot{k}_s = \phi(k_h) - \delta_s k_s \qquad (4)$$

Where δ_s is depreciation rate of social capital. However, like other forms of capital, social capital is also associated with maintenance costs: e.g., trust that is usually stated as the main form of social capital, do not remain automatically. Moreover, social capital does not necessarily decrease in use; on the contrary, it can accumulate as a result of its use. As Ostrom (2000) argues, social capital is unlike physical capital in that it 'does not wear out with use but rather with disuse'. Further more, there are also certain characteristics that distinguish social capital from other forms of capital, namely, in order to evolve, social capital needs at least two people, which are not necessarily required in other forms of capital. A number of other authors in the literature, such as Putnam et al. (1993), and Narayan and Cassidy (2001), emphasize that social capital exists only when it is shared. Of course, one can say, that to create social capital one must invest time and resources to sustain social interactions.

The stock of composite capital is defined as $k = k_p^{\alpha} k_h^{\beta} k_s^{1-\alpha-\beta}$. The equation of the motion of stock of composite capital, k, can be written as:

[18] It should be mentioned that developments of infrastructure and communication systems (that are highly depends on the availability of physical and human capital) highly affect the formation of social network/capital. So, in this context, I might consider that social capital formation depends on both human and physical capital, i.e., $S = \phi(k_p, k_h)$. For simplicity I consider here that only human capital generates social capital, i.e., $S = \phi(k_h)$, and continue our analysis.

$$\dot{k} = \eta_1 \dot{k}_p + \eta_2 \dot{k}_h + \eta_3 \dot{k}_s \qquad (5)$$

Where $\eta_1 = \frac{\alpha k}{k_p}$, $\eta_2 = \frac{\beta k}{k_h}$, and $\eta_3 = \frac{(1-\alpha-\beta)k}{k_s}$. Substituting eq.(2) - (4) in eq(5), it can be written as

$$\dot{k} = \eta_1 f(k) + \eta_3 \phi(k_h) - \psi(c) - \left\{\eta_1 \delta_p K_p + \eta_3 \delta_s K_s\right\} \qquad (6)$$

Where $\psi(c) = \eta_1 c - \eta_2 h(c)$ is *net consumption*.

The equation (6) contains two additional terms viz., social capital $\phi(k_h)$ and net consumption $\psi(c)$, which includes productive consumption $h(c)$. It should be noted that productive consumption creates human capital, which has two fold impact on the economy – directly develops human capital, $h(c)$ and indirectly creates social capital, $\phi(k_h)$.

2.4 Welfare function

The representative household maximizes her (his) instantaneous utility through consumption at each moment. The traditional objective of the household is

$$\underset{c}{Max} \int_0^\infty U(c) e^{-\rho t} dt \qquad (7)$$

Subject to the constraint $\dot{k} = \eta_1 f(k) + \eta_3 \phi(k_h) - \psi(c) - \left\{\eta_1 \delta_p K_p + \eta_3 \delta_s K_s\right\}$

$k_p(0) > 1$, $k_h(0) \geq 1$ and $k_s(0) \geq 1$.

2.5 Implications

First order condition of this solution is

$$u_c = \lambda \psi_c \qquad (8)$$

where λ is the shadow price of k and $\psi_c = \eta_1 - \eta_2 h_c$. Eq. (8) implies that along the optimal trajectory marginal utility of consumption equals to marginal net cost of consumption in utility measured units (Steger 2002).

The optimal economic growth rate is

$$\frac{\dot{c}}{c} = (\sigma + \theta)^{-1} \left\{ \eta_1 f_k(k) + \frac{\eta_3}{\eta_2} \phi_{K_h} - (\rho + \delta_p + \delta_s) \right\} \qquad (9)$$

Where $\sigma = \frac{-cu_{cc}}{u_c} > 0$,

$\theta = \frac{c\psi_{cc}}{\psi_c} = \frac{-\eta_2 h_{cc} c}{\eta_1 - \eta_2 h_c}$, provided $\eta_1 \neq \eta_2 h_c$,

i.e., θ is undefined at $h_c = \frac{\eta_1}{\eta_2} = \frac{\alpha}{\beta} \frac{k_h}{k_p}$,

$\theta < 0$ if $h_c > \frac{\alpha}{\beta} \frac{k_h}{k_p}$

and

$\theta > 0$ if $h_c < \frac{\alpha}{\beta} \frac{k_h}{k_p}$.

The term σ (in equ. (9)) is inter-temporal elasticity of consumption. The second term, θ is the elasticity of net consumption. It is one extra term added to traditional optimal consumption growth rate due to productive consumption. That means consumption or expenditure on education improves human capital, which stimulates to grow further. In other words, productive consumption has significant effect on economic growth through the elasticity of net consumption (θ).

It should be noted that social capital is an important factor that explains economic growth. Since $\phi_{K_h} > 0$ economic growth rate is more in eq.(9) than productive consumption growth model developed by Steger (2002). This difference is created due to incorporation of social capital that is reflected in the second term, ϕ_{K_h}, in second bracket in eq. (9). The marginal productivity of social capital, ϕ_{K_h}, is positive and thereby it has definite returns or/and incentives to grow social capital through widening social network.

Proposition 1: *Marginal productivity of social capital, ϕ_{K_h}, fastens economic growth rate as long as definite returns from it (i.e., as long as ϕ_{K_h} >0).*

The optimal growth path of the economy (eq.(9)) differs from our conventional growth path due to the marginal productivity of social capital, ϕ_{K_h}. The second term in second bracket of eq (9) can be rewritten as $\frac{\eta_3}{\eta_2}\phi_{K_h} = \frac{1-\alpha-\beta}{\beta}\frac{K_h}{K_s}\frac{\partial S}{\partial K_h}$. It should be noted that $\frac{K_h}{K_s}\frac{\partial S}{\partial K_h}$ is the cross elasticity (or sensitivity) of social capital with respect to human capital. If the social capital formation is insensitive to human capital (i.e., $\phi_{K_h} \to 0$) the economic growth rate (eq (9)) tends to represent conventional growth rate (i.e., Solow type growth model). This economic growth rate particularly focuses on the contribution of social capital in the economy (i.e., ϕ_{K_h} >0). Thus, economic growth rate may be high so long social capital has definite contribution (or return).

3 Empirical Observations

This section tries to highlight tangentially what factors influence social capital and its impact on the economy. Roughly, the conceptual theoretical model is translated to empirical observations and provides some evidences for the above model based on cross-country data. This section empirically tests the hypothesis that social capital is a factor of production. First this paper examines whether income level increases with rising social capital which also increases with improvement of human capital (education). For this purpose, here I consider trust and average years of schooling as social capital and human capital, respectively.

3.1 Data

In this study I have used the data set, which is available in the website: http://www.nek.uu.se/staffpages/publ/p431.xls. These data collect and compile several data from different sources (given in details in p431 excel file). Several studies (Zak and Knack (2001), Bengtsson et al. (2005), Berggren and Jordahl (2006)) have used part of these data. I have taken few relevant variables - viz., growth per capita income (annual percentage growth rate of real GDP per capita 1990-2000), trust[19] (first value of trust 1990-2000, World Value Surveys; see Inglehart et al. (2004) for details), per capita real GDP in 1990 (measured in thousand of International dollars at 1996 constant price; see also Penn World Table 6.1), meanschool (average years of schooling in 1990) for this study. There are 63 countries in the data set and empirical analysis concentrate on these countries only (Table A1). Table A2 in appendix provides summary statistics of the

[19] First value of trust in people (%) 1990 – 2000 from World Value Surveys plus New Zealand from a government sponsored survey www.worldbank.org/research/growth/pdffiles/trust_data.xls for 1980, 1990-91, 1995-96 (see Zak and Knack 2001).

variables. Average income and growth rate are $10244 and 1.75 per cent, respectively. Table A3 provides the association (correlation) among the variables. Among them, the high correlation is observed between schooling and income (0.789), trust and income (0.625), and moderate association between trust and schooling (0.537).

3.2 Results

Human capital is measured as test scores in terms of years of schooling. So, intuitively, the best predictor of the level of human capital (stock) of a country is simply its mean years of schooling at the base period. It is quite natural that formation of human capital[20] evolves social trust. Figure 1 shows a direct association between average years of schooling and social trust (Helliwell and Putnam 1999). This tends to suggest that rising level of education improves social trust. In other words, this also indicates that development of human capital through schooling definitely improves social capital. Table 1 provides direct impacts of schooling on trust, income level and economic growth rate unconditionally (without other covariates). Our results also support the findings of Helliwell and Putnam (1999). These empirical findings suggest that average schooling have direct impact/influence on social trust and income level. The empirical finding points out that for one additional average year of schooling the social trust in people improve 3.2 points (index), whereas income level rises by $2287 (see Table 1). It should be noted that impact of schooling on growth rate is insignificant, which is quite unnatural. However, overall, these indicate that improvement of human capital is crucial for formation and development of social capital.

[20] There are many factors influencing human capital accumulation. These are parents' education level, nutrition, school quality, time allocated for acquiring education, life expectancy or mortality rate, govt. policy etc.

Next I search for the contribution of social capital on income level of a country. Figure 2 shows the direct relationship between social trust and per capita GDP. Table 2 presents empirical results of the impact of social trust (capital) on income level. Social trust and human capital have positive impact on a country's income level (Table 2). This result also supports the finding of Baliamoure-Lutz (2005). Empirical results suggest that for each extra one year of education the trust (index) improves 3.2 points (Table 1) and for each additional increment of social trust the level of income (real GDP) increases from $137 to $302 (International dollars at 1996 constant price). This suggests that for one year extra schooling might directly provide extra income $1848 and indirectly (through social capital, viz., trust) extra income from $438 to $966 and in aggregate extra income increase from $2286 to $2814. Figure 3 suggests that economic growth rate increases with improvement of social capital (specifically social trust). Table 3 presents empirical results of the impact of social capital on economic growth rate that rises from 0.04 to 0.07 per cent for per additional unit of trust. This suggests that for each extra year of schooling may provide additional growth rate for an economy from 0.13 to 0.22 per cent through creating trust. These social capitals have also definite impact on income level as well as on economic growth. Thus, these empirical results support that social capital is a factor of production.

4 Policy

Productive consumption is effective and essential in less developed countries/regions for accelerating economic growth. As productive consumption (c) increases, human capital, $h(c)$, is created, accumulates and influences economic growth (through elasticity of productive consumption (θ)). Thus, productive consumption might

be a good policy for development of underdeveloped regions/countries if it truly enhance human capital of that region/country. In the less developed economies or societies, the productive consumption should be a crucial policy for development of human (health and knowledge) capital that also helps to create and concretize social capital. For a large and heterogeneous economy, policy makers should focus those forms of social capital, which will noticeably improve economic prosperity of distressed communities, and economic inclusion of deprived, disadvantaged and marginalised individuals. The compulsory minimum education should be the prime policy to develop face-to-face interaction among individuals and setting the norms for development of trust among themselves (Dowla 2006, Sabatini 2006). This establishes new norms, which build a new level of social trust that acts as collateral and solve the problems of poor people in the collective action (Dowla 2006). Thus, the acquisition of social capital by poor households is particularly important as a means to help them escape the poverty trap.

5 Conclusion

Social capital is a broad term containing the social norms and networks that generate shared understandings, trust and reciprocity, which underpin co-operation and collective action for mutual benefits, and creates the base for economic prosperity. Social capital is accumulated when people interact in a purposeful manner with each other in formal and informal meeting places. These social activities increase with development of human capital that is generated in the schooling system. Educated individuals are interested in dialogue and conversation that enables people to build communities, to

commit themselves to each other, and thereby to knit the social fabric. Thus social capital greases the wheels that allow nations to advance smoothly.

This paper tries to develop mechanism through which social capital forms and contributes to economic growth in the endogenous growth framework. This study deals with development of social capital through human capital formation that is created from productive consumption. The predictions of the model are examined empirically for a cross-section of countries. The empirical findings support our hypothesis that social capital has significant impact on the income level and economic growth rate.

Acknowledgements

I am grateful to the anonymous referees of this Journal for helpful comments and suggestions on earlier drafts. Usual disclaimers, however, apply.

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Table 1: Estimated Impacts of Schooling on Trust, Income and Economic growth rate

	Dependent Variables		
Variable	Trust	GDP	Growth rate
Constant	8.918*	-5.076***	1.525**
t-value	(1.92)	(-3.1)	(2.25)
Mean years of **Schooling**	**3.217*****	**2.287*****	0.034
t-value	(**4.97**)	(**10.03**)	(0.36)
R^2	0.2885	0.6227	0.0021
$\bar{R}^2$	0.2768	0.6165	0.0143
Loglikelihood function	-251.72	-186.015	-130.395
No. of Observations (Countries)	63	63	63

Note: The figures in parentheses are t-values. '***', '**' and '*' indicate the level of significance at 1%, 5% and 10%, respectively.

Table 2: Estimated impact of Social Capital on Income level

Variables	Income level (Per Capita GDP ('000 PPP)at 1990)	
	(1)	(2)
Intercept	1.0346	6.2943***
	(0.62)	(4.01)
Trust	**0.3023*****	**0.1366*****
	(**6.25**)	(**3.26**)
Schooling		1.8478***
		(7.36)
R^2	0.3902	0.6794
$\bar{R}^2$	0.3802	0.6687
Log likelihood function	-201.136	-180.887
No. of Observations	63	63

Note: The figures in parentheses are t-values. '***', '**' and '*' indicate the level of significance at 1%, 5% and 10%, respectively.

Table 3: Estimated Impact of Social Capital on Economic Growth rate.

Variables	Growth rate per capita (during 1990-2000)		
	(1)	(2)	(3)
Intercept	0.454	1.029	0.439
	(0.9)	(1.58)	(0.61)
Trust	**0.043*****	**0.056*****	**0.068*****
	(**2.88**)	(**3.2**)	(**3.69**)
Schooling (mean years)		0.145	0.028
		(1.4)	(0.2)
Per capita GDP at 1990			-0.094*
			(-1.78)
R^2	0.1198	0.1474	0.1910
$\overline{R}^2$	0.1054	0.1190	0.1498
Log likelihood function	-126.441	-125.44	-123.787
No. of Observations	63	63	63

Note: The figures in parentheses are t-values. '***', '**' and '*' indicate the level of significance at 1%, 5% and 10%, respectively.

Appendix

Table A1: List of countries in our empirical study

Algeria, Argentina, Australia, Austria, Bangladesh, Belgium, Bolivia, Brazil, Canada, Chile, China, Colombia, Costa Rica, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Finland, France, Germany, Ghana, Great Britain, Greece, Guatemala, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Italy, Japan, Jordan, Korea, Latvia, Mexico, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Slovak Republic, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, Turkey, Uganda, Uruguay, USA, Venezuela, Zimbabwe.

Table A2: Summary Statistics of the Variables

NAME	N	MEAN	ST. DEV	VARIANCE	MINIMUM	MAXIMUM
GDP('000)	63	10.244	7.6065	57.859	0.6862	26.458
GRWPC	63	1.752	1.935	3.743	-2.5807	7.6887
TRUST	63	30.465	15.718	247.05	5.0000	66.100
MSCHOOL	63	6.698	2.624	6.887	2.1900	12.000

Table A3: Correlation Matrix

TRUST	1.000			
GDP	**0.625**	1.000		
GRWPC	**0.346**	0.009	1.000	
MSCHOOL	**0.537**	0.**789**	0.046	1.000
	TRUST	GDP	GRWPC	MSCHOOL