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A two-sector model of economic growth with social capital accumulation

Angelo Antoci [a], Luca Guerrini [b,*], Mauro Sodini [c], Luca Zarri [d]

[a] Department of Economics and Business, University of Sassari, Italy
[b] Polytechnic University of Marche, Italy
[c] University of Pisa, Italy
[d] Economics Department, University of Verona, Italy

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ABSTRACT

In this paper we analyze a two-sector growth model in which the utility function is not additively separable in consumption and "quality leisure time". Differently from the main body of theoretical literature on quality leisure, we assume that the "productivity" of leisure is not determined by the stock of human capital but instead by the quality of social environment, which in turn depends on the joint action of the economy-wide average leisure and of the stock of social capital. In this context we show that the time evolution of social capital may exhibit an inverted-U shaped path, according to which the stock of social capital, initially increasing, becomes definitively decreasing. This result is consistent with several empirical studies about the time evolution of social capital in industrialized economies (see e.g. Robert Putnam, 1995, 2000). Furthermore, we show that the inverted-U shaped evolution of the stock of social capital can be observed only if the balanced growth path is locally indeterminate.

1. Introduction

In this paper we analyze a two-sector growth model in which "quality leisure time" (see the seminal work of Becker, 1975) enters the utility function of economic agents as, among the others, in Heckman (1976), Stokey and Rebelo (1995), Ortigueira (2000), Mino (2002), Gomez Suarez (2008), and Azariadis et al. (2013).[1] However, differently from the main body of theoretical literature on quality leisure, we assume that the "productivity" of leisure is not determined by the stock of human capital but instead by the quality of social environment, which in turn depends on the joint action of the economy-wide average leisure and of the stock of social capital.[2] Individuals allocate their time between the production of a private good and leisure, which is entirely devoted to social participation. Classical work in sociology has long stressed the impact of social interactions on individuals' well-being and actions (Simmel, 1972; Weber, 1978). Maskin (2000) exposits the economic perspective on social interactions and compares it with that of sociology. Broadly speaking, the nature of our micro–macro interactions, with individuals' well-being and choices depending on key features of the macro-environment (such as economy-wide average leisure) they are embedded in, is close in spirit to economics papers such as Cooper and John (1998), dealing with the microfoundations of macroeconomic coordination failures,[3]

* Corresponding author.
E-mail address: luca.guerrini@univpm.it (L. Guerrini).

[1] For a review of empirical literature supporting the relevance of quality leisure time see Gomez Suarez (2008).

[2] Chou's (2006) models show that social capital can foster economic growth through various channels, such as financial development and networking between firms.

[3] Cooper and John (1998) show that strategic complementarities and spillovers can generate both coordination failures and a multiplier process associated with changes in exogenous variables. The inefficiencies are driven by the presence of externalities in payoff functions.

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and Glaeser, Sacerdote, and Scheinkman (1996), investigating the effects of social interactions on individuals' decisions to engage in criminal activities.[4] In our model, in line with Coleman (1988, 1990), we assume that social participation incidentally generates durable ties as a by-product via a learning-by-doing mechanism. In the long run, such ties accumulate in a stock which constitutes the "social capital" of the economy (see e.g. Antoci, Sacco, and Vanin, 2005, 2007; Antoci, Sabatini, and Sodini, 2012b). The time allocation choice of each individual has a negligible effect on the evolution of social capital; so, differently from the accumulation process of human capital, the dynamics of social capital are considered entirely as exogenously determined by the representative agent (the framework is that analyzed by Wirl, 1997).[5]

We introduce the possibility that the private good and the quality of social environment can be either substitutes or complements. In the last decades several contributions in the literature have set forth the idea that a poor social environment may modify the prevailing consumption patterns, leading individuals to increase the consumption of private goods to defend themselves from social degradation (see among the others, Putnam, 2000; Corneo, 2005; Bruni and Stanca, 2008; Bartolini and Bonatti, 2008; Antoci, Sacco, and Vanin, 2007; Antoci, Sabatini, and Sodini, 2012a,b). In such a context, a low quality of social environment may incentivize behaviors that are perceived as individually rational (that is, utility maximizing for the agents who carry them out), but that may reduce the well-being of the whole population at the aggregate level. The mechanism underlying these perverse effects may be briefly illustrated as follows. In order to defend themselves from the degradation of social environment, economic agents make self-protective choices through the consumption of private goods. The consequent reduction in social participation further deteriorates the social environment and consequently increases the incentive to produce and consume private goods as a self-protection device. This substitution mechanism of social interaction via private goods may thus lead to a vicious circle that ultimately determines an unsustainable growth path, along which the growth of physical capital is associated to a reduction in the stock of social capital.

In economic literature there are some other economic growth models in which the "productivity" of leisure is influenced by the stock of social capital rather than by human capital; see among the others, Antoci, Sacco, and Vanin (2005, 2007), Antoci, Sabatini, and Sodini (2012b), Bruni, Naimzada, and Randon (2008), and Bilancini and D'Alessandro (2012). The results obtained by the analysis of our model are consistent with those obtained in the literature dealing with the issue: the expansion of market activities – private consumption and physical capital accumulation – may crowd out the relational sphere of the economy driving it toward a social poverty trap (in the sense of Antoci, Sacco, and Vanin, 2007) characterized by a high level of private consumption and a low quality of social environment. The main difference between our work and those present in the literature cited above is that, due to the simplicity of our model, we are able to show that the time evolution of social capital may exhibit an inverted-U path, according to which the stock of social capital, initially increasing, becomes definitively decreasing. More specifically, it is important to note that also Antoci, Sabatini, and Sodini (2013) account for the emergence of an inverted-U shaped path in the time evolution of social capital. However, while in Antoci, Sabatini, and Sodini (2013) the agents were supposed to be boundedly rational, the engine of private growth was an exogenous technological progress and there was no accumulation of physical capital, in our study the agents are optimizers and the accumulation processes of physical and social capital are jointly modeled.[6] Our current analysis is therefore more complete, as it can take account of the feedback effects of the accumulation of social capital on the accumulation of physical capital, and indicates that sustainable balanced growth paths can exist along which physical and social capital grow at strictly positive rates. Our main result is consistent with several empirical studies focusing on the time evolution of social capital in industrialized economies. Putnam (1995, 2000) has documented how most indicators of social capital followed an inverted-U path in the United States during the twentieth century. In the first two thirds of the century Americans took a more and more active role in the social and political life of their communities and they behaved in an increasingly trustworthy way toward one another (Putnam, 2000, p. 183). Then, beginning in the 1960s and 1970s and accelerating in the 1980s and 1990s, an erosion of the stock of American social capital started to take place.[7] According to Putnam (1995), this decline in the level of participation in group activities threatened the quality of democracy and the quality of life. He also looks for the reasons underlying the documented fall in social capital and identifies in generational differences, increases in television viewing, commuting times and female labor-market participation the major culprits. As noted by Sobel (2002), Putnam's thesis stimulated a broad range of research activities: cross-national studies of social capital, research into the social capital of firms, and work investigating how trust is created in neighborhoods and in transition economies.[8] Similarly, Halpern (2005, p. 210) stated that "by almost all measures, social capital declined in the USA over the period from 1960 to 2000"...."but this decline follows an earlier period of growth in U.S. social capital stretching back to the beginning of the twentieth century" (citation taken from Sequeira and Ferreira-Lopes, 2011). Costa and Kahn (2003), Bjornskov (2008) and several other scholars also achieve similar results in their empirical works.

The present paper has the following structure. Sections 2 and 3 introduce the model and the related growth dynamics. Section 4 deals with the analysis of the model. Section 5 contains some final remarks. Appendix A concludes the paper.

[4] Glaeser, Sacerdote, and Scheinkman (1996) set up a local interactions model where agents' decisions to commit a crime are influenced by their neighbors' decisions and offer empirical evidence that positive covariance across agents' decisions about crime is a key explanation for variance in crime rates across time and space.

[5] Dinda (2008) sets up a one-sector growth model where the engine of growth is capital accumulation and social capital formation depends on the development of human capital.

[6] The accumulation process of the two forms of capital is also analyzed in Antoci, Sacco, and Vanin (2005). However, in that model there was no endogenous growth of physical capital and the authors did not obtain the inverted-U shaped evolution of social capital result.

[7] One of the main factors, stressed by Putnam, through which economic growth can cause a reduction in social connectedness is technology, which has made news and entertainment increasingly individualized: "Electronic technology allows us to consume hand-tailored entertainment in private, even utterly alone ... the time allocation of Americans massively shifted toward home-based activities (especially watching TV) and away from socializing outside the home" (2000, pp. 216–217 and 238).

[8] Sobel (2002) criticized Putnam's (2000) work, being unconvinced by the details of his argument. In particular, his critique focuses on the causality issue and on the lack of an analytical framework allowing the reader to evaluate the claim that the apparent trends are related. However, it is worth noting that Putnam (2000) appears to be aware that the direction of causality has not been established. Next, even though we agree that it is unclear whether most of the phenomena presented by Putnam can be accounted for within a common framework, we believe that Putnam's thesis on the time evolution of social capital is overall correct. Our model's main prediction is consistent with such thesis, as we show that the time evolution of social capital may exhibit an inverted-U shaped path, according to which the stock of social capital, that is initially increasing, falls as time unfolds.