



Trust and the accumulation of physical and human capital

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ABSTRACT

Recent empirical work has shown that trust plays an important role in economic development. In this paper, we delve deeper into the mechanism behind that relationship. Specifically, we investigate the effect of trust on human and physical capital while controlling for the fact that the two types of capital are simultaneously determined. In a sample of 50 countries from 1976 to 2005, we show that trust has a positive and significant effect on human capital and a non-linear effect on physical capital. Increasing trust in a low-trust country has a greater impact on the accumulation of physical capital than an identical increase in trust in a high-trust country. We go on to investigate the interaction between institutions and trust and find that institutional reform is less effective at promoting investment in countries with high levels of trust.

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1. Introduction

There is a growing consensus among economists that trust plays an important role in economic development. Both cross sectional and panel research have verified that countries with higher levels of trust also have higher per-capita incomes on average. This begs the question as to how trust actually promotes economic growth.

Rather than focusing directly on the relationship of trust and economic growth, as much of the prior research has done, we dig deeper by investigating trust's role in the accumulation of human and physical capital. We estimate an econometric model of the determination of human and physical capital, allowing for simultaneous spillovers between the two. Our results indicate that the two types of capital are indeed simultaneously determined, and that trust is significantly related to the accumulation of both types of capital. We go on to show that while trust has a direct and positive impact on human capital, trust's effect on physical capital investment is non-linear. The relationship between trust and physical capital is characterized by diminishing marginal returns, which implies that increasing trust in a low-trust country will have a greater impact than an identical increase in trust for a high-trust country. We also find an interesting interaction effect between trust and institutions, whereby the effectiveness of institutional reform at promoting investment depends on a country's overall level of trust.

Besides our key findings about trust, we also discover some other interesting results about the determinants of human and physical capital in our sample. We show that government spending and political instability negatively affect physical capital, while lagged real GDP growth and openness increase physical capital investment. Ethnic diversity is negatively associated with human capital, while

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dummy variables representing Protestantism and Catholicism are both positive and significant in the human capital equation. The joint endogeneity of human and physical capital means that the variables that are included in the physical (human) capital equation also indirectly affect human (physical) capital. We calculate the overall effect of these variables to determine their long-run relationship with capital.

Our paper is organized as follows. [Section 2](#) discusses the relationship between trust and human and physical capital. [Section 3](#) outlines our empirical model, discusses the other independent variables in the system and details our identifying assumptions. [Section 4](#) examines the results and analyzes the equilibrium quantitative effects implied by these outcomes. In [Section 5](#), we analyze the robustness of the results by employing a jackknife. We conclude with some closing remarks in [Section 6](#).

2. Trust and capital

While much of the literature on trust has emphasized the relationship between it and economic growth, there has been some work detailing how trust may affect investment in human and physical capital. [Bjørnskov \(2009\)](#), for example, provides several ways in which education decisions are related to trust. First, as [Coleman \(1988\)](#) finds in an examination of the role of social capital on educational outcomes, higher levels of social capital both within the family and outside the family are associated with lower high school dropout rates.¹ As Bjørnskov points out, human capital should be higher in social capital-rich communities due to the fact that non-kin individuals would be willing to help children other than their own, as they trust that other parents would eventually reciprocate the favor. [Putnam \(2000\)](#) finds that even in communities with high levels of material wealth, education of children may be poor if the adults' social networks are deficient.

There are also labor market reasons for believing that trust and education are related. Firms typically hire workers with high levels of human capital to perform complex tasks. Monitoring costs escalate as the complexity of these tasks increase. Under higher trust levels, these monitoring costs are reduced increasing the firm's demand for human capital rich workers. Further, under higher trust levels, workers with high levels of human capital may be better able to cooperate, work, and share information with other workers, thus raising the firm's return to hiring workers with higher levels of human capital.²

Empirically, previous research has confirmed a positive relationship between trust and educational outcomes. [La Porta et al. \(1997\)](#) find that increasing trust by one standard deviation produces a one half standard deviation increase in the percentage of graduates from high school. Likewise, [Knack and Keefer \(1997\)](#) report a positive relationship between secondary education and trust for a cross section of 28 countries. [Bjørnskov \(2009\)](#) finds additional support for this result in an extended cross sectional sample of 52 countries covering the period 1960–2000.

There are also reasons to believe that the level of trust is positively related to the accumulation of physical capital. If both the quality and quantity of information are increased under trust, then firms would not only know about a larger variety of investment opportunities, but they could also more accurately assess their chance of success. Under higher levels of trust, the need for extensive contracts and the probability of outcomes ending in expensive litigation would be reduced as deals might be sealed with as little as a handshake. Higher trust levels would increase investment through trust-induced efficiency gains at the microeconomic level. [Zak and Knack \(2001\)](#) examine the aggregate impact of trust on physical capital using a cross section of 41 countries and find that trust increases investment.³

While some research has studied the link between trust and capital accumulation, all have done so in the context of a single equation model. Our model is unique in that we study trust while taking into account the possibility that the two types of capital may be simultaneously determined. In the next section, we discuss the motivation for modeling trust's effect on factor accumulation using a system of simultaneous equations and we explain the various measures used to identify those equations.

3. An empirical model of trust and capital

3.1. The relationship between human and physical capital

There is a well-developed theoretical literature on the link between human and physical capital. [Nelson and Phelps \(1966\)](#) discuss how education fosters the ability to innovate and assimilate new technology. Likewise, [Fishlow \(1966\)](#) argues that physical capital accumulation in the US was driven by high levels of education in the 1900s. [Romer \(1993\)](#) argues that endogenous growth theory can help formalize the claim that idea gaps (a lack of human capital necessary to sustain economic growth) and object gaps (a lack of physical capital) are related to one another. Countries that lack one type of capital tend to lack the other one as well. If policy could be used to close the idea gap, it would generate external benefits by reducing the object gap.

¹ Social capital refers to the interpersonal relationships that exist between people and other individuals in their communities. [Bjørnskov \(2006\)](#) finds that the main component of social capital for the areas of governance and life satisfaction is trust. [Paldam and Svendsen \(2000\)](#) argue that trust is the key component of social capital.

² [Yamamura \(2009\)](#) examines the relationship between trust and human capital in the growth of the Japanese garment industry in Kojima, Japan over the period 1968 to 2005.

³ While it is possible that capital also influences trust, several authors ([Uslaner \(2008\)](#), [Tabellini \(2008\)](#), and [Algan and Cahuc \(2010\)](#)) note that trust exhibits highly stable behavior over extended periods of time. Trust's stability contrasts sharply with that of physical capital accumulation, which is highly variable over time, a result that suggests physical capital does not cause trust. As for human capital, [Bjørnskov \(2009\)](#) finds that the direction of causality runs from trust to education.

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