



The Productivity of Trust

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Summary. — This paper tests whether social trust affects total factor productivity (TFP). Using both development and growth accounting, we find strong evidence of a causal positive effect of social trust on the level and growth of TFP. We moreover observe that the effect of social trust on TFP runs through economic-judicial institutions, but not through political institutions. Those findings resist a series of robustness checks.

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1. INTRODUCTION

While the concept of social trust originated in sociology and political science, economists quickly joined the research agenda, as early results indicated that such features contributed to explaining economic growth (Helliwell & Putnam, 1995; Putnam, 1993). The work of Knack and Keefer (1997) supported this contention, thereby fueling the economic interest in trust.

The literature has shown that the association between social trust and economic growth is both robust and of economic significance (Beugelsdijk, de Groot, & van Schaik, 2004; Whiteley, 2000; Zak & Knack, 2001), but only hinted at what the transmission mechanisms are.¹ Although the evidence that trust affects the level and growth of output is convincing, it is not clear whether trust affects factor accumulation only or also productivity.

There is consistent evidence that trust affects factor accumulation, as reported in the original contributions of Knack and Keefer (1997) and Zak and Knack (2001). More recently, Dearmon and Grier (2011) show that trust is a determinant of both physical and human capital accumulation and that there seems to be a spill-over between these effects, confirming that trust is an important determinant of factor accumulation. The impact of trust on productivity is more debated. On the one hand, the theoretical literature suggests that social trust could enable cooperation and reduce rent-seeking behavior, thereby increasing total factor productivity (TFP), a point made by Arrow (1972), Putnam (1993) and Fukuyama (1995). On the other hand, the empirical evidence has remained somewhat scarce. In particular, Knack and Keefer (1997) noted a correlation between social trust and labor productivity, but Zak and Knack (2001) found that social trust leads mainly to higher investment in physical capital, i.e., factor accumulation. Conversely, Bjørnskov (2012) finds evidence of a growth effect of trust through improved governance, which is not associated with investment or education. While he notes that this could be interpreted as a productivity effect, it remains speculative as he does not directly measure productivity. Several previous contributions to the trust literature thus suggest that social trust arguably affects productivity but provide no direct evidence.

The question is important because TFP has been shown to be the main driver of economic performance, a standard result of growth accounting, going back to Solow's (1957) first effort. It has been confirmed on a large sample of countries, for instance by Klenow and Rodriguez-Clare (1997), who observed that differences in TFP growth explain the bulk of cross-country growth differences. Similar results have been obtained in studies focusing on specific regions, such as Berthélemy and Söderling (2001) or Gómez-Sancho, López-Pueyo, Mancebón, Sanaú, & Barcenilla-Visús (2013). The development accounting literature, featuring papers such as Hall and Jones (1999) and Caselli (2005), complements growth accounting by decomposing income levels instead of growth rates and comes to the similar conclusion that differences in TFP levels explain the bulk of cross-country differences in per capita incomes. Hence, while the growth accounting and development accounting literatures show that long-run growth and economic development are mainly driven by TFP, the more specific literature on the trust-growth association provides no clear answers as to whether trust affects TFP as well as factor accumulation. In short, we know that trust affects the level and the growth of output, but we do not know whether it affects the main engine of long-run output growth.

This paper, consequently, looks further into the association between social trust and both the level and the growth of TFP. We thus extend the work of Hall and Jones (1999) and Olson, Sarna, and Svamy (2000), who respectively showed a positive relationship between institutional quality and the level and the growth of TFP. In Williamson's (2000) terms, we take the analysis from the second to the first level of social analysis, the social embeddedness level, where norms, traditions, and basic beliefs are located. Firstly, we find a clear and robust

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association between levels of TFP and social trust. We next observe a clear and robust relation between social trust and the growth of TFP. Most importantly, we find in both instances that trust affects TFP by increasing the quality of formal institutions, i.e., the enforcement quality of formal legislation and regulations. More precisely, we find evidence that the transmission channel of trust to TFP to be economic-judicial institutions that protect property-rights, but not institutions that define the political system and the degree of democracy (political institutions). We therefore find that a dimension of the first level of social analysis, the set of unwritten rules and conventions of society, affects TFP through a specific dimension of the second level of social analysis, the written rules and their enforcement.

Across all those steps, we systematically consider both the level and the growth of TFP. We do so because although growth and development accounting have evolved as complementary but distinct strands of literature, they lead to the same conclusion on the importance of TFP. Moreover, TFP levels capture long-run economic performance, as [Hall and Jones \(1999\)](#) argue, while TFP growth captures transitory dynamics. Studying both the long-term impact of trust and its relationship with the catching-up process provides a more comprehensive view of the impact of trust on economic performance.

The rest of the paper is structured as follows. Section 2 discusses the theoretical reasons to believe that social trust affects TFP. Section 3 describes the data used in the empirical Section 4. Section 5 concludes.

2. WHY WOULD TRUST AFFECT PRODUCTIVITY?

A basic theoretical question to ask is why we would expect social trust to affect TFP. The literature on the association between trust and economic growth surveyed by [Bjørnskov \(2009a, chap. 20\)](#) provides a number of clues. The arguments can be split into two different strands: (1) mechanisms directly enabling pro-social behavior and improved information flows; (2) indirect mechanisms associating trust with better formal institutions that in turn affect economic outcomes.

(a) *Economic effects connecting trust and TFP*

[Knack and Keefer \(1997\)](#) provided a series of arguments relating trust to productivity. They first note that with higher levels of trust comes a lesser need to devote resources to securing individuals and firms from theft and expropriation, which allows the reallocation of resources from protection to actual production. Moreover, higher levels of social trust reduce the transaction costs implicit in any economic activity, as trust reflects the average trustworthiness of people and thus the likelihood that they abide by both formal rules and informal social contracts ([Arrow, 1972](#)).² As a result, trustworthiness allows the production of a larger output with the same endowments of production factors. This is what TFP measures at the aggregate level.

By the same token, trust in other people implies that firms can apply longer time horizons when taking investment decisions, which allows them to invest in riskier, but potentially more productive processes. A related mechanism stressed by [La Porta, Lopez-de-Silanes, Shleifer, and Vishny \(1997\)](#) is that high levels of social trust allow economic agents to write shorter contracts, covering only broad contingencies. Trust would therefore allow contracting for productivity gains, since such gains cannot logically be precisely described or covered by contractual contingencies. By the same token, [Matsuyama](#)

(2014) provides a formal model relating the quality of investment to the intensity of agency problems on countries' financial markets. One may easily argue that that intensity is directly affected by trust, as originally suggested in [Zak and Knack \(2001\)](#). Assuming that agency problems are also more serious for more profitable projects, [Matsuyama \(2014\)](#) argues that entrepreneurs in countries with more serious agency problems will choose less profitable projects, resulting in lower aggregate productivity. [La Porta et al.'s \(1997\)](#) argument is consistent with [Dearmon and Grier's \(2009\)](#) finding that the marginal impact of investment on growth is larger in more trusting economies. One interpretation of their result is that the quality of investment is larger in higher trust countries, leading to productivity gains in addition to the accumulation of physical and human capital.

A second series of mechanisms relates trust to innovation and technical progress. [Knack and Keefer \(1997\)](#) note that research activities are essentially non-monitorable. As [Maskell \(2000\)](#) notes, market interactions are generally incapable of transmitting the information needed to develop new products in interaction between firms, because the distribution of information between the seller and the buyer regarding the main characteristics of what is offered for sale is asymmetric. This problem and the characteristic of non-monitorability imply that firms either have to closely screen information or trust the agents providing it. The optimal screening effort is consequently decreasing in social trust, which affects the transaction cost of hiring the most productive employees. This means that firms in high-trust societies are both more likely to be close to the technological frontier and more likely to adopt new technologies earlier ([Bornschieer, 2005](#)).

Emphasizing a related indirect mechanism, [Bjørnskov \(2009b\)](#) presents a simple growth model in which firms' investment in labor-augmenting technological improvements is determined by the costs and necessity of monitoring skilled employees with complex work tasks. As high-trust employees are both better at cooperating and need less monitoring, social trust affects TFP through its effects on the demand for higher education. The model also suggests an effect through norms of cooperation, consistent with [Dearmon and Grier's \(2009\)](#) finding that trust increases the impact of education on growth. If education in high-trust countries has an impact that goes beyond the accumulation of human capital, it must impact TFP growth.

Building on Austrian entrepreneurship theory ([Kirzner, 1997](#)), [Ikeda \(2008\)](#) argues that a minimum of social trust is necessary to access the information available in networks through what [Granovetter \(1973\)](#) termed "weak ties", social ties to people one either does not know or barely knows. Trust therefore allows entrepreneurs to access a wider range of knowledge resources. High-trust societies should consequently have a competitive edge in innovative activities. [Kwon and Arenius \(2010\)](#) present cross-country evidence supporting these links between trust, weak tie investments and entrepreneurial activity. The idea is further corroborated by [Akçomak and ter Weel \(2009\)](#), who find that trust significantly affects patentable innovation activity, measured by the number of patent applications in European regions. As patents are bound to affect productivity, trust would correlate not only with the level of TFP but also with its growth.

One may connect trust and TFP through its influence on tolerance of atypical behaviors and lifestyles. [Florida and Gates \(2001\)](#) and [Florida \(2002\)](#) argue that innovations typically come from atypical groups, while [Uslaner \(2002\)](#) shows that trusting individuals are, on average, more tolerant of different lifestyles. The adoption of innovations would be more likely in

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