NORMS, VALUES, AND TECHNOLOGICAL CHANGE

BY

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Summary

Within the context of a repeated game framework, this paper formalizes various roles of norms and values in facilitating economic cooperation. Moreover, the paper explores how technological progress in general and information and communication technology (ICT) in particular affect these roles.

1 INTRODUCTION

This paper serves two purposes. First, whereas the literature on the economics of law enforcement has studied various institutions encouraging cooperation and discouraging aggression (see, e.g., Becker 1968 and Grossman and Kim 1995), we formalize the various roles of norms and values in reducing transaction costs and enhancing economic cooperation within the context of a repeated game framework. We define norms as codes of conduct that facilitate human interaction and values as preferences that do so. Our definition of norms as rules implies that norms do not necessarily have a moral character. The second purpose of the paper is to explore several channels through which technological progress in general and information and communication technology (ICT) in particular affect the roles of norms and values in enhancing cooperation. By investigating this question, this paper addresses the interaction between social capital and technological capital. Are these two types of capital complements or substitutes? Do new, dynamic technologies crowd out stable, time-honored norms and values or do they foster them?

The rest of the paper is organized as follows. Section 2 first explores two formal institutions for addressing the prisoner’s dilemma, namely private contracts and public laws. In elaborating on informal contract enforcement, section 3 formalizes the coordination mechanism of cooperative exchange as a self-enforcing contract in a repeated prisoner’s dilemma. Section 4 employs this formalization

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of implicit contracts to discuss various roles of norms and values in facilitating commitment to these self-enforcing contracts. Subsequently, section 5 investigates how information technology affects these roles. Section 6 concludes.

2 RESOLVING THE PRISONERS’ DILEMMA

The major coordination problems in economics – including externalities, hold-up, moral hazard, adverse selection, and public goods – can be viewed as variants of the prisoner’s dilemma. The payoff structure of the prisoner’s dilemma game implies that, in the absence of further constraints, the dominant strategy for each of the two players is to act non-cooperatively – even though the players would be better off if both of them would play cooperatively. The reason for this inefficient outcome is that the players fail to internalize the external effects they impose on other players (see van de Klundert (1999a)).

Figure 1a illustrates the prisoner’s dilemma in the context of a market transaction of a commodity between a supplier and a demander. The supplier and demander attach values to this commodity of \( s > 0 \) and \( d > s \), respectively. Accordingly, the market exchange creates a value of \( d - s > 0 \). In particular, exchanging the commodity at a price of \( 1/2(s + d) \) yields a welfare gain of \( 1/2(d - s) > 0 \) to both parties. However, taking as given the action of the supplier, the demander is best off by not paying the supplier. In this way, the demander ensures that he is not taken advantage of if the supplier does not deliver the goods: he avoids a welfare loss of \( 1/2(d - s) \) in this case. If the supplier comes through on delivering the commodity, the demander derives an additional benefit if he does not pay: the demander enjoys a benefit \( d \) rather than only \( 1/2(d - s) \). Accordingly, irrespective of the action of the supplier, the demander’s best course of action is not to pay. This is thus his dominant strategy. The supplier goes through similar reasoning when deciding whether or not to deliver the commodity. Irrespective of whether the demander pays, the supplier is best off not delivering the commodity. The result of the dominant non-cooperative strategies of the transaction partners is that the value-creating transaction does not occur: the buyer does not pay and the supplier fails to deliver the commodity.

By changing the structure of the prisoner’s dilemma, various institutional arrangements can ensure that the players internalize external effects. In this way, these institutions encourage agents to select a cooperative strategy, thereby enhancing efficiency. One such institution is a private contract enforced by an independent, impartial judiciary. Such a contract involves extending the prisoner’s dilemma with an additional, initial stage. In particular, before they actually play the second stage of the game, the players agree to change the payoff structure during this second stage to ensure that the dominant strategy is to play cooperatively. Such an agreement imposing constraints on the rest of the game can be