Supply Chains of Opportunity: The Role of International Standards In Global Development

Philip Auerswald, George Mason University[1] and Brian Higginbotham, George Mason University

Abstract

This paper studies the impact on global development of codification through international standards. Standards are one form of codified knowledge practical knowledge that have been critical in sharing technical knowledge and expanding the reach of market opportunities. Employing panel data on firms from Eastern Europe and Central America will we study the impact of standards adoption on outcomes at the scale of the firm and the region.

Background

The two greatest innovations of the past quarter century arguably have not been products, but standards: the TCP/IP protocol that constitutes the underlying architecture of the Internet, and the Global System for Mobile Communications (GSM), which has made the revolution in mobile technologies possible.

The set of organizational and technical standards developed and maintained by the International Standards Organization has also been a powerful driver of global development. Just two years after Vannevar Bush published *Science: The Endless Frontier* (1945), the United States and other leading powers created the International Organization for Standardization (ISO). This complemented existing national standards bodies—such as the American National Standards Institute (ANSI) in the United States, and the British Standards Institute (BSI) in the United Kingdom—but provided a wider forum for the agreement, adoption, and dissemination of standards. Among the drivers of beneficial trade, international standards are among the least studied but may be among the most important.[2]

Most productive knowledge is firm-specific. Producers far from dominant production clusters in particular must learn to produce through a process of trial and error.[3] This process is not limited to entrepreneurship in the developing world. Standards played a crucial role in the transition from manufacturing to knowledge based economies in the now industrialized world.

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[1] Email: auerswald@gmu.edu

[2] Among the few firm-level studies of the decision to seek certification from global standards bodies is Chen, Maggie Xiaoyang, John Wilson, and Tsunehiro Otsuki. 2008. "Standards and export decisions: Firm-level evidence from developing countries." *The Journal of International Trade & Economic Development* 17(4): 501-523. See also J. Luis Guasch, *Quality Systems and Standards for a Competitive Edge*, Washington DC: World Bank Group.

[3] Arrow, K. J. 1962. "The economic implications of learning by doing." The review of economic studies 29(3): 155–173.

We hypothesize that international standards provide at least three benefits to entrepreneurs in developing and middle-income countries. First, adopting ISO standards eases entry into production and distribution networks on a global scale. Second, achieving functional compatibility and interoperability according to global norms ease adoption of platform technologies, or general purpose technologies (GPT). Finally, the process of obtaining and maintaining standards-certification can serve as an important learning tool.

Methods

We will employ data from the World Bank Enterprise Surveys and the World Bank Technical Barriers to Trade data to study the impact of standards at the firm level and at the regional level. The data cover 2002-2011, with each country being surveyed every 3 years, on a staggered basis. The dataset includes full panels only for Eastern Europe and for Central America. Controls included in the dataset include productivity and export levels.

Restricting out attention to The Central America and Eastern Europe panel data subsets, we will construct matched pair sample to study the effect of standards on outcomes at the firm level. We will seek to test each dimension of the hypothesized effect of standards on firm-level outcomes.

We will separately aggregate data at the city level to study the effect of increased rates of standards adoption on regional outcomes.

In both cases we will focus our methodological choices on addressing the evident endogenity of the firm's decision to seek standards certification to begin with.