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The politics of intellectual property rights regimes: An empirical study of new technology use in entrepreneurship



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ABSTRACT

This study examines interactions between political processes and intellectual property rights regimes that can influence the propensity of early-stage entrepreneurs to employ the latest available technologies in their ventures. We argue that the effects of intellectual property regimes are moderated by the nature of a country's political system, including the influence of Pirate parties, which advocate for minimal intellectual property enforcement. We combine large-panel cross-country survey data on entrepreneurs and country-level measures of polity (democracy versus autocracy) and intellectual property rights with a new measure (created by the authors) estimating the influence of Pirate parties. Results indicate that entrepreneurs in more democratic (high polity) countries enjoy higher levels of technology usage as intellectual property rights strengthen. By contrast, entrepreneurs in more autocratic (low polity) countries are less likely to use the latest technology as intellectual property rights strengthen. The influence of Pirate parties makes strengthening intellectual property rights more positive for technology use in entrepreneurship. These results contribute to the literature examining institutional and political determinants of high-value forms of entrepreneurship—which may hinge on the extent to which entrepreneurs' interests are considered by technology and intellectual property policy-makers.

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1. Introduction

Debates about the effects of regimes governing intellectual property rights (IPR) abound in the entrepreneurship, managerial, economic and legal literatures (Candelin-Palmqvist et al., 2012; Lemley, 2012). However, relatively little has been demonstrated empirically about how IPR regimes affect the likelihood that entrepreneurs will find the use of the latest available technologies feasible in their ventures. Yet, the use of new technologies is critical for effective entrepreneurship via disruptive innovation (Christensen, 1997; Christensen and Bower, 1996). Since most intellectual property rights expire (e.g., patents typically last 20 years in the U.S.), it is mostly the latest available technologies that are restricted meaningfully by monopolies. Thus, IPR regimes constitute a key technology strategy concern for entrepreneurs expecting knowledge spillovers in the form of easy component

acquisition and usage in the recombinatory processes (Acs et al., 2009) essential to technological innovation (Fleming, 2001).

IPR regime strength is a technology policy issue with different implications for incumbents and new entrants. Typically, incumbent suppliers with superior technology portfolios prefer strong monopoly rights that maximize rent appropriation (Teece, 1986). However, for early-stage entrepreneurs seeking to use the latest available technologies, strong IPR regimes may represent entry barriers. IPRs affect early-stage entrepreneurship by impeding knowledge spillovers to entrepreneurs (Acs et al., 2009), thus potentially compromising the effectiveness of the process of recombination that normally enables technological innovation. The entrepreneurial intentions of cash-strapped early-stage entrepreneurs may be particularly harmed when the prerequisite components (e.g., web servers) they need are tied up by excessive licensing costs (Acs and Sanders, 2008).

Politics affect the institutions that regulate all forms of economic exchange (Williamson, 2000). We expect that polity—defined as the degree of political democracy (as opposed to autocracy) in a country context—should increase the ability of entrepreneurs to use the latest technologies in their ventures. Technology entrepreneurs operating in the presence of more autocratic political systems may need to fight against politically connected interests using

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repression masquerading as IPR enforcement (Durand and Vergne, 2013). In authoritarian systems, small entrepreneurs may struggle to participate in shaping the rules of the game in their favor (Spencer et al., 2005). By contrast, democratic political processes should allow potential and actual technology-entrepreneurs to influence the laws that regulate their entrepreneurial behaviors. For a real case, we empirically examine the participation of Pirate parties, which may directly benefit some classes of technology-using entrepreneurs.

We test our hypotheses in a sample of 23,179 entrepreneurs from 42 countries participating in Global Entrepreneurship Monitor (GEM) survey (Reynolds et al., 2005) between 2005 and 2008. This database is complemented with national data on IPR from the Global Competitiveness Index (Schwab et al., 2011), Polity data from the Polity IV database (Marshall and Jaggers, 2012), and data on the influence of Pirate parties using a new measure proposed by the authors—only three of the countries in our sample have no Pirate party representation.

The study results indicate that (1) *Polity* moderated the effect of IPR on technology use in entrepreneurship. As IPR strengthens, its effect is positive when polity is high (democracy), whereas its effect is negative when polity is low (autocracy). Also, (2) the influence of *Pirate parties* moderated the effect of IPR on technology use in entrepreneurship. As IPR strengthens, its effect is more positive when Pirate parties are present and more negative in their absence.

This paper contributes to technology policy development by corroborating that political processes are important moderators of IPR, with respect to their influence on technology use by entrepreneurs. Policymakers that wish to pursue economic development via the path of technology use by domestic entrepreneurs should design their IPR regimes with early-stage entrepreneurs' interests in mind, and should interpret the prevalence of Pirate parties as a signal that enforcement may be stifling innovation by entrepreneurs. More generally, we show that the effects of formal institutions depend on the extent to which the political systems and processes of a country allow them to adapt to the requirements of productive classes, lest they be pushed toward less productive entrepreneurial behaviors (Baumol, 1990).

This paper proceeds as follows. First, we cover the relevant literature on our main factors of interest: polity, Pirate parties, IPR, and new technology use in entrepreneurship. Next, we develop three hypotheses regarding the moderating effects of polity and Pirate parties. Then, we explain our multi-level modeling methods and present and interpret our results. Finally, we discuss the implications of our study for the academic literature, technology policymakers and practicing managers, and conclude the paper.

2. Theory and hypotheses

Not all forms of entrepreneurship are equal with respect to their impact on economic growth. A typical U.S. entrepreneurial venture has only tens of thousands of dollars in capital, and is engaged in retail or personal services (Hurst and Lusardi, 2004). Many of these businesses are home-based, do not provide employment except as supplementary income for the entrepreneur (Armington and Acs, 2004; Haynes, 2001; Pratt, 1999), and tend to go out of business within five years, often because they are less productive than incumbent firms (Knaup, 2005; Persson, 2004). Unfortunately, many entrepreneurs also choose industries that are already highly competitive because of low entry barriers (Johnson, 2004).

Nonetheless, the small and medium size enterprise literature suggests that new technology adoption increases economic performance (Stoneman and Kwon, 1996). The use of the latest

technologies may allow firms to achieve competitive parity with incumbents and to engage in recombinatory processes aimed at generating innovations (Fleming, 2001; Schumpeter, 1934). However, the positive effect of new technology adoption is also moderated by forces such as the investment climate of a country (Correa et al., 2010), and may be affected by the degree of trust among stakeholders (Chang and Wong, 2010), as well as organizational learning (Tippins and Sohi, 2003), business strategy (Zahra and Covin, 1993), and the architectural interdependence of the technology (Adner and Kapoor, 2010). Higher productivity is available to firms that adopt new technologies, especially if they simultaneously invest in training (Boothby et al., 2010). Majumdar and Venkataraman (1993) find that new technology adoption is affected by incentive systems within firms and the nature of the competitive environment. New technology is also more likely to be adopted by firms with younger stakeholders (Meyer, 2001).

The factors that reduce technology adoption include internal and external pressures, as well as processes, thus comprising at least two different levels of analysis, requiring a multi-level theoretical and empirical approach. We still know relatively little about the factors that increase entrepreneurs' use of new technology in their ventures. Entrepreneurs choosing new technology may be affected more severely by institutions such as IPR regimes. IPR may be much more important to the success or failure of entrepreneurs because the patent system and copyright laws are key institutions governing access to resources they need (Acs and Sanders, 2008; Teece, 1986).

2.1. Intellectual property rights regimes and new technology use in entrepreneurship

Formal institutions, such as IPR regimes, affect the search and reaction behaviors of entrepreneurs by changing incentive structures for choosing entrepreneurial careers (Eckhardt and Ciuchta, 2008; Hwang and Powell, 2005; Krueger et al., 2000). IPR regimes affect the transaction costs involved in the acquisition and use of the latest available knowledge and associated technologies (Grant, 1996; Teece, 1986; Williamson, 2000). IPR regimes may be more important for ventures engaged in knowledge-based transactions and acquisition, which may help explain why the level of IPR protection varies meaningfully across countries and industries (Oxley, 1999).

We know that as IPR regimes become too tightly enforced, they can start to stifle innovation (Acs and Sanders, 2008). IPRs assist technology-entrepreneurs by helping them to protect their ideas from imitators, but the threat of being accused of infringement may be much worse (Lemley, 2012; Teece, 1986). IPR may restrict the latest available components and resources by increasing early costs and reducing access to key technologies (Autio and Acs, 2010), thus impeding the imitative and re-combinatory processes that yield capabilities (Fleming, 2001). Although the strength of IPR may thus seem to be an important predictor of the propensity of individuals to employ the latest technology, it may actually be the designs of formal institutions (e.g., copyright law and the patent system) that matter more—especially the extent of participation that is allowed by entrepreneurs whose interests are at stake. In short, strong IPR could be good for all, if it is designed with both the interests of incumbents, multinationals, and new entrants, especially early-stage entrepreneurs.

2.2. Polity and new technology use in entrepreneurship

More democratic political systems rank high in polity because they tend to have competitive politics, unrestricted political participation, election-based executive recruitment, and constraints imposed on the chief executive (Marshall et al., 2002). Przeworski and Limongi (1993) reviewed the link between polity scores and economic growth and

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