

The Costs of Using Formal Intellectual Property Rights

A Survey on Small Innovative
Enterprises in Latin America

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Abstract

This document analyzes the perceptions of small innovative enterprises (SIE) in Latin America of the effectiveness of the legal protection afforded by intellectual property rights (IPR). To analyze the costs of using IPR, the study surveyed 352 SIEs from Chile, Colombia, Costa Rica, Ecuador, Mexico, and Peru. It found evidence that SIEs do not know how the IP system works, and that most SIEs consider that knowing how it works is not important for business performance. The study finds large differences among countries with respect to the need to hire legal services to apply for IPR. There are also differences in perceptions of the efficiency of the IP system, unrelated to the countries' IPR enforcement (Park, 2008). The study also finds differences in the perception of the disadvantage in protect their IPR when innovations are imitated by a large firm. This difference is related to the countries' IPR enforcement.

JEL Codes: L26, N76, O31, O32, O34

Keywords: entrepreneurship, innovation, intellectual capital, intellectual property rights, Latin America, small business

1. Introduction

This study was conducted as part of the project entitled “The Cost of Intellectual Property Rights: A Survey of Latin American SMEs” (RG-K1341), coordinated by the Competitiveness, Technology, and Innovation Division of the Inter-American Development Bank (IDB). Its purpose was to illuminate the underlying reasons why small innovative enterprises (SIEs) face incentives to underuse formal intellectual property rights (IPR) to protect their innovations.

Specifically, the objective of the study was to gather and analyze the perceptions of these firms to assess the existence of costs of using formal IPR versus other protections (e.g., secrecy). The study was conducted in six Latin American countries: Chile, Colombia, Costa Rica, Ecuador, Mexico, and Peru. A preliminary study of three countries (Chile, Colombia, and Mexico) found some evidence suggesting that SIEs lack awareness, lack knowledge, and exhibit cognitive bias (De Leon and Fernandez, 2015). This paper analyzes the results of expanding the survey to three additional countries: Costa Rica, Ecuador, and Peru.

There is a vast economic literature on the gains accrued from an IPR system (Fisher, 2001; Johnson, 2011; Stiglitz, 2014). Presumably, the most influential theory in economics uses a neoclassical economic perspective of law (Posner, 1980) to emphasize the inter-temporal incentives of using IPR to innovate. According to this theory, intellectual property (IP) provides ex ante incentives that increase the efforts to innovate by privatizing the surplus of innovation through monopoly rights to the innovator.

However, few firms use patents to protect their intellectual property (Bound et al., 1984). According to the “Business R&D and Innovation Survey” (NSF, 2008), the number of U.S. firms that had never used utility patents was 96 percent, and 95 percent had never used design patents. If only firms engaging in formal research and development (R&D) are considered, only 26 percent had ever used patents.

Indeed, every innovator faces the tradeoff of using formal IPR (e.g., patents, designs, copyrights, etc.), that is, either disclosing the innovation or keeping the idea to him or herself. As with all economic tradeoffs, this decision depends on the costs and benefits of each action. If keeping the innovation secret is more costly than using IPR (i.e., imitation risk is greater than the cost of applying for a patent), then IPR should be preferable to secrecy. These costs depend on different factors, such as product characteristics (Anderson, 2011; Fernandez Donoso, 2014; Moser, 2013), product cycle (Bilir, 2014), and strategic reasons (Hall et al., 2014; Noel and Schankerman, 2013).

In a previous study conducted as part of this project, we contended that these costs are not absolute; rather, they are contingent on the cognitive perception of IP system users. Therefore, perceptions about the expediency and effective use of the legal system are as important as the absolute costs involved (De Leon and Fernandez Donoso, 2015). This paper expands the original universe of countries and evaluates the perceptions of SIEs according to their responses. The remainder of this paper is organized as follows. Section 2 explains the hypotheses and setting of the study, Section 3 analyzes the responses and findings, and Section 4 concludes.

2. Hypotheses and Setting of the Study

Hypotheses

This paper tests three hypotheses on the costs that would prevent Latin American SIEs from using IPR optimally:

Hypothesis 1: SIEs perceive high learning and legal costs of applying for formal IPR.

Hypothesis 2: SIEs consider that the legal system is inefficient in protecting their innovation during the application process.

Hypothesis 3: SIEs perceive that they are at a disadvantage with respect to large firms in defending their rights in the event of imitation.

Sample Selection

Finding small businesses with real new-to-the-market innovations is a difficult task in Latin America, as most innovations remain outside the patenting system. Gathering data that would be representative of local innovative firms required a two-stage sampling method. In the first stage, we collected as many innovative businesses as possible that are using formal or informal IP protection. To do so, we contacted national patenting offices, government agencies in charge of competitiveness, entrepreneurs' associations and accelerators, angel investors, business and startup incubators, and university spinoff incubators. From this compilation of firm information, we generated a universe of domestic SIEs. This universe comprised firms from a variety of industries: nanotechnology, software, food processing, textiles, agricultural technology, and chemicals, among others. Given the budget constraints of this research, in the second stage we randomly selected firms to be interviewed, without regard to industry.

Table 1: Number of Firms by Country

Country	Number of innovative firms interviewed
Chile	50
Colombia	50
Costa Rica	61
Ecuador	70
Mexico	50
Peru	71
Total	352

Given the sampling method and the number of cases gathered, these findings should be interpreted as a first attempt to explore these questions and shed light on this IP puzzle, rather than definitive findings. Ideally, the selection process should have taken into account the vast heterogeneity of industries and randomized the sample by industry group.

From the randomization process we gathered a sample with a composition very similar to each national universe of SIEs in terms of IP use. Indeed, in the original universe, the proportion of SIEs with at least one patent application was 23 percent for Chile, 40 percent for Colombia, 23 percent for Costa Rica, 20 percent for Ecuador, 45 percent for Mexico, and 18 percent for Peru.

Table 2: Sample Firms' Use of IPR

	Chile	Colombia	Costa Rica	Ecuador	Mexico	Peru
Patents	13	20	17	15	25	14
Design patents	5	4	6	5	10	4
NDA's	0	3	12	1	12	5
Utility models	2	9	2	0	9	12
Geo. indication	6	0	0	0	1	0
Trademarks	32	11	37	23	31	10
Copyrights	9	2	5	7	18	0
Firms using IP protection	35	31	51	26	36	23
Firms using no IP protection	15	19	10	44	14	48

Study Implementation

To contrast the three hypotheses, we evaluated the perceptions of entrepreneurs about the efficacy of the IP system for each country in the study. The study assessed the opinions of 352 businesses on four dimensions: (i) the time required to obtain IPR; (ii) the definition of what is likely to be protected; (iii) uncertainty about whether the innovation could be imitated during the

IPR application process, and (iv) the ability of institutions to exercise protection of innovations after obtaining IPR.

To better understand this puzzle, we queried the SIEs in the sample about their beliefs and attitudes toward the IP system. The objective was to identify and analyze the perceived costs of using formal IP. Between June 2013 and September 2014, we interviewed 352 SIEs in six countries, asking specific questions about their performance, innovation, imitation concerns, and the perceived costs of using formal IP.

Using a semi-structured interview, we asked each entrepreneur, firm owner, or CEO how they perceived their own knowledge of their national IP system. After they explained their perception of how comfortable they felt about their knowledge of their IP institutions, we asked how important they believed that their understanding and knowledge of the IP system was for their business performance.

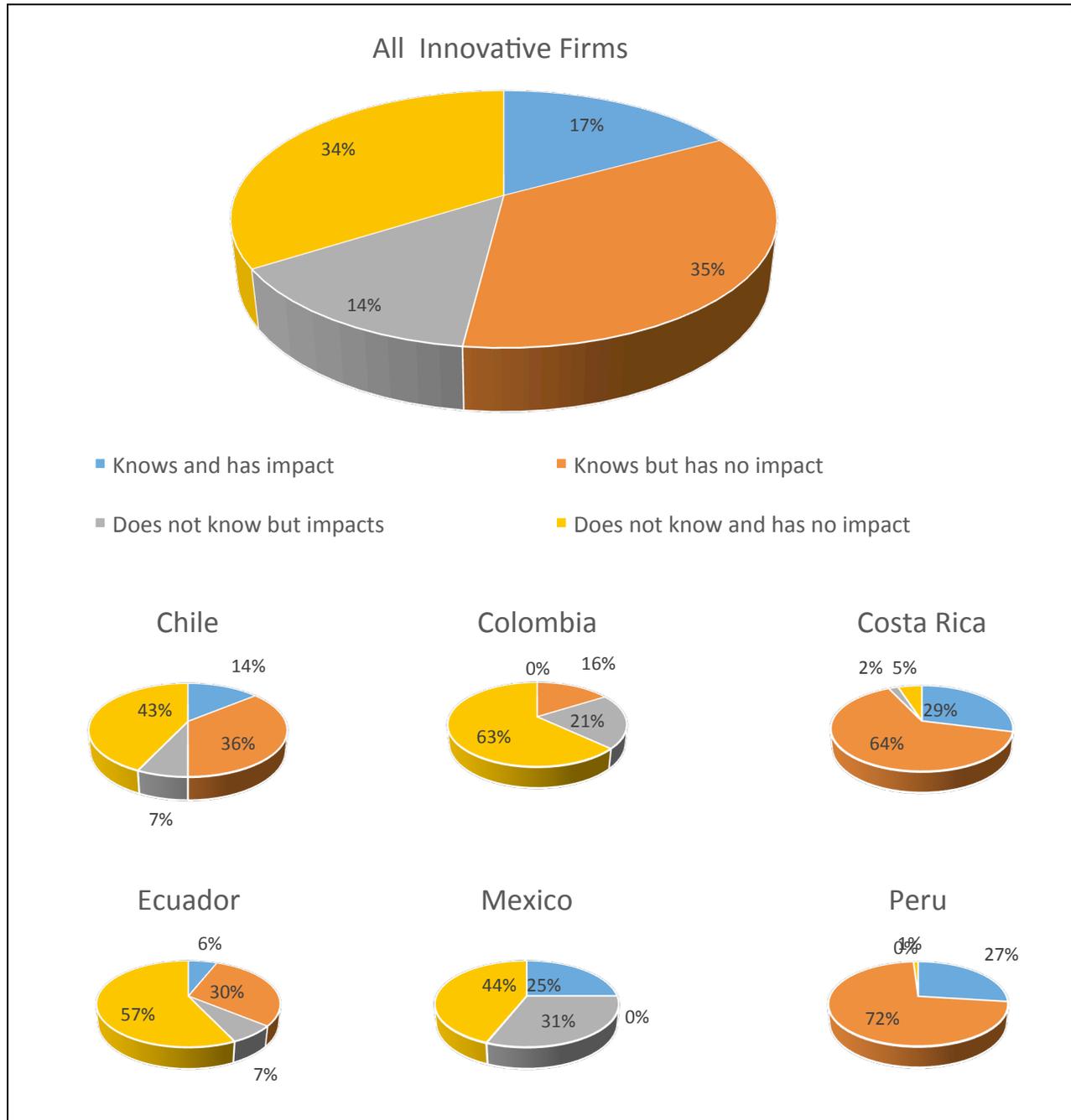
3. Results

The first part of the interview asked SIEs about the cost of applying to different IPRs. The transcribed interviews allowed us to analyze their responses and classify them into four groups:

- (i) businesses whose owner or CEO considered that she or he did not understand the system, but understanding it would have no impact on performance;
- (ii) businesses whose owner or CEO considered that she or he did not understand the system, but understanding it would improve the firm's performance;
- (iii) businesses whose owner or CEO considered that she or he understood the system, but this knowledge had no impact on the firm's performance; and
- (iv) businesses whose owner or CEO considered that she or he understood the system, and his or her knowledge has an impact on the firm's performance.

Figure 1 depicts the distribution of these business types overall and by country.

Figure 1: Knowledge of IP System and Perceived Impact of IP Strategies on Innovative Firms



Source: Authors' calculations.

Overall, 69 percent of the SIEs interviewed considered that understanding how the IP system works has no impact on the performance of the business. Among those who consider that IP knowledge is relevant for business performance, only 54 percent think they understand the system well enough to use it.

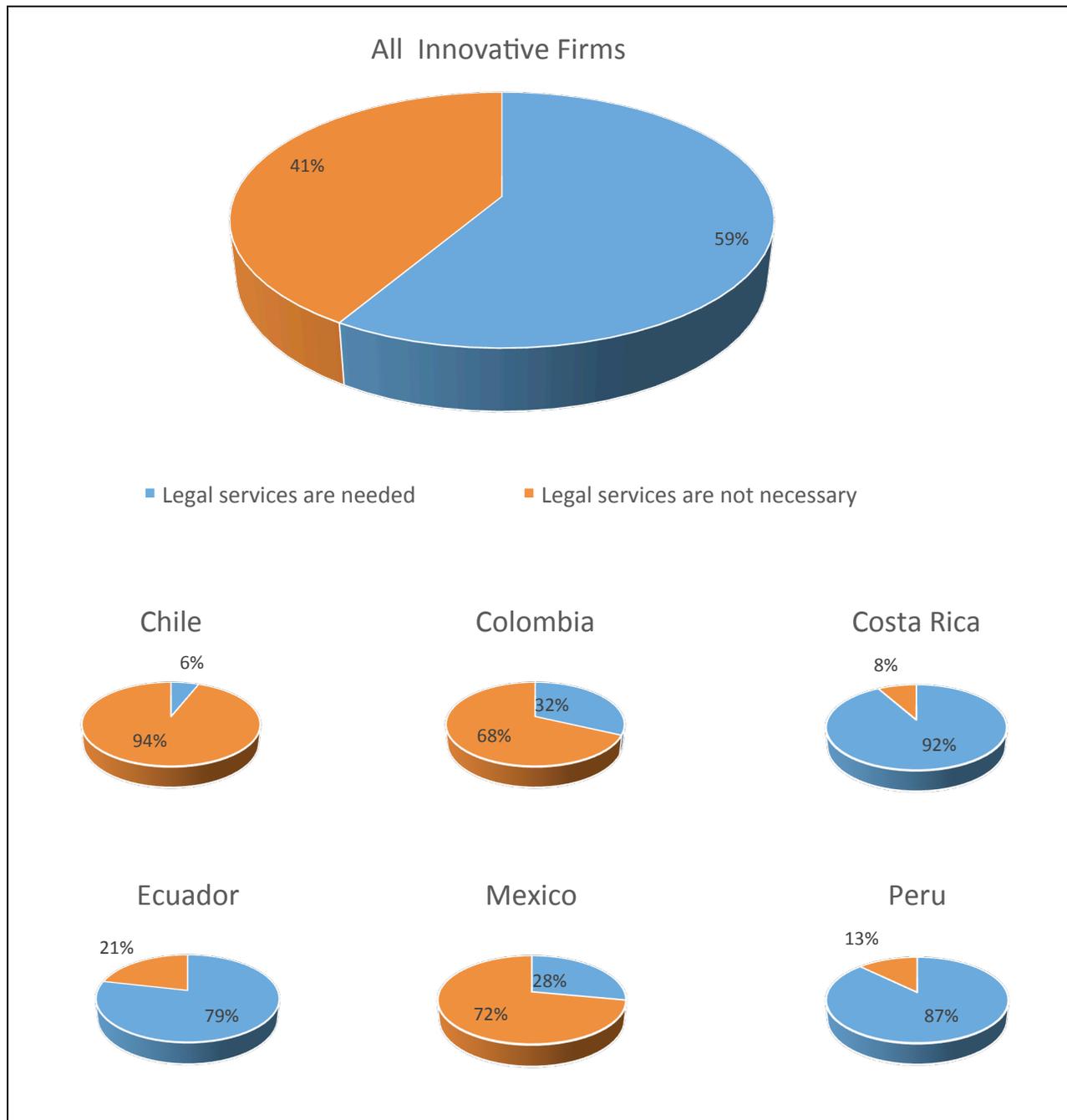
However, the results varied considerably among countries. In Chile, while exactly half of the businesses interviewed considered that they understand the IP system, 79 percent of all businesses considered that understanding the IP system has no impact on firm performance. Seventy-nine percent of firms interviewed in Colombia, 69 percent of the sample from Costa Rica, 87 percent from Ecuador, and 73 percent from Peru shared the perception that understanding the IP system is not useful. Only in Mexico, the number of businesses considering that a proper understanding of the IP system has an impact on firm performance is over 50 percent. Nevertheless, 55 percent of Mexican firms that believed that understanding the IP system has an impact on business performance considered that they did not know enough about how the system works.

Result 1: *Except for SIEs in Mexico, the majority of SIEs do not consider that understanding IPR would have a positive impact on their business' performance.*

Result 2: *Except in Costa Rica and Peru, an important percentage of SIEs (between 43 percent and 63 percent) does not know the system, and does not consider that knowing it would somehow improve their business' performance.*

Understanding the IP system seems to be irrelevant for a large number of SIEs. An alternative solution for them may be outsourcing this service (i.e., hiring legal services). When analyzing the responses to the question, "Are legal services needed to successfully apply for an IPR?," not all firms perceive that there are relevant costs associated with using the IP system, specifically legal costs (i.e., hiring legal services). While 40 percent of firms consider that hiring legal services is not needed and 60 percent feel that it is needed, the proportion of firms considering that legal services are needed is still much lower than the proportion of firms that have never used the patenting system.

Figure 2: Are Legal Services Needed to Successfully Apply for an IPR?



Source: Authors' calculations.

This distribution of firms considering that legal services are needed varies considerably between countries. Moreover, in Chile, the majority of respondents indicated that such costs were borne by the intellectual property office, INAPI.

When plotting this distribution with an international index of IPR protection (Park 2008), there is a clear negative correlation between the perception of needing legal services to use the formal IP system and IPR protection in the country (Figure 3).

Figure 3: Innovative Firms Stating that Legal Assistance and IPR Enforcement are Needed



Sources: Authors' calculations; Park (2008).

This perception of needing legal services is not statistically different when comparing the perceptions of patent users to the perceptions of those that have never applied for a patent (Table 3). If countries are considered separately, among SIEs that have used patents, a higher proportion of Chilean and Mexican SIEs consider that legal advice is needed than do those that have never used patents.

Table 3: Statistical Differences in Perception of Legal Services Needs between Users and Non-users of IPR (*probit*)

	All	Chile	Colombia	Costa Rica	Ecuador	Mexico	Peru
Patents	0.143 (1.00)	1.017* (1.75)	0.312 (0.83)	0.243 (0.50)	-0.501 (-1.51)	1.095** (2.24)	0.44 (1.32)
Trademarks	0.739*** (4.95)	1.437** (1.99)	0.0880 (0.24)	0.451 (1.03)	1.258** (2.14)	1.175* (1.65)	0.734** (2.03)
NDAAs	0.629** (2.27)	-0.00371 (-0.00)	N/A	N/A	-0.143 (-0.18)	0.248 (0.48)	N/A
N	352	50	50	61	70	50	71

Source: Authors' calculations.

Notes: * p<0.1, ** p<0.05, *** p<0.01

Result 3: *The perceived need for legal services varies considerably between countries (ranging from 6 percent to 92 percent of the SIEs interviewed). Except in Chile and Mexico, SIEs that have applied for a patent do not perceive that legal services are needed for a successful application any more than the SIEs that have never applied.*

This study also found that SIEs attach little importance to the costs associated with registering their intellectual property, including the payment of fees. The irrelevance of fees to the decision to register was corroborated by the implementation of some initiatives to reduce registration fees for inventions and utility models to national companies, universities, and research centers (De Leon and Fernandez Donoso, 2015).

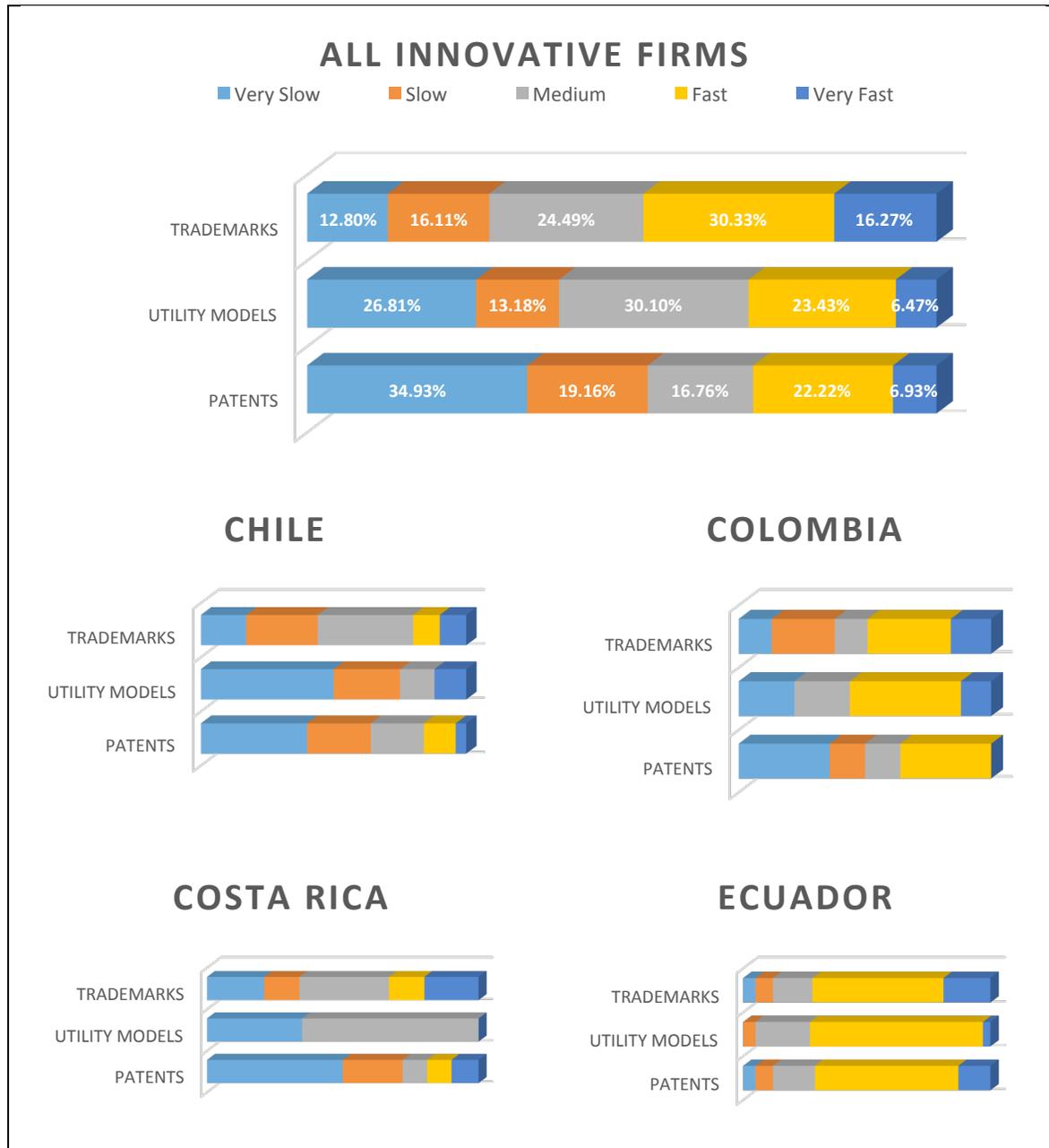
Perceived Efficiency of the Legal System

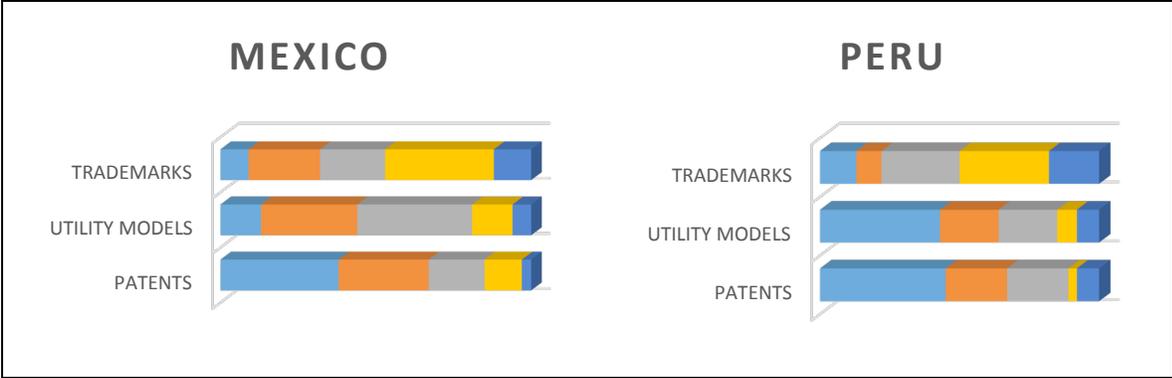
To contrast our second hypothesis, we first must answer the question, How do SEIs perceive the efficiency of the IP system? Our claim about underuse of the IP system may be partly explained by the fact that users (and potential users) perceive that the system is too slow or not secure. First-mover advantage is a key competitive variable when it comes to commercializing an innovation. If the system fails to enable this advantage, either by taking too long due to excessive bureaucracy or by not effectively keeping the invention confidential while the IP is being reviewed, then using formal IP may not be the best way to protect an innovation against imitators. Conversely, the system may be well designed, efficient, and functional, but if potential users perceive it as inefficient, IPRs are suboptimally used.

Hence, we explored the perception of innovators about the effectiveness of the system, and not just the official data about IP use. To do so, we asked firms to rate their perception of the IP system and then allowed them to expand on their answers. Analyzing the text of their

answers allowed us to determine whether the grading is consistent with their perception of the system. With respect to the speed at which the IPR is processed and reviewed, we classified the answers according to the following scale: “very slow,” “slow,” “medium,” “fast,” and “very fast. Figure 4 depicts the results overall and by country.

Figure 4: Perception of Process Efficiency (time to process application)

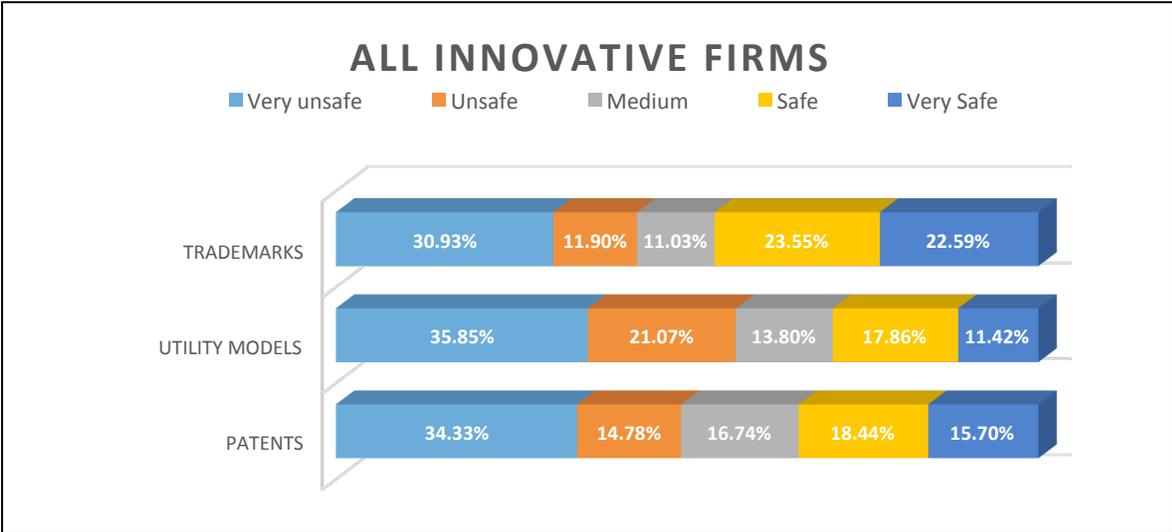




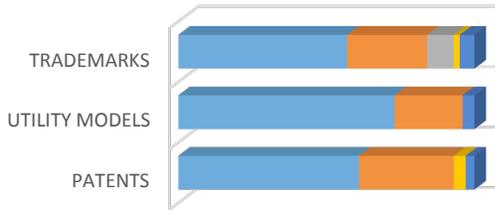
Source: Authors' calculations.

Our interviews show that there is no unanimity regarding the efficiency of the institutions. Considering the extremely low use of the patenting system in these countries, we would have expected that over 75 percent of the innovators interviewed would evaluate the IP system negatively. However, as can be seen in Figure 5, Chile is the only country where more than 65 percent of the innovators interviewed considered that the system was slow or very slow, or that it offered little or no protection while the IPR is being processed and reviewed.

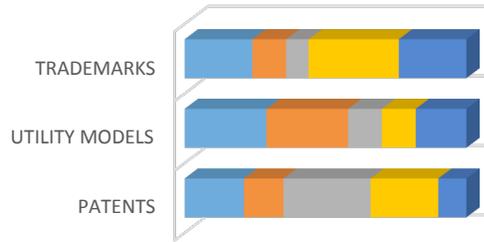
Figure 5: Perception of System Safety (*likelihood of being imitated while processing*)



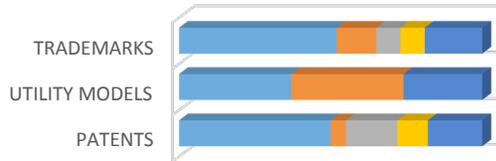
CHILE



COLOMBIA



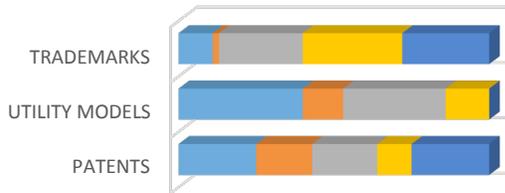
COSTA RICA



ECUADOR



MEXICO

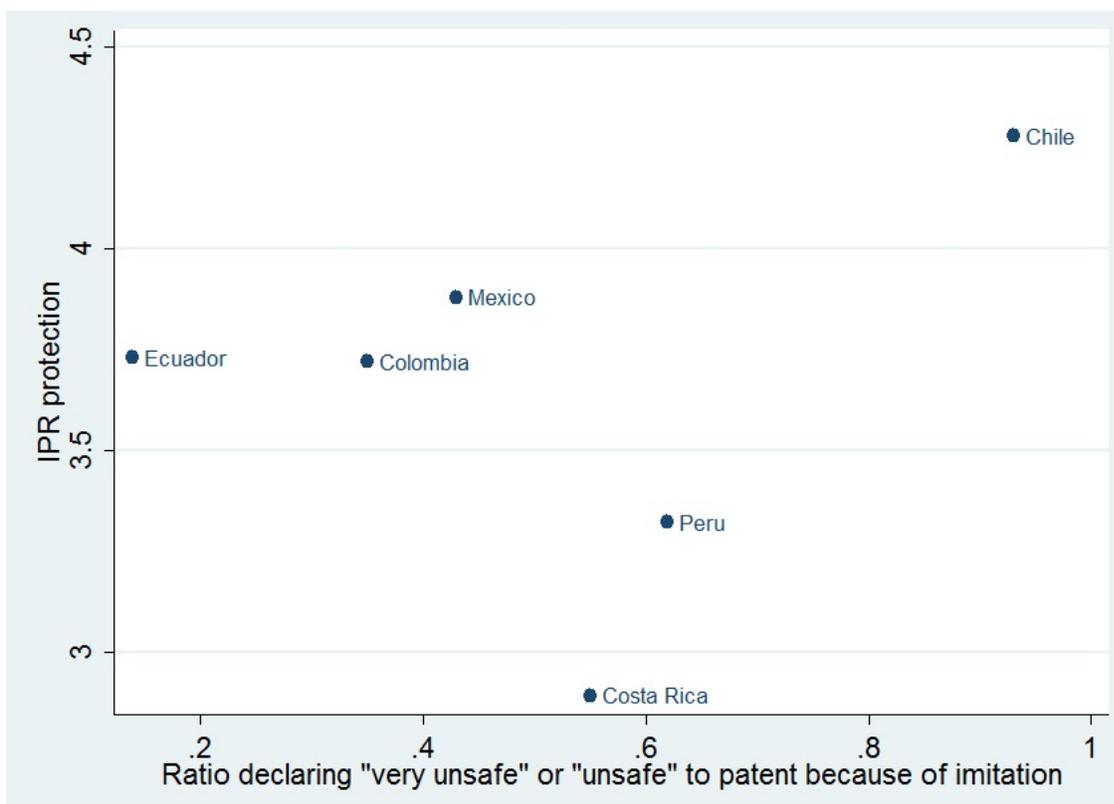


PERU



Source: Authors' calculations.

Figure 6: Safety Perception (Imitation Risk) and IPR Protection

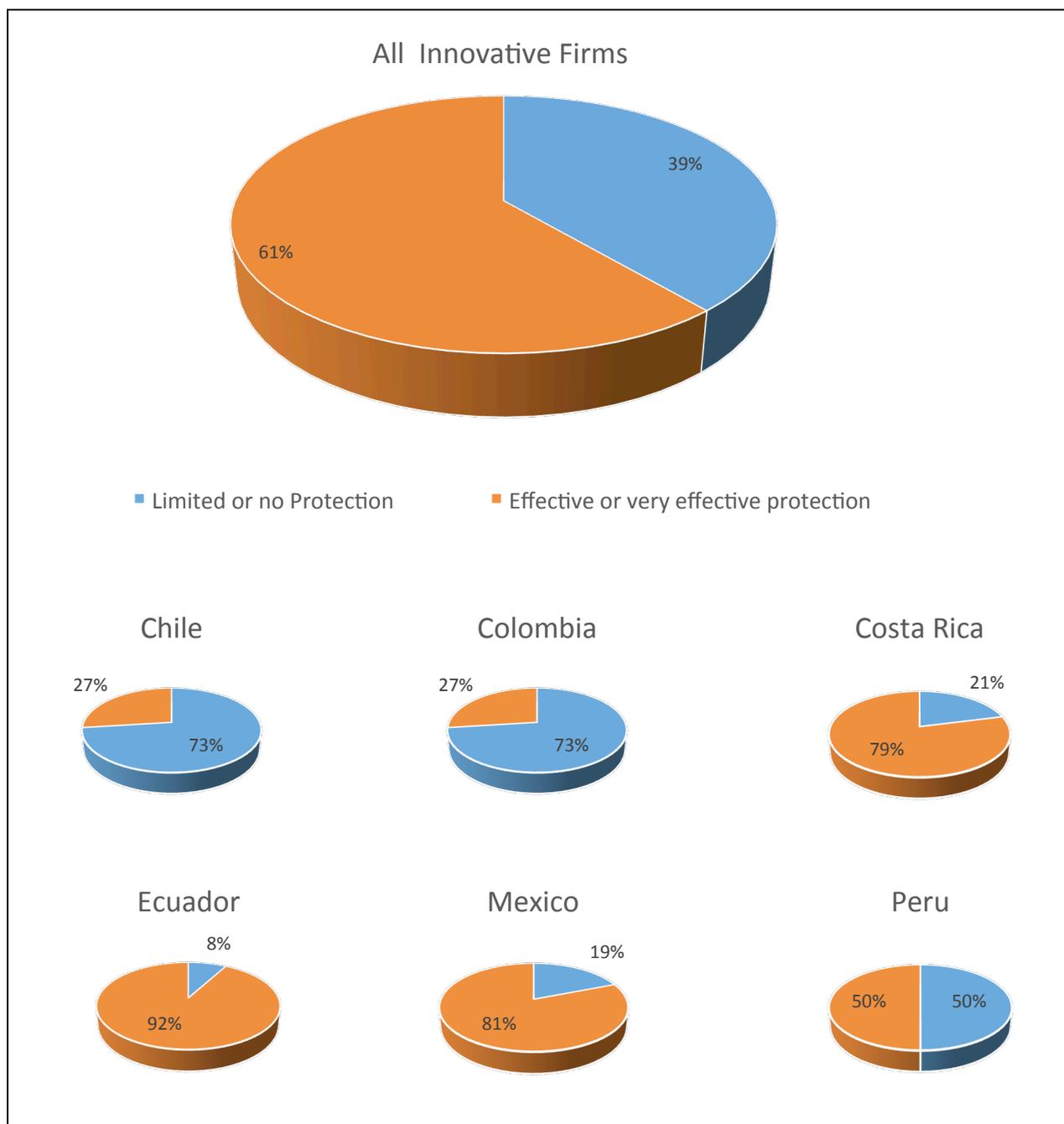


Sources: Authors' calculations; Park (2008).

Result 4: *SIEs evaluation of the system's efficiency varies between countries. The perceived imitation risk derived from this efficiency seems unrelated to countries' IPR enforcement (Park, 2008).*

When innovators are asked about their perception of the efficiency of informal IP protection, in countries such as Mexico and Ecuador, where innovators perceived the formal IP system to be efficient, they also believed that non-disclosure agreements (NDAs) and secrets effectively protect their ideas. However, evidence shows that most of them are not using these tools.

Figure 7: Effectiveness of Non-Disclosure Agreements and other Confidentiality Clauses



Source: Authors' calculations.

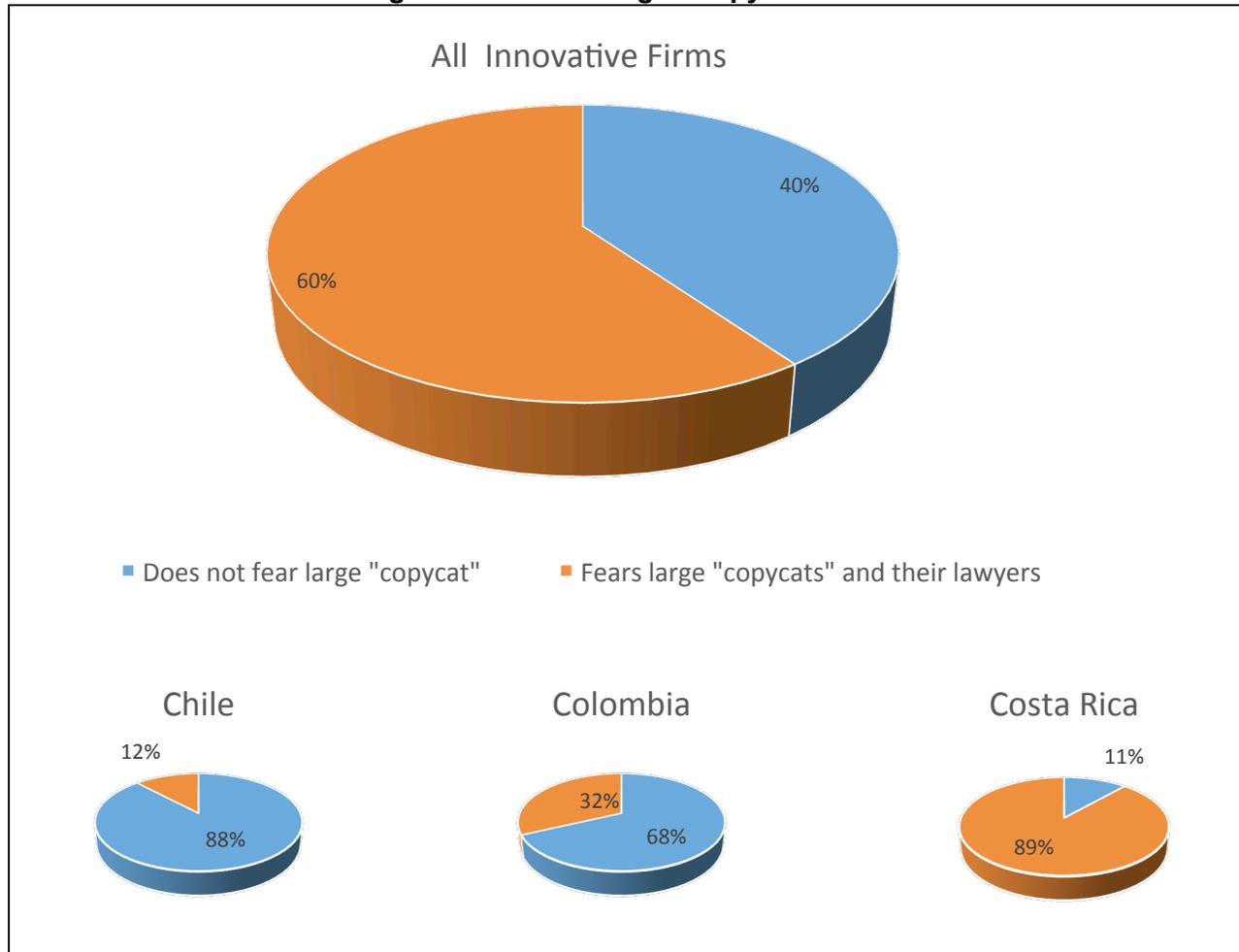
Most innovating firms in these six countries do not patent their innovations, nor do they use NDAs or confidentiality clauses in their contracts with partners and employees. If we contrast the percentage of respondents evaluating the system as slow or inefficient with Park's (2008) index of IPR enforcement, we do not find a clear negative correlation either. In short, countries where IPR enforcement is lower do not have more potential users giving the system

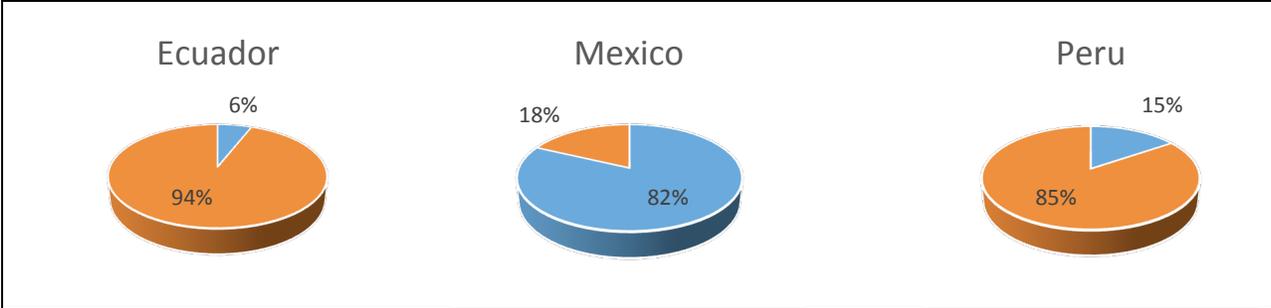
poor grades. Indeed, perceptions seem to be unrelated to how “strong” or effective the IP system is.

Disadvantage Against Big Firms

The perceived need for legal advice to apply for a patent behaves similarly to the fear of being imitated by a large firm that could have better chances of winning a legal battle over intellectual property. The same distribution—40 percent/60 percent—as the perceived need for legal advice (Figure 8), and the same negative ratio as IPR protection (Figure 9), except for Ecuador.

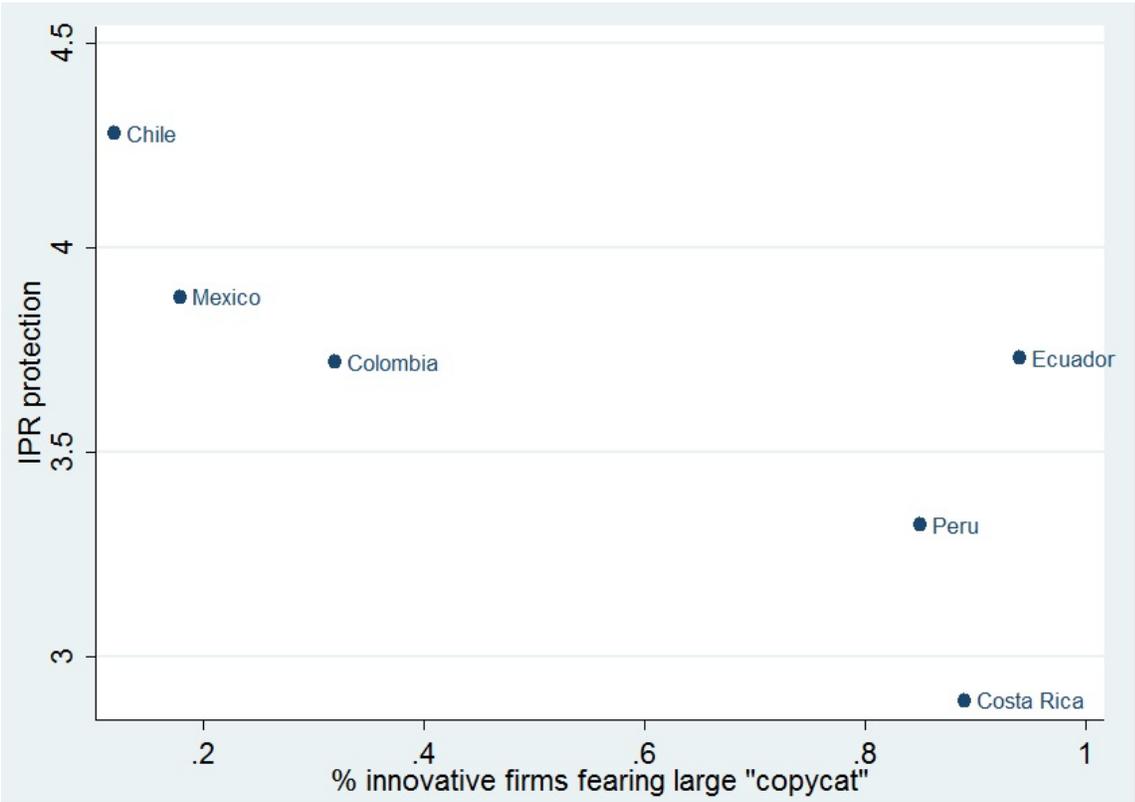
Figure 8: Fear of Large “Copycat” Firm





Source: Authors' calculations.

Figure 9: Fear of Large “Copycat” and IPR Protection



Sources: Authors' calculations; Park (2008).

Result 5: In Chile, Colombia, and Mexico, most firms do not perceive themselves to be at a disadvantage in protecting their IP if copied by a big company. SIEs surveyed in Costa Rica, Ecuador, and Peru would consider themselves to be at a disadvantage to protect their IP if a big company imitated their innovation.

4. Conclusions

The development of a healthy IP system relies on user demand as much as on its supply by government agencies. Therefore, users' perceptions about the system need to be addressed through targeted awareness campaigns and capacity building on how to use the IP system.

Most companies surveyed said that they did not know how the patent and copyright registration system worked. This was confirmed by their responses, which revealed misconceptions and misperceptions about the costs of use and the overall performance of IPR. The respondents' answers suggest that the costs of formalizing IP do not limit the use of IP systems. However, innovators' beliefs about the ease of using the system do limit their use.

It is possible to conclude that innovative Latin American entrepreneurs perceive their creative and intellectual heritage to be unrelated to the legal system established for its defense, thereby eroding their own chances of capitalizing on such intangible assets through ownership systems. This suggests a confirmatory bias, which limits their ability to return to a mismatch between the startup's perceived utility of intellectual property and what the IP system is able to offer. Nevertheless, because of the methodological restrictions of this study, we leave the hypothesis of cognitive distortions for future research.

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