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innovative enterprises in Latin America

Ignacio L. De León - José Fernández Donoso

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The costs of using formal intellectual property rights: a survey on small innovative enterprises in Latin America

Ignacio L. De León¹

José Fernández Donoso²

Abstract

This document analyzes the perception of small innovative enterprises (SIE) in Latin America towards the effectiveness of the legal protection of intellectual property rights (IPR). To analyze the costs of using IPR, we surveyed 352 SIEs from Chile, Colombia, Costa Rica, Ecuador, Mexico, and Peru. We found evidence of SIEs not knowing how the IP system works, and most of them considering that knowing how it works is not important for business performance. We find strong differences between countries in the need to hire legal services to apply for IPR. We also find differences in the perception of the IP system efficiency, and the evaluations are not related to the country's IPR enforcement (Park 2008). We also find differences in the perception of disadvantage to protect their IPR if imitated by a big firm. This difference is related to the country's IPR enforcement.

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

Keywords: Intellectual property rights, intellectual capital, Innovation, Latin America, Small business, Entrepreneurship

¹ Inter-American Development Bank

² Universidad del Desarrollo

1. Introduction

The following study was conducted under the project “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). The study aimed to understand the underlying reasons why small innovative enterprises (SIE) face incentives to underuse formal intellectual property rights to protect their innovations.

In particular, the objective is to gather and analyze the perception of these firms, to assess the existence of costs of using formal IPR, versus other protection (e.g. secrecy). We conducted the study in six Latin American countries: Chile, Colombia, Costa Rica, Ecuador, Mexico, and Peru. A preliminary study for three countries (Chile, Colombia, and Mexico) found some evidence suggesting unawareness, lack of knowledge, and cognitive bias of these firms (De Leon and Fernandez, 2015). This paper analyzes the results of expanding the survey to Costa Rica, Ecuador, and Peru.

There is vast economic literature on the gains of an intellectual property rights 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 intellectual property rights to innovation. According to this theory, intellectual property provides ex-ante incentives, hence increasing the efforts to innovate by privatizing the surplus of innovation through monopoly rights to the innovator.

However, a reduced number of firms use patents to protect their intellectual property (Bound et al. 1984). In the United States, according to the Business R&D and Innovation Survey, in 2008 the number of firms that had never used

utility patents was 96%, and 95% had never used design patents. If only firms with formal R&D are considered, only 26% had ever used patents.

Indeed, every innovator faces the trade-off of using formal IPR (e.g. patents, designs, copyrights, etc.), which involves disclosing the innovation, or keep the idea for him or herself. As all economic trade-offs, this decision depends on the costs and benefits of each action. If keeping the innovation secret is more costly than using IPR (e.g. imitation risk is higher than the costs of patent applications), then IPR should be preferred to secrecy. These costs depend on different factors, such as product characteristics (Anderson 2011, Moser 2013, Fernandez Donoso 2014), product cycle (Bilir 2014), or strategic reasons (Hall et al. 2014, Noel and Schankerman 2013).

In a previous study of this project, we contended that these costs are not absolute but they are contingent to the cognitive perception of the IP system users. Therefore, perceptions about the expediency and effective use of the legal system are as important as the absolute costs they actually bring about (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. Next section explains the hypotheses and setting of the study. Section 3 analyzes the responses and findings. Section 4 concludes.

2. Setting of the study and hypotheses

Hypotheses

We examine three hypotheses of costs that would prevent Latin American SIEs of using IPR optimally:

Hypothesis 1: SIEs perceive high learning and legal costs of applying to formal intellectual property rights.

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

Hypothesis 3: SIEs perceive to be in disadvantage with respect to big firms defending their rights in case of imitation.

Sample selection

Finding small business with real new-to-the-market innovations is a difficult task in Latin America, as most innovations stay outside the patenting system. Gathering data that would be representative of local innovative firms required a two-step method for sampling. In the first stage, we collected as many innovative businesses as possible, using formal and 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, university spin offs incubators. From all this collection of firms' information, we generated a universe of domestic small innovative businesses. This universe was comprised of firms from a variety of industries: nanotechnology, software, food processing, textile, agricultural technology, chemicals, among others. Given the budget constraints of this research, in the second stage we randomly selected firms to be interviewed, without conditioning by 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, hence randomizing by group.

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

Table 2: Sample Firms' use of IPR

	Chile	Colombia	Costa Rica	Ecuador	México	Perú
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 any protection	35	31	51	26	36	23
Firms using no protection at all	15	19	10	44	14	48

Study implementation

To contrast the three hypotheses, we evaluated the perceptions of entrepreneurs towards the efficacy of the intellectual property system for each country of the study. The study assessed the opinion of 352 businesses on four dimensions: (i) the time for obtaining intellectual property rights; (ii) the definition of what is likely to be protected; (iii) the uncertainty of imitation while obtaining the right is processed, and (iv) the ability of institutions to exercise protection of innovation after obtaining intellectual property.

In order to better understanding this puzzle, we asked surveyed SIEs about their beliefs and attitudes towards the IP system. The objective was to analyze and identify their perceived costs of using formal IP. From June 2013 until September 2014, we interviewed 352 innovative firms in six countries, with specific questions about their performance, innovation, imitation concerns, and perceived costs of using formal IP.

Using a semi-structured interview, we asked each entrepreneur, firm owner, or CEO to tell us about 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 was for their business performance their understanding and knowledge of the IP system.

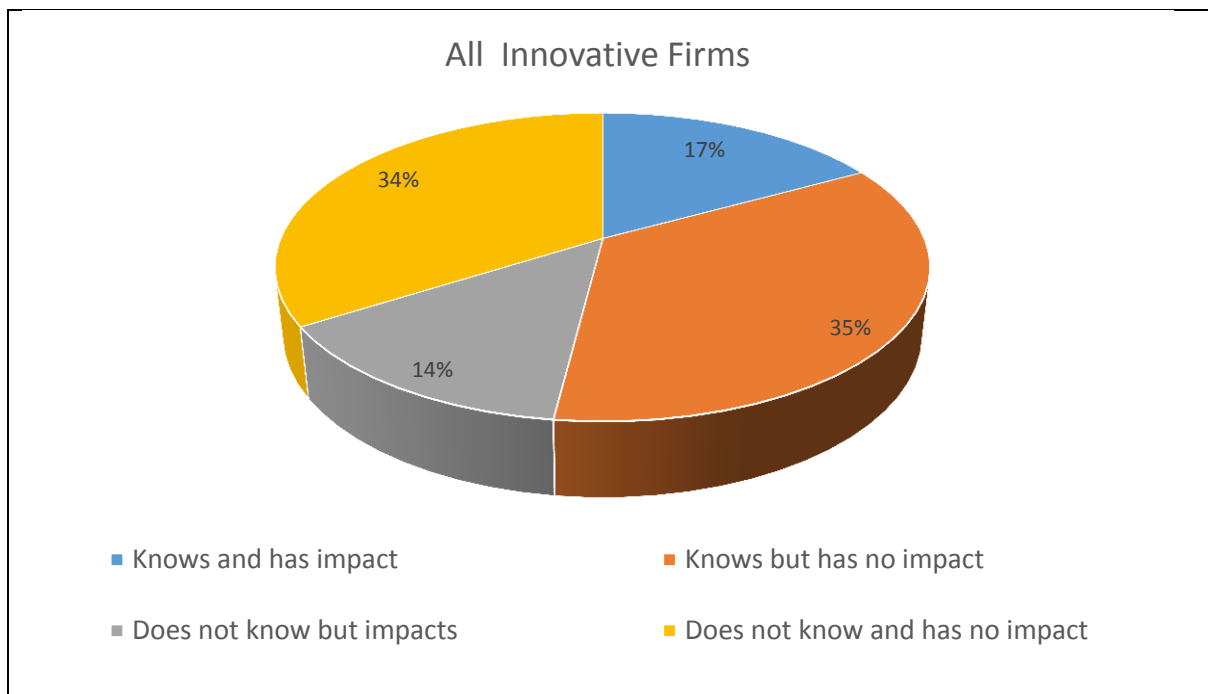
3. Results

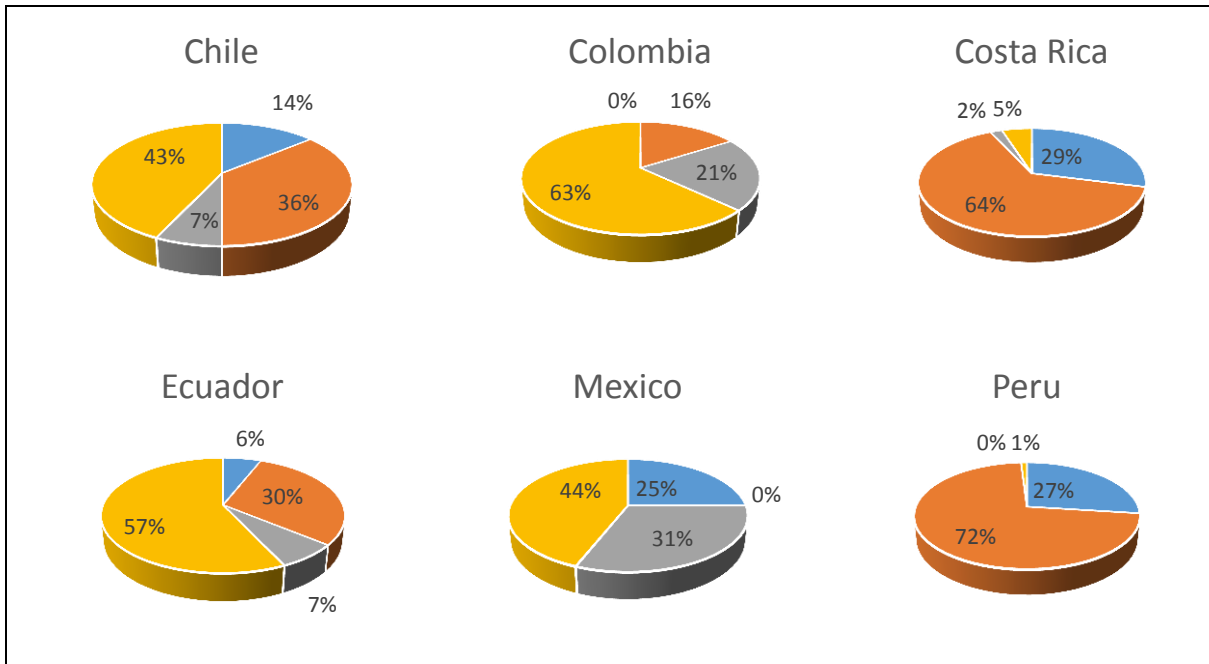
The first part of the interview asked SIEs about the cost of applying to different IPRs. The transcribed interview allowed us to analyze their responses and classify into four different groups:

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

The distribution of these businesses types is shown in Figure 1.

Figure 1: Knowledge of IP system and perceived impact of IP strategies to innovative firms





Overall, 69% of interviewed firms considered that knowing 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% think they know the system good enough to use it.

However, results vary considerably among countries. In Chile, while exactly half of interviewed businesses considered they know the IP system, 79% of all businesses considered that knowing the IP system has no impact on firm performance. This perception of IP knowledge being unprofitable is also shared by 79% of interviewed firms in Colombia, 69% of the sample from Costa Rica, 87% of Ecuador, and 73% of Peru. Only in Mexico the number of businesses considering that a proper understanding of the IP system has an impact on firm performance is higher than 50%. Nevertheless, 55% of Mexican firms interviewed thinking that IP knowledge has an impact on business performance considered they did not know enough about how the system works.

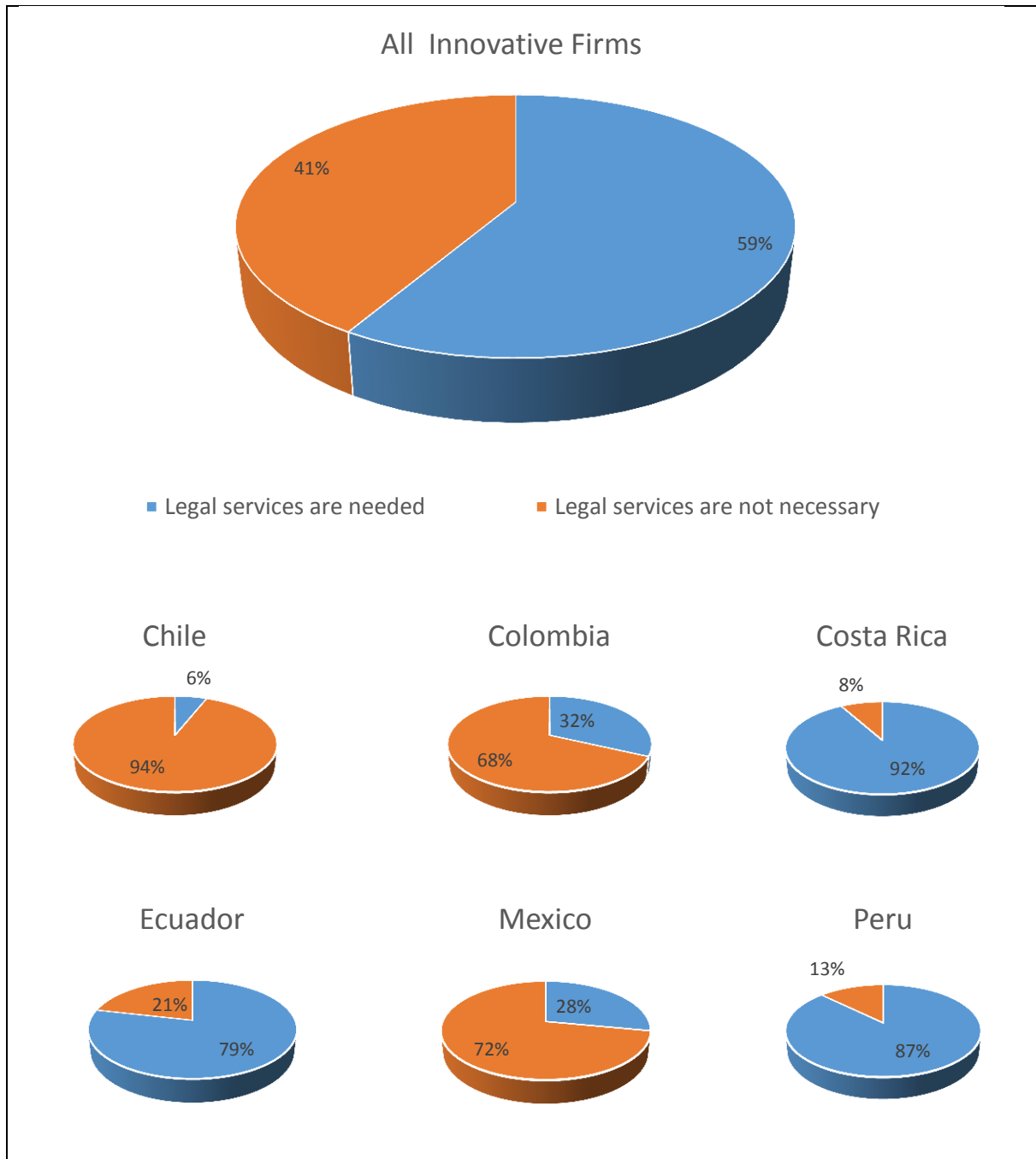
Result 1: *Except SIEs in Mexico, the majority of SIEs do not consider that understanding IPR would generate a positive impact in their business' performance.*

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

Understanding the IP system seems to be irrelevant for an important 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?” firms do not seem to perceive unanimously that there are relevant costs of using the IP system, and in particular legal costs (i.e. hiring legal services). With a 40%-60% distribution of firms considering that hiring legal services are not needed and needed respectively, the proportion of firms considering that legal services are needed is 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?



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 intellectual property rights protection (Park 2008), there is a clear negative relation between the perception of needing legal services to use the formal IP system, and the IPR protection of the country (figure 3).

Figure 3 Innovative Firms declaring if need for legal assistance and IPR enforcement (Park 2008)



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

Table 3: statistical differences in 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

* p<0.1, ** p<0.05, *** p<0.01

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

This study also noted that SMEs attach low relevance to the costs associated with registering their intellectual property, including the payment of fees. The irrelevance of fees 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).

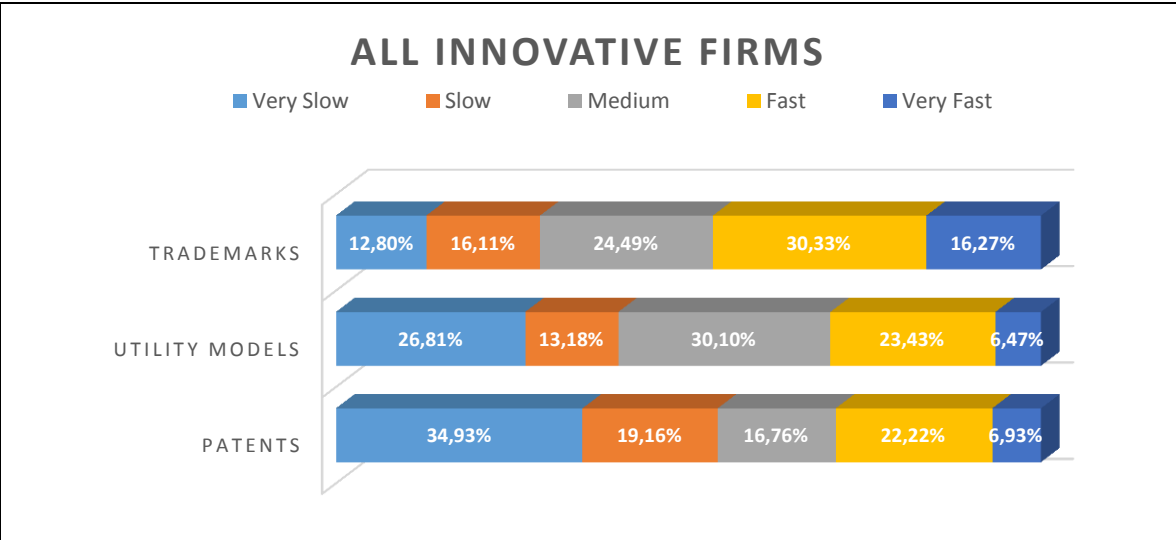
Perceived efficiency of the legal system

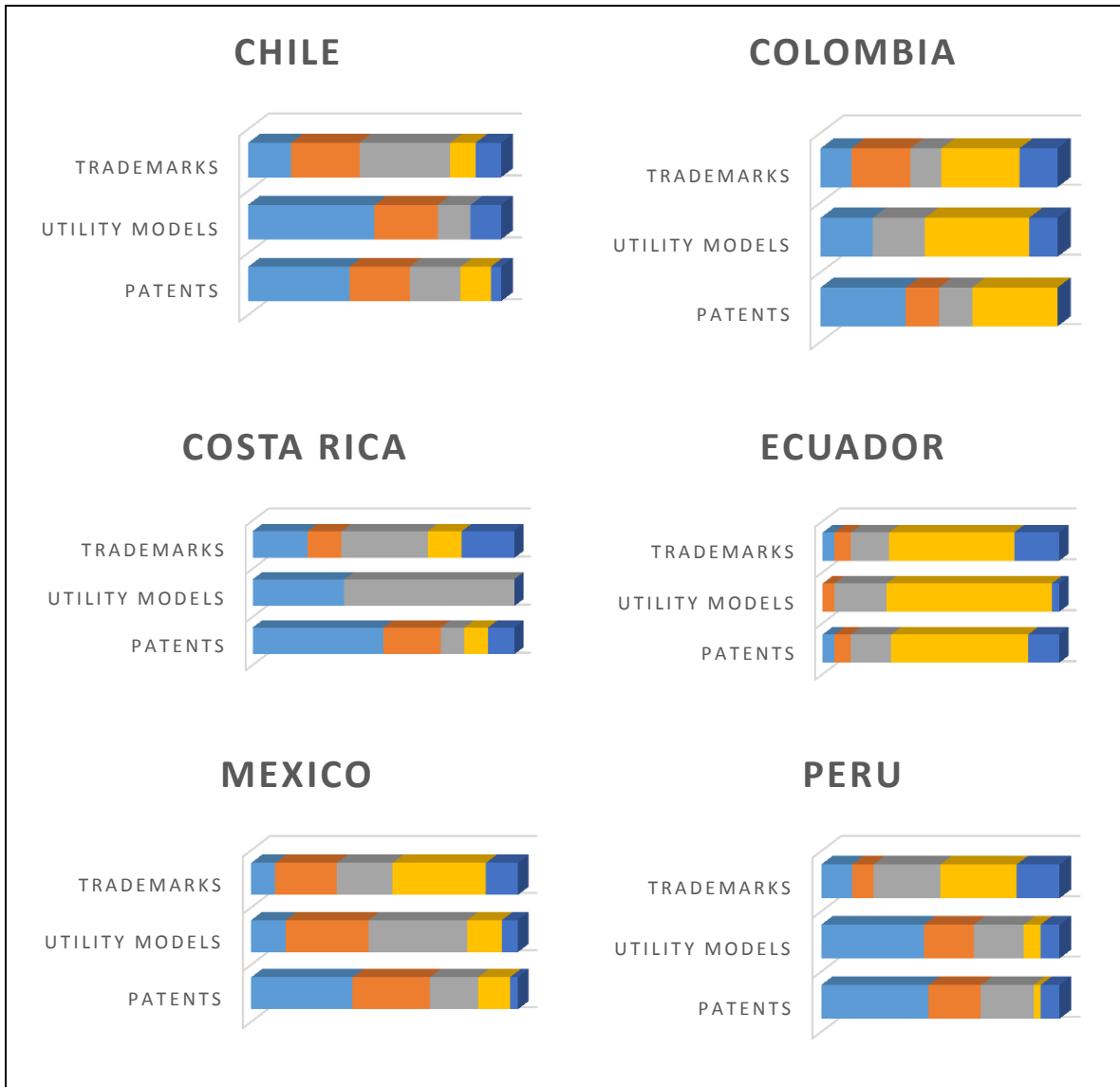
To contrast our second hypothesis, we first must answer the question "How do SBIs perceive the efficiency of the IP system"? Our claim about the IP system being underused may be partly explained simply because users (and potential users) perceive that the system is slow or unsafe. First mover advantage is a key competitive variable when it comes to commercializing

an innovation. If the system fails to enable this advantage, either by slowing down with excessive bureaucracy, or by not effectively keeping the secret of the invention while the IP is being reviewed, then using formal IP may no longer be the best tool to protect an innovation against imitators. However, the system may be well designed, efficient and functional, but if potential users perceive it as inefficient, IPRs are sub-optimally underused.

Hence, we explore the perception of innovators about the effectiveness of the system, and not just the official data of IP use. To do so, we asked firms to rate their perception of the IP system, and then allowed them to expand their answers. Analyzing the text of their answers allowed us to confirm if 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 scale: "very slow," "slow," "medium," "fast," and "very fast."

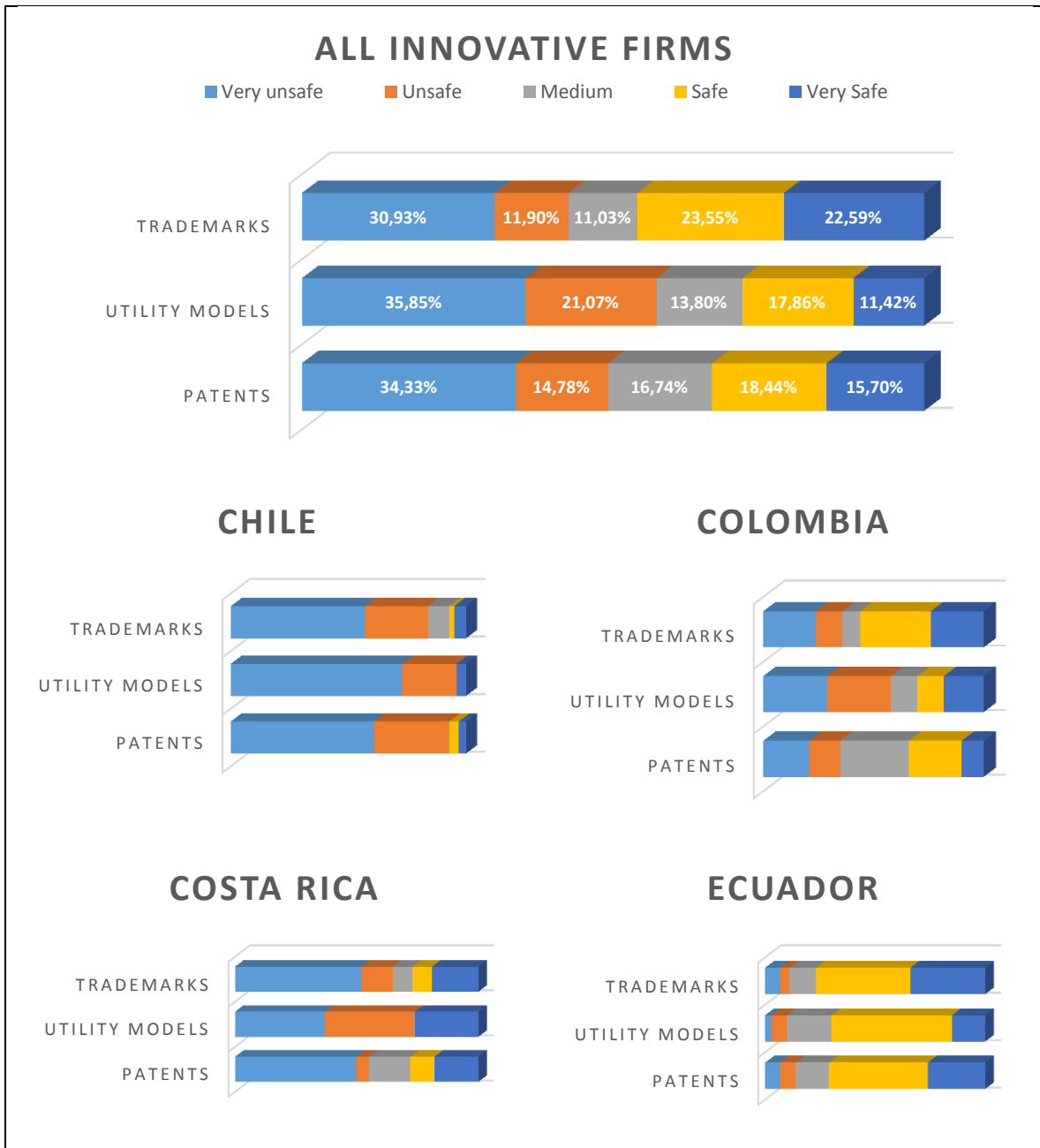
Figure 4: Perception of process efficiency (time to process application)





Our interviews show that there is no unanimity in regarding the institutions inefficient. Considering the extremely low use of the patenting system in these countries, we would have expected over 75% of interviewed innovators having a bad evaluation of the system. With the exception of Chile, no country has rates above 65% of interviewed innovators considering the system slow or very slow, or offering little or no protection while the IPR is being processed and reviewed.

Figure 5: Perception of system safety (likelihood of being imitated while processing)



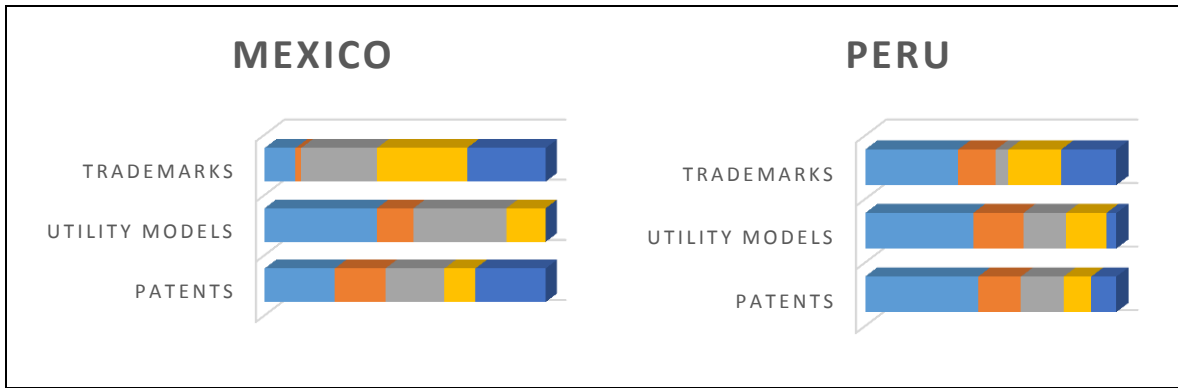
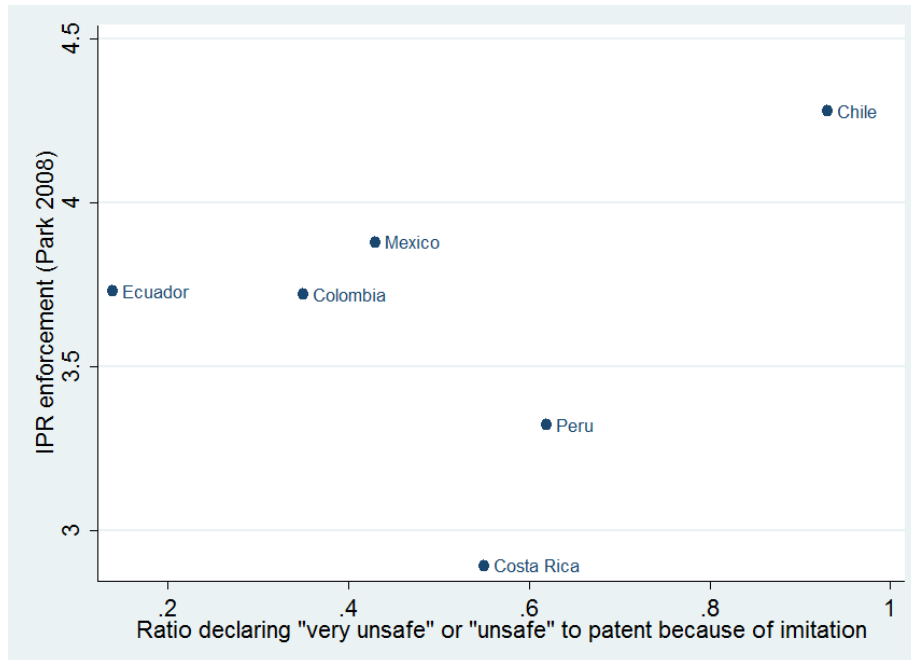


Figure 6: Safety perception (imitation risk) and IPR protection (Park 2008)

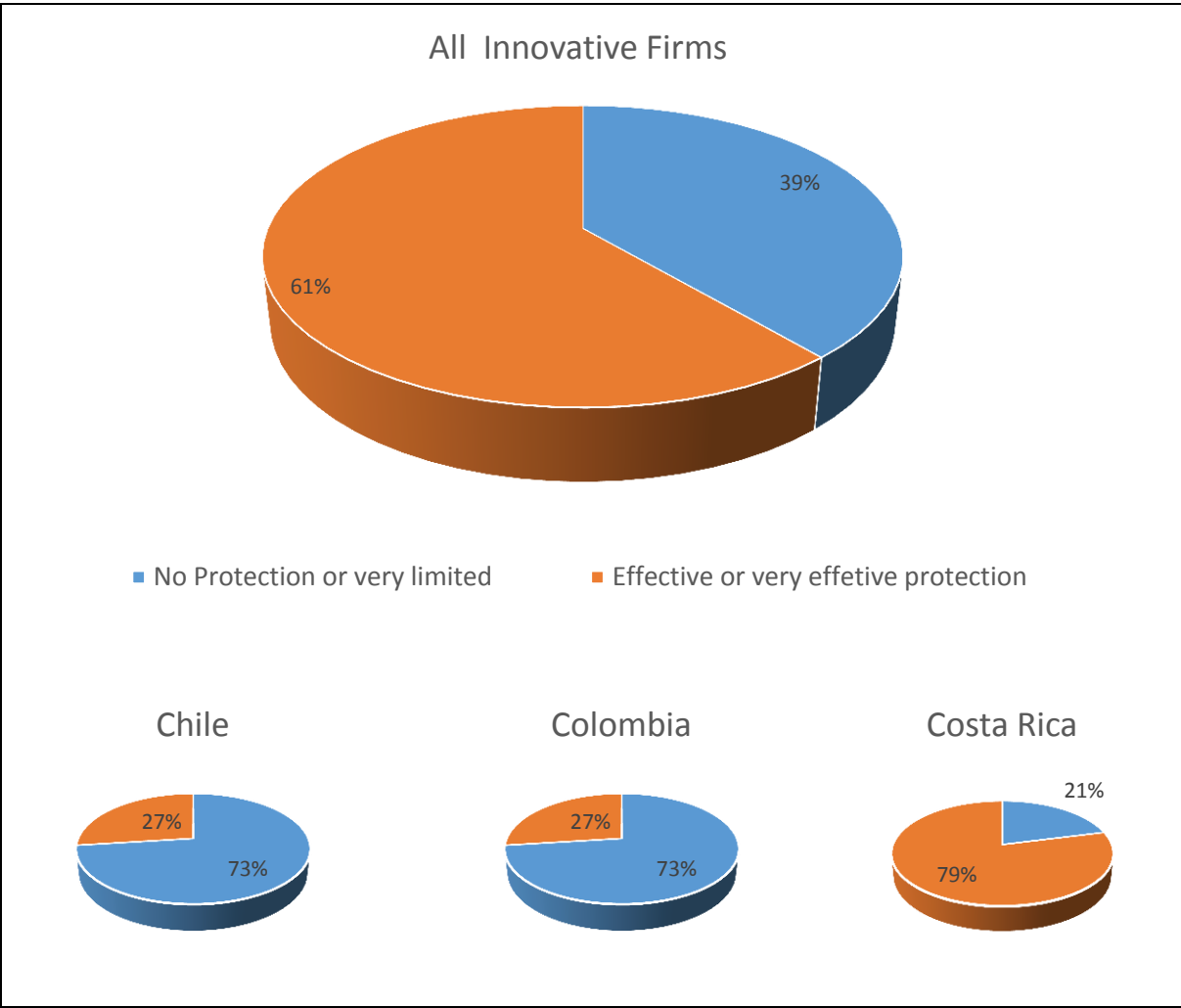


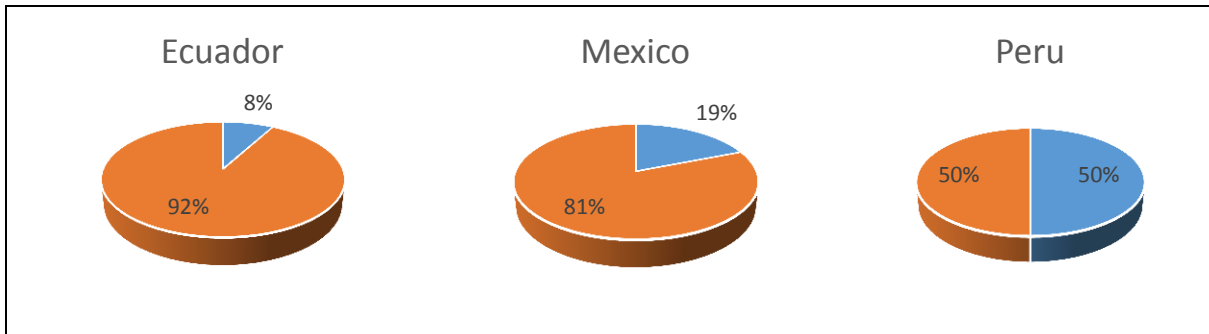
Result 4: SIEs evaluation of the system's efficiency varies between countries. The perceived imitation risk derived from this efficiency seems unrelated with countries' IPR enforcement (Park 2008).

When innovators are asked about their perception of the informal IP protection efficiency, in countries like Mexico and Ecuador, where

innovators had a good perception of the efficiency of the formal IP system, also believe that NDAs and secrets are effective to protect their ideas. However, evidence shows that most of them are using none.

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





Most innovating firms in these six countries do not patent their innovations; they do not use NDAs, nor 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 (2008) index of IPR enforcement, we do not find a clear negative relation 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 very similarly than the fear of being imitated by a large firm that could have better chances of winning a legal battle of intellectual property. The same distribution 40%-60% than for legal needs (Figure 8), and the same negative relation with IPR protection (Figure 9), except for Ecuador.

Figure 8: Fear of large "copycat" firm

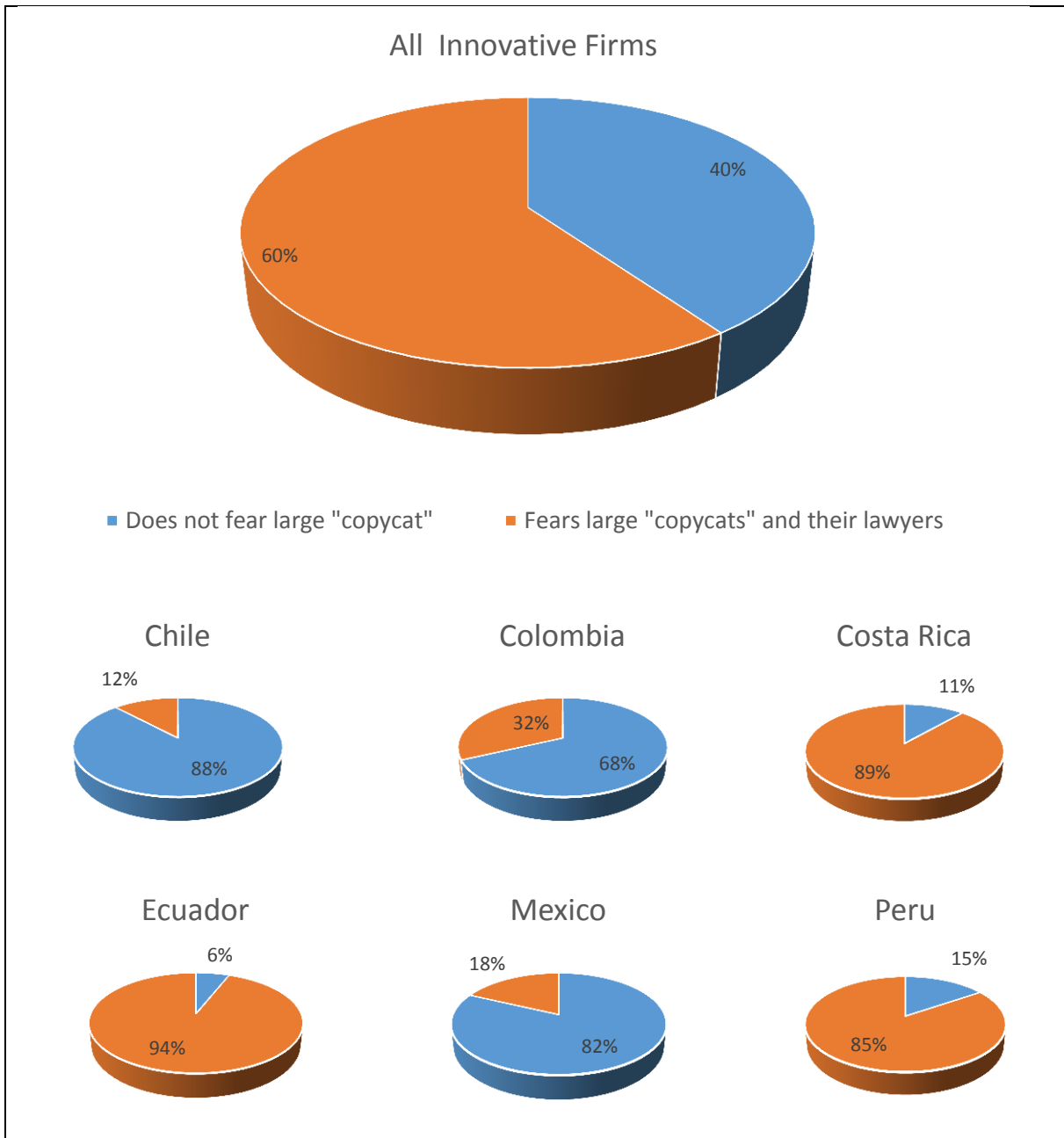
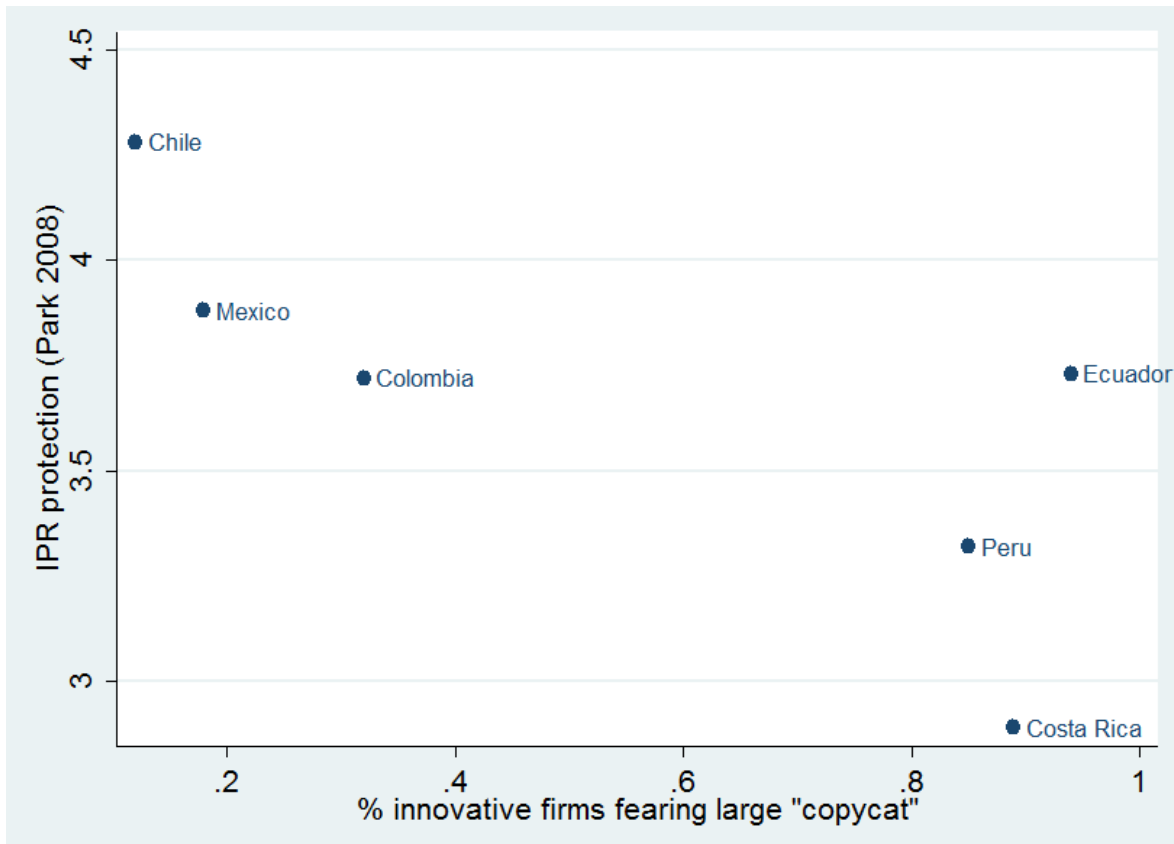


Figure 9: Fear of large “copycat” and IPR protection (Park 2008)



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 feel in disadvantage to protect their IP if a big company imitated their innovation.

4. Conclusion

The development of a healthy IP system relies on its demand by users, 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 of the companies surveyed said they ignored how the patent and copyright registration system worked. This was reaffirmed by their responses, which showed misconceptions and misperceptions about the costs of use and overall performance of intellectual property rights. The respondents' answers suggest that costs of formalizing IP do not limit the use of IP system, but innovators' beliefs about the ease of using the system do.

It is possible to conclude that innovative Latin American entrepreneurs perceive their creative and intellectual heritage 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" that limits their ability to return to a mismatch between the startup perceived utility of intellectual property and the IP system is able to offer. Nevertheless, because of the methodological restrictions of this study, we leave the hypothesis of cognitive restrictions to future research.

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