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The influence of home country intellectual property rights (IPR) protection on the international expansion efforts of entrepreneurs: A multi-level study through the lens of dynamic capabilities

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ABSTRACT

An emerging topic in strategic entrepreneurial research is how institutional influences impact on entrepreneurial internationalization behavior. This paper sets out to undertake a multilevel study regarding the impact of home country IPR on the relationships among entrepreneurial self-efficacy, entrepreneurial opportunity perception, risk tolerance, and the degree of internationalization. Through a combination of the dynamic capability perspective and entrepreneurial bricolage theory, we propose a model that underpins the role of home country institutional influence, in particular, IPR during the internationalization of new ventures. Using a sample of 91 countries, we empirically test the model via multi-level logistic regression analysis controlling micro as well as macro variables such as personal education level, gender, household income, purchasing power per capita, and GDP growth rate. Our findings suggest that higher IPR protection mechanism in the home country will strengthen the positive relationships between entrepreneurial self-efficacy and the degree of internationalization, entrepreneurial risk tolerance and the degree of internationalization. However, although the findings support the positive relationship between entrepreneurial opportunity perception and the degree of internationalization, the moderating effect of IPR protection in the home country is not supported for such relationship. Our study contributes to the literature by extending entrepreneurial bricolage theory and dynamic capability approach into international entrepreneurship research. We advance the understanding of how the protection of intellectual property in home country influences the internationalization efforts into new ventures taking consideration of the personal-level characteristics of entrepreneurs.

Key words: intellectual property rights, degree of internationalization, entrepreneurial self-efficacy, entrepreneurial opportunity perception, risk tolerance

INTRODUCTION

Although international growth has been a significant theme in entrepreneurial research, the factors influencing the individual expansion efforts of entrepreneurs regarding such activities remain largely unexplored (Keupp and Gassman, 2009; Jones, Covellio and Tang, 2011). This is an important gap because there have been numerous studies showing that entrepreneurial entry creates new employment opportunities (see, for example, Decker, Haltiwanger, Jarmin, and Miranda, 2014; Reynolds and White, 1997). This paper focuses on entrepreneurs that seek to exploit opportunities in international as well as domestic markets because there is evidence, albeit anecdotal, that international entrepreneurship (IE) may deliver significant additional employment and wealth creation benefits both for the home country and other countries (Oviatt and McDougall, 2005a).

All entrepreneurial growth is difficult and carries risks (Delmar, Davidsson, Gartner, 2003). However, international entrepreneurial growth involves additional risks related the resources, uncertainty and increased complexity of growth beyond that of the home country of the entrepreneur (Wright, Westhead & Ucbasaran, 2007). Despite such risks, some entrepreneurs still direct their international efforts, their abilities and resources to pursue international entrepreneurial expansion (Oviatt and McDougall, 2005b). An important unresolved issue is the characteristics of the individual entrepreneurs that aspire to such international growth and the external country-level opportunities, risks and related protective laws that impact on such growth efforts (Wiklund and Shepard, 2005; Van Ness and Seifert, 2016). This paper is a multi-level study of three selected *individual-level* characteristics of entrepreneurs with international growth efforts as moderated by the *country-level* issues from the exploitation and protection of the intellectual property rights (IPRs) possessed by such aspiring international entrepreneurs in their home countries.

In common with all entrepreneurial activity, the international growth efforts of entrepreneurs derive from the behavior, expectations, knowledge and resources of the individual (Bird & Schjoedt, 2009; Shane 2003). There have been three principle routes that explicate such growth efforts. The first relates to entrepreneurial orientation and is grounded in psychological studies of individual entrepreneurs (see, for example, Wiklund and Shepard, 2005). The second route is derived from sociological theory, arguing that social norms and the pressure to conform (or otherwise) will guide such effortss (see, for example, Krueger, Reilly, and Carsrud, 2000). The third route focuses on economic decision-making resulting from considerations of utility maximization, coupled with the assessment of the profit risk and return that will shape entrepreneurial decision-making (see, for example, Douglas and Shepherd, 2000; Eckhardt and Shane, 2003). For this paper, we have chosen to follow this third route. Specifically, we employ the resource-based theory of *entrepreneurial bricolage* (Baker and Nelson, 2005) and the related theory of dynamic capabilities (DCs) (Al-Aali and Teece, 2014).

In conjunction with the individual-level firm specific advantages of entrepreneurs, this paper explores the country-level regime of the home country's Intellectual Property Rights (IPR). The reason for selecting IPR is that country-level laws and institutions allow the individual holder to exercise monopoly power and thus deliver firm specific advantage over time (Barringer and Ireland, 2008; OECD, 1993). IPR is path-dependent on the institutions of the country in which it operates because it relies on legal, contractual and other related agreements of that country (Estrin et al, 2013; Matthews and Zander, 2007; Pathak et al, 2013) as well as the informal institutional arrangements and other protection arrangements that exist in each country (Baldwin and Henkel, 2015). Thus, such laws and structures are valuable for the long-term success of international entrepreneurial growth (Al-Aali & Teece, 2014).

The choice and development of IE by the entrepreneur will begin at the *micro-level* of the individual entrepreneur (Bird and Schjoedt, 2009; Hermans et al, 2015). Typically, this will encompass three main areas of individual entrepreneurial characteristics: entrepreneurial self-efficacy, entrepreneurial motivation and entrepreneurial opportunity (Shane, 2003). For most entrepreneurs, such activities will commence first in the home country of the individual with international activities then following later (Johanson and Vahlne, 1997; Mathews and Zander, 2007; Oviatt & McDougall, 2005a). There are relatively few ‘born global’ entrepreneurial businesses (Cavusgil and Knight, 2009; Knight and Cavusgil, 2004; Mandl and Patrini, 2018). Entrepreneurs then expand internationally using capabilities and heuristics derived from home country experience, knowledge and networks (Allen, 2016; Oviatt & McDougall, 2005b). This paper examines the degree of internationalization undertaken by such entrepreneurs with an *a priori* IPR protected business in the home country. Thus, the initial strategic context of the IPR-related activities of the individual entrepreneur will exist within the *country-level* of its IPR laws and institutional constraints of the home country (Brander, Cui, & Vertinsky, 2017; Santangelo, Meyer and Jindra, 2016).

The relationship between entrepreneurial perceptions (skill and opportunity), attitudes (risk tolerance), and entrepreneurial international growth remains inconclusive in the literature (Björnskov and Foss, 2016). This paper contributes to this debate by exploring these while introducing a country-level institutional influence variable, namely home country IPR. The paper proposes a model that identifies the individual entrepreneurial skill-sets and attitudes that lead to effective entrepreneurial international growth by the exploitation of the firm specific resources developed *a priori* in the home country. From a DC perspective, we set these factors against the backdrop of the approaches that entrepreneurs use for international sensing, seeking opportunities, and reconfiguration of their firm capabilities. We undertake this using entrepreneurial bricolage theory and DCs. However in our Discussion,

section we argue that bricolage theory needs to be expanded into a concept which we have called *proactive bricolage*. In summary, the perspective provides a new way of interpreting IE. By combining bricolage and DC theory, we provide a novel explanation of the mechanism through which entrepreneurs grow internationally. We show that the above individual-level efforts can be strengthened or weakened by the country-level resource-based variable of the home country IPR.

We tested our theoretical model by merging data from two sources, namely the Global Entrepreneurship Monitor (GEM) for data on entrepreneurial activity with data from the Index of Economic Freedom (IEF) on IPR protection. GEM surveys perform a geographically stratified sampling procedure in order to locate respondents aged from 18 to 64 for interviews (for details of the sampling procedure, see Reynolds & Hechavaria, 2008). We pool data collected through the GEM Adult Population Surveys in 2011-2015 that covers 91 countries worldwide. By applying a multi-level approach to assess determinants of international growth efforts, our research responds to the calls for multi-level analysis in the study of entrepreneurship (e.g. Busenitz et al., 2003; Phan, 2004; Schendel et al., 2007). While micro-level and macro-level developments in the existing literature have made their distinctive contributions to a better understanding of what explains the international growth efforts, the fact that these two levels have largely developed in isolation from each other has also hampered the knowledge advancement in this domain than if they could be bridged together.

The next section of this paper reviews the theory and builds the hypotheses regarding the self-efficacy, the opportunity perception and the risk tolerance of the individual entrepreneur in the context of the home country-level firm specific advantage of IPR. The following section sets out the variables and research methodology. The findings are then discussed with the final section explicating the conclusions. To test these matters, this paper explores the above through a multi-level analysis of the firm's entrepreneurial strategy, its

IPR activities and the resulting degree of internationalization. Our theoretical model is summarized in Figure 1 and explicated in the next section.

[Insert Figure 1 about here]

LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES

Entrepreneurial dynamic capabilities for international expansion

The international expansion activities of entrepreneurs beyond their home countries will be influenced by the institutional characteristics and location specific advantages of the countries that are considered for entry ((Belderbos, Leten, & Suzuki, 2013; Cantwell, Dunning, & Lundan, 2010). They will also be influenced by their possession of firm specific advantages originally developed in their home countries (Al-Alii and Teece, 2014). It is the link between the activities of individual entrepreneurs and the country-level institutions within which they operate (or plan to operate internationally) that remains largely unexplored and is the focus of this paper (Bjørnskov and Foss, 2016).

To explore this link, the paper is grounded in the concept of dynamic capabilities (DCs) (Teece, Pisano and Shuen, 1997; Eisenhardt and Martin, 2000; Winter 2003) for three reasons specifically related to IE. DCs involve (1) the process of discovering and exploiting opportunities; (2) the recognition and arbitrage of pre-existing demand and supply; and (3) the creation and exploitation of new opportunities (Sarasvathy, Dew, Velamuri, and Venkataraman, 2003; Shane, 2003; Zahra et al, 2006). This has been defined from an IE perspective as, “The discovery, enactment, evaluation and exploitation of opportunities—across national borders—to create future goods and services” (Oviatt and McDougall, 2005a, p. 540.) Hence, any decision to extend the entrepreneurial business beyond the home country will involve new assets: the whole of the international strategy literature supports the argument that some new assets are required or existing assets need to be adapted (see, for

example, Buckley and Casson, 1998; Oviatt and McDougal, 2005). It follows that the strategic move beyond the home country by the entrepreneur involves the 'reconfiguration' of existing firm specific assets - perhaps not precisely the *dynamic* reconfiguration envisaged by Teece, but a reconfiguration development, nevertheless. Finally, we note that DCs are implicit in the related entrepreneurial theory of bricolage (Gans, Stern and Wu, 2019). This concept of entrepreneurial theory supports the contention that entrepreneurs build their business from the firm specific advantages possessed by the individual entrepreneurial enterprise (Baker and Nelson, 2005; Barringer and Ireland, 2008). Later in the Discussion section of this paper, we return to entrepreneurial bricolage theory and argue that this needs to be extended from the perspective of dynamic capabilities.

International Growth Efforts of Entrepreneurs

Entrepreneurship is an action in the individual-opportunity nexus with the business opportunity being the prime motivation for such individuals (Shane and Venkataraman, 2000). However, there are many conceptual definitions of entrepreneurship - ranging from the identification of opportunities (Hitt *et al*, 2001) to the creation of new economic, social and institutional environments (Rindova *et al*, 2009). This suggests that there will be an equally wide range of characterizations of the motivations of entrepreneurs in both the home country and with regard to international expansion (Van Ness and Seifert, 2016). For this paper, we assume that the international growth efforts of entrepreneurs will derive from the behavior, expectations, knowledge and resources of individual entrepreneurs (Bird & Schjoedt, 2009; Shane 2003). Such growth efforts will be tempered by the opportunities and constraints that the entrepreneur perceives in her or his personal, organizational and home country environment, which will be influenced by the perception and realization of the possible international growth opportunities (Hermans *et al*, 2015). The full process of entrepreneurship

also involves such activities as knowledge, learning, testing and network development (Gans et al, 2019; Hermans et al, 2015).

Given the breadth and complexity of such factors, this paper has chosen two foci. First, we concentrate on the entrepreneurial efforts as they exist *now*, rather than as they may be shaped or influenced by external conditions surrounding such activities. Second, we follow the theoretical taxonomy of entrepreneurial dimensions developed by Van Ness and Seifert (2016) and theoretical grounding of the GEM model by Levie and Autio (2008). Consistent with these three areas, we have then selected three constructs at the *individual-level* of the entrepreneur related to international growth (Bird and Schjoedt, 2009; Hermans et al, 2015). These are entrepreneurial self-efficacy, entrepreneurial opportunity and risk tolerance (Shane, 2003).

Entrepreneurial self-efficacy and degree of internationalization

Typically, entrepreneurship has been conceived as the process of discovering and exploiting both existing opportunities (Shane, 2003) and the creation of new demands and supplies that do not yet exist (Kirzner, 1985). Such processes require, “[An] awareness of the ways the human agent can, by imaginative, bold leaps of faith, and determination, in fact create the future for which his present acts are designed” (Kirzner, 1985, p. 56). Within the DC framework, awareness can be considered as being captured in the early ‘sensing’ mechanism of the DC process. Such opportunities will then be seized and assets configured or reconfigured for completion of the entrepreneurial task (Al-Alii and Teece, 2014; Zahra, Sapienza, and Davidsson, 2006). In the international entrepreneurial context, such a process involves, “the discovery, enactment, evaluation, and exploitation of opportunities—across national borders—to create future goods and services.” (Oviatt and McDougall, 2005c, p. 540). Thus, in the context of this paper, entrepreneurs will have developed firm specific

advantages *a priori* in their home countries and then seek to exploit them internationally through the process of entrepreneurial bricolage and the various stages of DC strategy process. But such processes depend on the confidence and self-belief characteristics of the individual entrepreneur (Van Ness and Seifert, 2016). Without such characteristics, the international expansion will not be effective.

These personal attributes are summarized in the concept of entrepreneurial self-efficacy. This has been defined as the set of beliefs of entrepreneurs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives (adapted from Bandura, 1994). Based on the above argument with regard to international expansion, we therefore posit that:

H1: Entrepreneurial self-efficacy is positively related to the degree of internationalization.

Entrepreneurial opportunity and degree of internationalization

DCs and the related concept of entrepreneurial bricolage will only be effective if the entrepreneurial opportunity is fully recognized and exploited (Baker and Nelson, 2005; Zahra et al, 2006). Such an opportunity process goes beyond the ordinary capabilities that entrepreneurs have developed in their home countries. DCs are, “Based on a forward-looking assessment of the business environment and technological opportunities, and on a backward-looking understanding of the firm’s history, culture, and distinctive routines.” (Alii and Teece, 2014, p 106). Thus, a crucial element for entrepreneurs aiming to go beyond their home countries with a firm specific advantage rests on shaping demand, launching new products and exploiting opportunities beyond the original home market of the entrepreneur. This will require the effective entrepreneur to have the skills, knowledge and business networks to identify, test and exploit foreign opportunities (Oviatt and McDougall, 2005a). For these reasons, we posit that:

H2: Entrepreneurial opportunity perception is positively related to the degree of internationalization.

Risk tolerance and degree of internationalization

Whether it is through their own resources or those obtained from external sources, entrepreneurs need to undertake investment in their businesses. This necessarily entails a degree of risk for the entrepreneur (Heaton and Lucas, 2004). Risk tolerant individuals are more likely to experience a lower degree of failure ((Weber and Milliman, 1997). There is evidence that the tolerance to risk will influence entrepreneurial activity (Aidis et al., 2008; Estrin and Mickiewicz, 2011). Thus the high growth of the firm is likely to involve significant financial and marketing activity that will test the risk tolerance of the individual entrepreneur (Langowitz and Minniti, 2007) For most companies, risk is greater for foreign ventures because they involve new finance, new market knowledge and new networks of both suppliers and customers (Cantwell, Dunning, & Lundan, 2010). Hence, for entrepreneurs to build a business in their home country and then internationalize the enterprise, it follows that such entrepreneurs must have a significant degree of tolerance toward the risk of failure. Thus, we posit that:

H3: Risk tolerance is positively related to the degree of internationalization.

The moderating role of Intellectual Property Rights

For this paper, we focus on one entrepreneurial firm specific advantage with regard to the exploitation of firm specific advantages, namely the intellectual property rights (IPR) possessed by the entrepreneur (Arora, Fosfuri, and Gambardella, 2001; Foss and Foss, 2008; Schendel and Hitt, 2007; Teece, 1998). This will be derived from the home country IPR country-level laws and its related formal and informal institutions (Bjørnskov and Foss, 2016). IPR needs to be viewed within three broad entrepreneurial contexts: first, the development of

entrepreneurial strategy by individual entrepreneurs (Alvarez and Barney, 2007; Sarasvathy, Dew, Velamuri & Venkataraman, 2003); second, the specific degree of IPR protection (if any) available in individual countries in relation to IE (Narula, 2014; Zhao, 2006); third, the formal and informal nature of the institutional IPR framework of an individual country (Autio and Acs, 2010; Nandkumar & Srikanth, 2016; Peng, Ahlstrom, Carraher & Shi, 2017).

For international expansion, this will subsequently entail the exploitation of its home-country IPR entrepreneurial opportunities and advantages, while also dealing with the legal and other opportunities and constraints involved in each individual country beyond its home base (Brander, Cui, & Vertinsky, 2017; Peng, Ahlstrom, Carraher, & Shi, 2017). This will change the nature of the dynamic capabilities because the prior possession of IPR by the entrepreneur implies that it has already undertaken at least some of the earlier entrepreneurial processes for it to possess the firm specific advantages that accompany home-country IPR. Hence, DCs will be an essential contributor to entrepreneurial effectiveness within the opportunities and restrictions imposed by IPR (Al-Aali & Teece, 2014; Zahra et al, 2006). In the specific context of IPR, we assume that each individual entrepreneur possesses some intellectual property that she/he wishes to protect when expanding internationally. This will be derived from the home country IPR country-level laws and its related formal and informal institutions (Bjørnskov and Foss, 2016.) Hence, IPR is a competitive resource for the individual entrepreneur.

When a country's IPR protection is favorable, the country's institutional support is stronger, individual entrepreneurs may expect to be able to obtain stronger support from the regime when going abroad. As such, individual entrepreneurs can take advantage of the host country market for which its IPR protection regime either on par with the home country or inferior than the home country. In other words, for individual entrepreneurs who possesses higher entrepreneurial self-efficacy, higher risk tolerance, or higher opportunity perception,

the higher IPR protection regime in the home country helps to reduce the barrier of internationalization and thereby facilitating the international expansion efforts of the individual entrepreneurs.

Furthermore, the level of IPR protection is often linked with the development status of a country (Smeets and de Vaal, 2016). Higher level of IPR protection indicates higher level of economic development and establishment of formal institutions such as law and regulations (Kim et al., 2012). With strong home institutional support and good infrastructure, the opportunity cost and risk level of going international will be perceived as considerably reduced. Those entrepreneurs with higher entrepreneurial self-efficacy will take full advantage of the situation and therefore further boosting the international expansion effort. However those with lower entrepreneurial self-efficacy may not be able to make use of the institutional support provided and may hinder their effort to internationalize and they would view IPR protection as a barrier to the way forward. The same argument may apply for those with higher risk tolerance and higher opportunity perception. We therefore assume:

H4: The IPR of the home country positively moderates the relationship between a) entrepreneurial self-efficacy and the degree of internationalization, b) entrepreneurial opportunity perception and the degree of internationalization, c) risk aversion and the degree of internationalization.

VARIABLES AND METHOD

Data and sample

The dataset is constructed by merging Global Entrepreneurship Monitor (GEM) with IPR protection from the Index of Economic Freedom (IEF) dataset and macroeconomic controls. GEM surveys perform a geographically stratified sampling procedure in order to locate respondents aged from 18 to 64 for interviews (for details of the sampling procedure, see

Reynolds & Hechavaria, 2008). We pool data collected through the GEM Adult Population Surveys in 2011-2015 that cover 91 countries worldwide. In this paper, we use early-stage entrepreneurs who are defined as adults actively involving in starting a new firm (i.e. nascent entrepreneur) or owning and managing an operating business that is up to three and a half years old (i.e. young business owner) (Urbano & Alvarez, 2014). Our usable dataset involves 97,711 observations from 91 countries. Figure 2 illustrates the process of selecting early-stage entrepreneurs.

Figure 2 demonstrates the differences between countries in the degree of internationalization of new business, with 95% confidence intervals. This graph is plotted based on a random-intercept model that only includes country effects and confidence intervals are calculated based on Bayesian predictions. The vertical axis represents the predicted intercept and horizontal axis shows the rank of country effect. Considerable heterogeneity can be observed across countries, which implies the high degree of variations of internationalization among countries.

[Insert Figures 2 and 3 about Here]

Variables

The degree of internationalization is captured by the percentage of sales generated in foreign countries among total sales in the GEM Survey (Muralidharan & Pathak, 2017). More specific, the identified early-stage entrepreneurs are asked the following question: “*What proportion of your customers will normally live outside your country?*” The individual-level responses are categories into four types (0 = no export; 1 = greater than 0 and less than 25; 2 = 25% and less than 75%; and 3 = 75% and up to 100%). Our dependent variable is therefore categorical in nature. According to Muralidharan and Pathak (2017), this operationalization generates a more evenly distributed range of the percentage of internationalization. Table 1 details the measures and definition of the studied variables.

[Insert Table 1 about Here]

Prior research has measured entrepreneurial self-efficacy by questioning subjects on their self-assessment of their entrepreneurial ability to open a new business (e.g. Arenius & Minniti, 2005; Wennberg et al., 2013). Adopting this approach, self-efficacy is measured dichotomously in this research, creating a binary variable coded 0 for No and 1 for Yes to the following question “*Do you have the knowledge, skill and experience required to start a new business?*” We note that this question is entirely consistent with the DC concept of sensing new business opportunities (Helfat et al, 2007)

Turning to the opportunity perception of the individual entrepreneur, we regard this concept as an important proximal predictor of the degree of internationalization in our conceptual framework. Adopting Stuetzer et al.'s approach (2014), opportunity perception is measured with a GEM question of whether the participants perceived founding opportunities in the area where they live. We observe that opportunity perception is an inherent concept underpinning the early stages of dynamic capabilities (Helfat et al, 2007).

With regard to risk tolerance and consistent with previous studies (Arenius & Minniti, 2005; Koudstaal et al., 2015; Sepúlveda & Bonilla 2014), this study employs the question from the GEM data base: “*Would fear of failure prevent you from starting a business?*” to create a proxy for the individual’s risk tolerance. It was coded as 0 if the person who selects yes to the statement, indicating that the person is less willing to bear the risk in business activities. It is coded as 1 if the person chooses no. With regard to risk tolerance, this is not specifically identified as part of the dynamic capabilities framework. However, we suggest that it is an integral implied part of the evaluation and exploitation of the business opportunity. From this perspective, it is an implied concept in the dynamic capabilities process (Helfat et al, 2007)

The IPR index is collected from the Index of Economic Freedom database. The scale from 0 to 100 combines various aspects of the degree to which a country protects citizens against illegal expropriation of property, enforces intellectual property rights, and guarantees independence of the judiciary system from any external interference. This index ranges from values of 5 to 90 across countries in the dataset. A low score implies loose intellectual property protection and a high score means tight protection.

In this research, we control for a variety of micro and macro-level factors. As the higher propensity of men towards internationalization compared to women (Muralidharan & Pathak, 2017), this study adds gender (female = 1, male = 2). According to Arenius and Minniti (2005), age and household income appear to have an important influence on entrepreneurship. Control variables of entrepreneurs' age and socioeconomic status are therefore included. Educational attainment has often been regarded as a proxy for human capital and an engine of ambition regarding entrepreneurship (Bates, 1990). The respondents are thus requested to indicate the achieved highest educational qualification. Their responses were harmonized into a four-category variable: "primary or below", "secondary", "post-secondary", and "graduate experience". Such proxy measures have been successfully employed in teasing out the effects associated with different levels of education (Wößmann, 2003). At macro level, extant research has found a significant and positive relationship between the degree of international expansion and economic development of home countries as represented by income per capita (Carree, van Stel, Thurik, & Wennekers, 2002). Hence, this research includes the gross domestic product (GDP) at purchasing power parity (PPP) per capita and GDP growth rate as control. Data on a country's GDP per capita and growth are obtained from International Monetary Fund (IMF).

Estimation method

Since the same participants for obtaining most of constructs are relied on self-report, the common method variance (CMV) could potentially distort the empirical findings (Podsakoff et al., 2003). This study follows prior research (Chang, Van Witteloostuijn, & Eden, 2010; Fuller, Simmering, Atinc, Atinc, & Babin, 2016) to assess this variance. First, in line with Change et al. (2010), the central approach to avoid or reduce potential CMV is to perform other sources of information for the primary variables. Multiple data sources are therefore merged in this research (i.e. GEM-Adult Population Survey; Index of Economic Freedom; and International Monetary Fund) for the decisive variables to be determinants of the degree of internationalization. Second, the cross-level moderation relationships are included in the theoretical model, which helps to diminish CMV concerns since such complex relationships are ‘in all likelihood, not part of the respondents’ theory in use’ (Chang et al., 2010: 180). Third, the Harman’s statistical test is employed and the result implies a single factor does not simultaneously affect all constructs. Only 20.18% total variance is accounted by the single factor and is below the critical value of 50%. Fourth, by applying CFA that links each indicator to a latent common factor rather than separate ones (Shirokova et al. et al., 2016), it has a major drop in the model’s fit. Therefore, CMV represents a minimal concern in our research.

Since this research focuses on early-stage entrepreneurs who are part of the GEM survey, it can be influenced by the factors that affect the individual self-selection into entrepreneurship. Hence, this research employs the analyses into two stages to address the self-selection bias (Heckman, 1979). A probit equation is conducted in the first stage in order to predict the individual selection into entrepreneurship. An inverse Mill’s ratio is then computed using the residuals from the selection equation and the ratio is included as a control in all hierarchical models.

Given that the dependent variable has a binary nature, the effect of covariates on the total entrepreneurial activity is analyzed by binomial logistic models. Multilevel modeling is used in order to deal with unobserved heterogeneity within the context of a cross-individual, cross-time, and cross-country dataset. Multilevel modeling approach controls for the hierarchical structure of data in which individuals represent level one, country-years samples represent level two and countries represent level three. This approach allows us to take into account of the data clustering first within a country and second within a country-year subsample. Our econometric model (including interaction terms) is shown below:

$$y_{ijk}^* = \beta_0 + \beta_1 \text{Inverse Mill's ratio}_{ijk} + \beta_2 \text{Age}_{ijk} + \beta_3 \text{Gender}_{ijk} + \beta_4 \text{Income}_{ijk} + \beta_5 \text{Educational attainment}_{ijk} + \beta_6 \text{GDP per capital}_{jk} + \beta_7 \text{GDP growth}_{jk} + \beta_8 \text{Entrepreneurial self-efficacy}_{ijk} + \beta_9 \text{Risk tolerance}_{ijk} + \beta_{10} \text{Opportunity perception}_{ijk} + \beta_{11} \text{IPR}_{jk} + \beta_{12} \text{Entrepreneurial self-efficacy}_{ijk} * \text{IPR}_{jk} + \beta_{13} \text{Risk tolerance}_{ijk} * \text{IPR}_{jk} + \beta_{13} \text{Opportunity perception}_{ijk} * \text{IPR}_{jk} + \mu_k + \nu_{jk} + \varepsilon_{ijk}$$

where y_{ijk}^* is the latent variable of internationalization (subscript ijk where I represents an individual, j a particular year-country sample, and k a country)

$$\{ \text{Inverse Mill's ratio}_{ijk}, \text{Age}_{ij}, \text{Gender}_{ij}, \text{Income}_{ij}, \text{Educational attainment}_{ijk} \}$$

represent individual-level controls

$$\{ \text{GDP per capital}_{jk}, \text{GDP growth}_{jk} \}$$

represent country-level controls

$$\{ \text{Entrepreneurial self-efficacy}_{ijk}, \text{Risk tolerance}_{ijk}, \text{Opportunity perception}_{ijk} \}$$

represent individual-level covariates

$$\{ \text{IPR}_{jk} \}$$

represent country-level covariate

$$\{ \text{Entrepreneurial self-efficacy}_{ijk} * \text{IPR}_{jk}, \text{Risk tolerance}_{ijk} * \text{IPR}_{jk}, \text{Opportunity perception}_{ijk} * \text{IPR}_{jk} \}$$

$$\text{IPR}_{jk}$$

represent cross-level interaction terms

The combination of $\mu_k + v_{jk} + \varepsilon_{ijk}$ represents the random part of the equation, where μ_k are the country level residuals, v_{jk} are year-country residuals, and ε_{ijk} are individual-level residuals.

RESULTS

The pairwise correlation coefficients are shown in table 2. Variance inflation factors (VIFs) are applied as a diagnostic test of potential multicollinearity problems. The VIF for all variables doesn't exceed the conventional level of 5 (Ryan, 1997). In addition, our large sample size alleviate the micronumerosity problem (Goldberger, 1991), which can be another source of instability in coefficients.

Tables 3 and 4 report the empirical results. The inverse Mill's ratio is shown as a statistically significant influence in all models, confirming the importance of controlling for self-selection. Model 1 is a base model in which the individual-level and country-level controls are entered. The random effects of the country-specific intercept are reported ($\sigma_u=0.92$, $\sigma_v=0.33$) and the intra-class correlation suggests that 20.31% and 7.28% of the total variance within the data are generated due to the grouping in country and year respectively. The estimated coefficients of control variables largely conform to findings in the extant literature. The effects of entrepreneurs' age are statistically significant and positive. Higher educated people and being a male are positively associated with the degree of internationalization (Muralidharan & Pathak, 2017). Income level appears to have a significant positive relation with internationalization. More specific, when an individual possesses a higher degree of household income, the odds of individuals going international can increase by 7.68% ($\beta=0.074$, $p<0.001$). The positive effect of GDP is a macro indicator of entrepreneurial expectations about further international expansion, which is consistent with existing research findings (Bowen & De Clercq, 2008).

In model 2, the log-likelihood ratio, Akaike information criterion (AIC) and the Bayesian information criterion (BIC) show that the inclusion of individual-level predictors better explain the probability of an entrepreneur going international. The results demonstrate that entrepreneurial dynamic capabilities positively affect an individual's intention to go international. Entrepreneurial self-efficacy and risk tolerance are positively related to internationalization ($\beta=0.276$, $p<0.10$; $\beta=0.317$, $p<0.05$). In addition, when an individual can perceive entrepreneurial opportunity, the odds ratio of internationalization increases by a factor of 2.24 ($\beta=0.808$, $p<0.001$). Therefore, hypotheses 1,2 and 3 are supported.

The interaction terms between individual-level factors and IPR are tested separately from model 3 to model 5 and add the interaction terms together as a robustness check in model 6. Comparing model 2 and 3, it observes drops in both of country and year-country variances, suggesting that the country-level IPR index and cross-level interaction terms further explains of the remaining country-level variance and year-country variance. Evidence is found to confirm the hypothesis that stronger IPR can modify the association between entrepreneurial dynamic capabilities and the internationalization. For instance, the positive relationship between entrepreneurial self-efficacy and internationalization is strengthened by 20.57 % in odds under stronger IPR protection ($\beta=0.187$, $p<0.01$). In addition, the positive effect also exists in the case of risk tolerance. When the individual is more tolerant with business failure, (s)he is more likely to go international under stronger IPR protection ($\beta=0.280$, $p<0.001$). However, such impact cannot be observed on opportunity perception. Therefore, hypotheses 4a and 4c are supported but hypothesis 4b is not.

[Insert Tables 2,3 and 4 about Here]

Eventually, this research performs a median split based on IPR index and employs separate regressions for 'weak-IPR' and 'strong-IPR' countries. Table 5 presents the countries in weak and strong IPR regimes and table 6 shows the separate regression results. The regression

coefficient of entrepreneurial self-efficacy increases from 0.057 in weak-IPR regimes to 0.284 in strong-IPR regimes. Also, there are substantial improvements in the effects as well as significance of risk tolerance from weak-IPR to strong-IPR regimes. Therefore, the effects of entrepreneurs' beliefs about their capabilities to produce designated levels of performance and the tolerance of business failure on internationalization grows stronger as a function of the strength of country-level IPR protection, but it remains statistically significant and positive throughout. These patterns are consistent with the cross-level interaction effect in table 4.

[Insert Table 5 and 6 about Here]

DISCUSSION

An emerging topic in strategic entrepreneurial research in general and the international entrepreneurship in particular is how institutional influences impact on entrepreneurial internationalization behavior (Schendel and Hitt, 2007; van Ness and Seifert, 2016). A salient such institutional influence is the protection of intellectual property rights (IPR) among different nations (Acs and Autio, 2010). More specifically an important unresolved issue within this topic is the influence of IPR on the role of personal-level characteristics of entrepreneurs in the internationalization process of firms. To address this issue, this paper sets out to a multilevel study regarding the impact of home country IPR on the relationships among entrepreneurial self-efficacy, entrepreneurial opportunity perception, risk tolerance, and the degree of internationalization. Through a combination of the dynamic capability perspective and entrepreneurial bricolage theory, we propose a model that underpins the role of home country institutional influence in particular IPR during the internationalization of new ventures. Consistent with the work from Al-Aali and Teece (2014), the model suggests that the protection of IPR as a specific institutional influence directly influences the employment of entrepreneurial capabilities in the internationalization process of new ventures,

especially in terms of the confidence and belief in sensing new international growth opportunities, then recognizing and exploiting such opportunities.

Using a sample of 91 countries, we empirically test the model via multi-level regression analysis controlling micro as well as macro variables such as personal education level, gender, household income, purchasing power per capita, and GDP growth rate etc. For the hypotheses proposed, hypotheses 1, 2 and 3 are fully supported, whereas hypothesis 4 is partially supported. In other words, higher IPR protection mechanism in the home country will strengthen the positive relationships between entrepreneurial self-efficacy and the degree of internationalization, entrepreneurial risk tolerance and the degree of internationalization.

However, although the findings support the positive relationship between entrepreneurial opportunity perception and the degree of internationalization, the moderating effect of IPR protection in the home country is not supported for such relationship. Furthermore, for the influence on the degree of internationalization, the country-level moderating effects were weaker than the direct effect of personal-level factors. While the results are consistent with other similar multi-level studies, e.g. Acs and Autio (2010), they extend our understanding in several ways. They show that the protection of home-country IPR is important to the self-efficacy of entrepreneurs when making the decision to expand internationally. But they show the home-country IPR is, at best, less relevant to entrepreneurs when assessing the opportunities for international expansion. This evidence is arguably not wholly surprising since such international expansion will be subject to the formal and informal institutions and protections of the countries selected for international expansion. However, it is arguably counter-intuitive in the sense that effective entrepreneurs place less emphasis on the need for the skills, knowledge and business networks to identify, test and exploit foreign opportunities than previously envisaged (see, for example, Oviatt and McDougall, 2005c).

Our study contributes to the literature and theory surrounding IPR and entrepreneurial activity from two perspectives. First, our study extends entrepreneurial bricolage theory into international entrepreneurship research (Baker and Nelson, 2005). Entrepreneurial bricolage and dynamic capabilities are both based on the resource-based view (see, for example, (Barney, 1991; Dierickx and Cool, 1989). However, our model assumes that entrepreneurs in their home country will have gone beyond the ‘making do’ concept of entrepreneurial bricolage and will have wish to exploit their firm specific advantages in the home country when expanding internationally (Al-Aali & Teece, 2014). In order to undertake this task, entrepreneurs will then use such home-based advantages to seek out new opportunities (Oviatt and McDougall, 2005c). Hence, rather than the reactive and serendipitous ‘making do’ process of existing bricolage theory, our evidence suggests that entrepreneurs need to engage in the more active concept of dynamic capabilities to explicate fully the internationalization activities of such entrepreneurs (Zahra, Sapienza and Davidsson, 2006) because entrepreneurship is about action (McMullen and Shepherd, 2006). Hence this paper argues that the resource-based bricolage conceptual theory of entrepreneurship needs to be extended to the concept of *proactive bricolage*. Such entrepreneurial proactive bricolage activities can then be viewed from an IE perspective as, “The discovery, enactment, evaluation and exploitation of opportunities *and resources*—across national borders—to create future goods and services” (our extension of the Oviatt and McDougall, 2005c, definition, p. 540) based on the existing home country firm specific advantages developed *a priori* by the entrepreneur. Additionally, this paper has addressed the call for further research in this area from Al-Aali and Teece (2014).

Second, we advance the understanding of how the protection of intellectual property in home country influences the internationalization efforts into new ventures taking consideration of personal-level characteristics of entrepreneurs. Our model suggests that the

concept of proactive bricolage at the personal-level of the entrepreneur has important implications for the country-level IPR regime. If country-level IPR is weak, then proactive bricolage becomes difficult, if not impossible, to deliver and maintain firm specific advantages. Conversely, if the country-level IPR regime is very strong, then the ‘sensing, seizing and reconfiguration process’ (Teece, 2011) of proactive bricolage may well be slow, bureaucratic and expensive. Hence, the most effective country-level IPR regime needs to strike an optimal balance between these two extremes.

Limitations and future research

This paper has some limitations that also generate opportunities for future research. First, considering that the appropriateness of the use of single item is questioned in recent studies (e.g. Sarstedt et al., 2016), future research can apply multi-dimensional measures of different aspects of entrepreneurial dynamic capabilities. For this research, because we regard entrepreneurial self-efficacy as a general rather than specific self-efficacy, it is appropriate to use binary and unidimensional measure from GEM dataset. Second, the GEM dataset captures international sales only for measuring the degree of internationalisation. This might be appropriate for early-stage entrepreneurial firms’ internationalisation, because exporting is often the primary mode of such firms’ international activity (Zhang et al., 2016). Nonetheless, this paper’s theoretical logic can be expanded to examine other aspects of international growth efforts such as international sourcing, foreign production, and geographical dispersion in future research.

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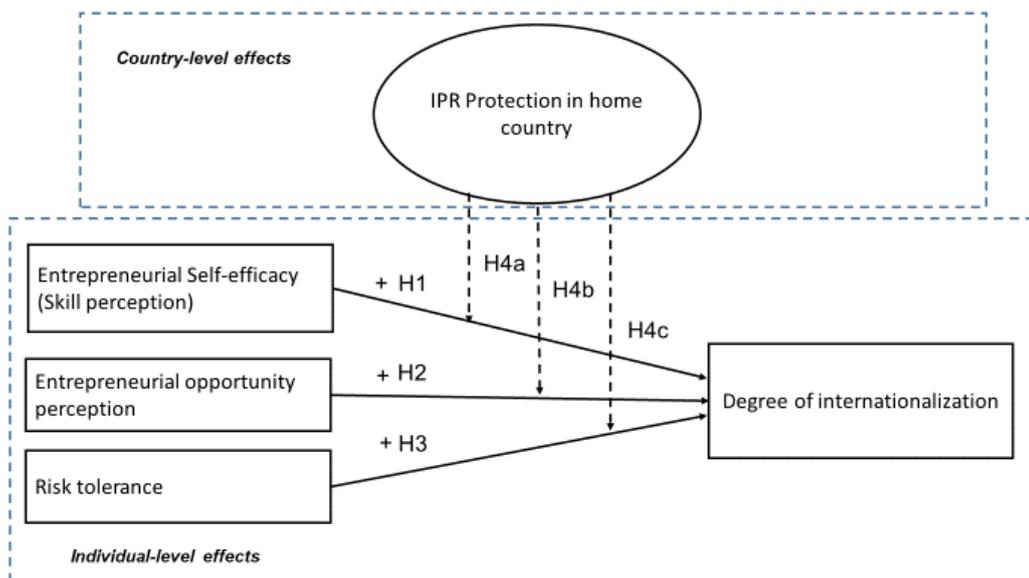
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Figure 1 Theoretical Model of the Study



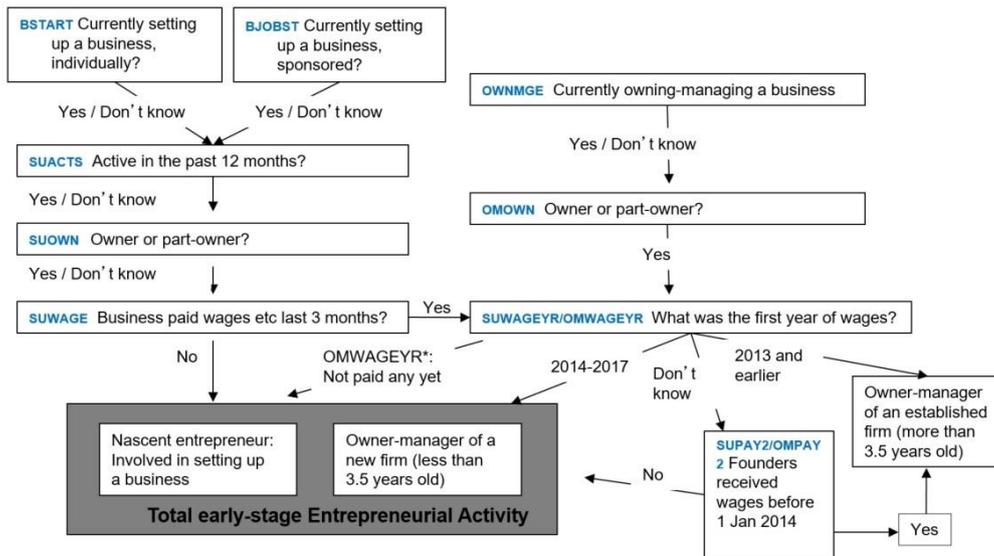


Fig 2. Early-stage entrepreneurs' selection process

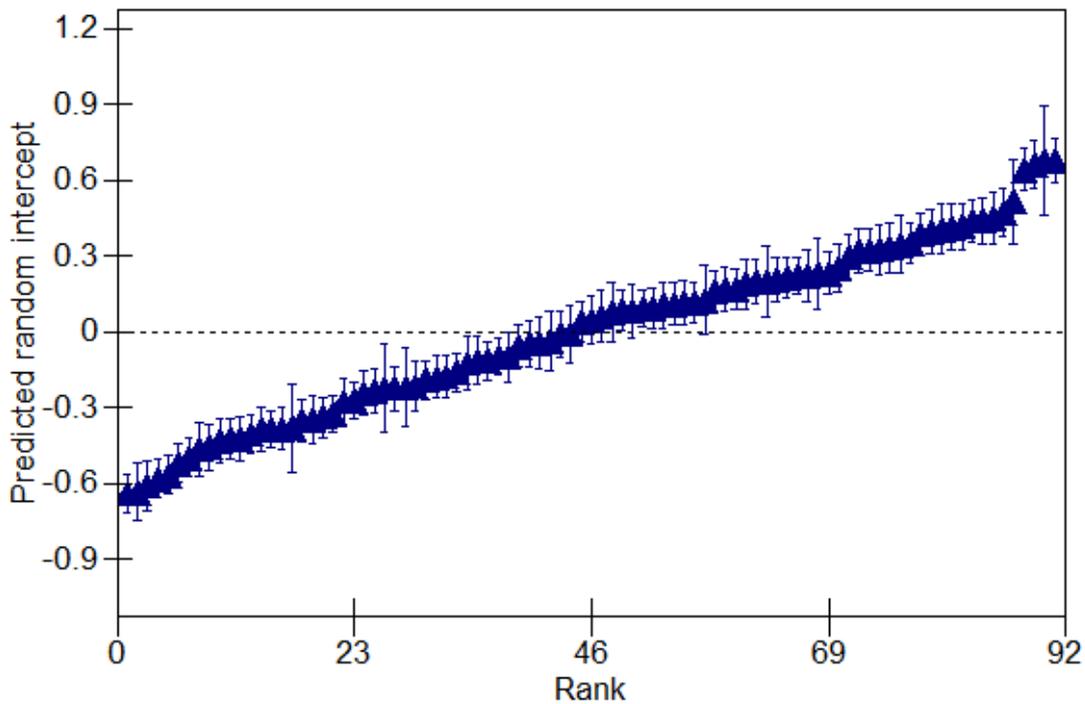


Fig. 3 The degree of internationalization: country effects in rank order with 95% confidence intervals

Table 1 . Description of model variables

| Measure | Definition | Possible value | Source |
|--------------------------------|--|---|---------|
| <i>Dependent Variable</i> | | | |
| Degree of internationalization | What proportion of your customers will normally live outside your country?" GEM puts the individual-level responses into five categories | 0 - no export 1 - greater than 0 and less than 25 2 - 25% and less than 75% 3 - 75% and up to 100% | GEM-APS |
| <i>Independent Variable</i> | | | |
| Entrepreneurial self-efficacy | Do you have the knowledge, skill and experience required to start a new business | 0 - no 1 - yes | GEM-APS |
| Risk tolerance | Would fear of failure prevent you from starting a business | 0 - yes 1 - no | GEM-APS |
| Opportunity perception | In the next six months, will there be good opportunities for starting a business in the area where you live? | 0 - no 1 - yes | GEM-NES |
| IPR index | The degree to which a country enforces intellectual property rights, protects citizens against illegal expropriation of property, and guarantees independence of the judiciary system from any external interference | | IEF |
| <i>Control Variable</i> | | | |
| Gender | What is your gender? | 1 - female 2 - male | GEM-APS |
| Age | What is your current age (in years)? | | GEM-APS |
| Education attainment | What is the highest qualification you have achieved? | 1 - primary or below 2 - secondary 3 - post-secondary 4 - graduate experience | |
| Household income | Represented by household-income tier | 1 = lower income tier 2 = middle income tier 3 = upper income tier | |
| GDP per capital | Gross domestic product (GDP) at purchasing power parity (PPP) per capita | | IMF |
| GDP growth rate | Gross domestic product, constant prices percent change | | IMF |

Table 2. Correlation matrix

| | Mean | S.D. | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|--------------------------|-------|-------|---------|----------|----------|---------|----------|----------|----------|---------|---------|---------|-------|
| Internationalization (1) | 0.60 | 0.78 | 1.000 | | | | | | | | | | |
| Age (2) | 36.55 | 12.69 | 0.007* | 1.000 | | | | | | | | | |
| Gender (3) | 0.58 | 0.49 | 0.069** | -0.009** | 1.000 | | | | | | | | |
| Income (4) | 2.15 | 0.76 | 0.072** | -0.010** | 0.103** | 1.000 | | | | | | | |
| Education attainment (5) | 2.04 | 1.08 | 0.155** | 0.022** | 0.058** | 0.256** | 1.000 | | | | | | |
| GDP per capital(6) | 2.09 | 1.72 | 0.172** | -0.108** | 0.064** | 0.057** | 0.269** | 1.000 | | | | | |
| GDP growth (7) | 0.34 | 0.37 | 0.025** | 0.035** | -0.015** | 0.013** | -0.081** | -0.169** | 1.000 | | | | |
| Self-efficacy(8) | 0.72 | 0.46 | 0.055** | -0.037** | 0.029** | 0.046** | 0.146** | 0.137** | -0.054** | 1.000 | | | |
| (9) | 0.43 | 0.47 | 0.042** | -0.027** | -0.003 | 0.022** | 0.079** | 0.055** | -0.051** | 0.176** | 1.000 | | |
| Fear of failure (10) | 0.74 | 0.45 | 0.06** | -0.011** | 0.045** | 0.038** | 0.096** | 0.078** | -0.090** | 0.152** | 0.164** | 1.000 | |
| IPR Index (11) | 48.70 | 24.37 | 0.198** | -0.138** | 0.023** | 0.035** | 0.220** | 0.614** | -0.117** | 0.131** | 0.080** | 0.102** | 1.000 |

Note: ** p<0.01; * p<0.05;

Table 3. Multilevel ordinal logistic regression analysis results

| | Model 1 | | Model 2 | | Model 3 | |
|---|------------------|----------------|-----------------|----------------|-----------------|----------------|
| | Coefficient | S.E. | Coefficient | S.E. | Coefficient | S.E. |
| Fixed effects parameters | | | | | | |
| Selection control | | | | | | |
| Inverse Mill's ratio | -0.113*** | (0.044) | -0.117** | (0.044) | -0.118** | (0.044) |
| Individual-level control variables | | | | | | |
| Age | 0.003*** | (0.000) | 0.003*** | (0.000) | 0.003*** | (0.000) |
| Gender | 0.172*** | (0.014) | 0.175*** | (0.014) | 0.176*** | (0.014) |
| Household income | 0.074*** | (0.009) | 0.071*** | (0.009) | 0.074*** | (0.009) |
| Educational attainment | 0.121*** | (0.007) | 0.119*** | (0.007) | 0.120*** | (0.007) |
| Country-level control variables | | | | | | |
| GDP per capital | 0.164*** | (0.045) | 0.165*** | (0.045) | 0.113* | (0.054) |
| GDP growth | 0.347 | (0.670) | 0.129 | (0.670) | 0.373 | (0.679) |
| Individual-level predictors | | | | | | |
| Self-efficacy | | | 0.276+ | (0.151) | 0.509+ | (0.296) |
| Opportunity perception | | | 0.808*** | (0.149) | | |
| Risk tolerance | | | 0.317* | (0.152) | | |
| Country-level predictor | | | | | | |
| IPR index | | | | | 0.060 | (0.040) |
| Cross-level two-way interaction | | | | | | |
| Self-efficacy * IPR index | | | | | 0.187** | (0.059) |
| Opportunity perception * IPR index | | | | | | |
| Risk tolerance * IPR index | | | | | | |
| Model Fit | | | | | | |
| Number of Observations | 97,711 | | 97,711 | | 97,711 | |
| Number of Countries | 91 | | 91 | | 91 | |
| Industry effect | controlled | | controlled | | controlled | |
| Log-likelihood | -86987.1 | | -86966.1 | | -86978.6 | |
| Akaike Information Criterion (AIC) | 174020.2 | | 173984.1 | | 174009.31 | |
| Bayesian Information Criterion (BIC) | 174438.4 | | 174230.9 | | 174236.0 | |
| Random effects parameters | | | | | | |
| sigma_u | 0.92 | | 0.91 | | 0.78 | |
| sigma_v | 0.33 | | 0.31 | | 0.11 | |

Note: *** p<0.001 ; ** p<0.01; * p<0.05; + p<0.1

Table 4. Multilevel ordinal logistic regression analysis results

| | Model 4 | | Model 5 | | Model 6 | |
|---|-----------------|---------|-----------------|---------|-----------------|---------|
| | Coefficient | S.E. | Coefficient | S.E. | Coefficient | S.E. |
| Fixed effects parameters | | | | | | |
| Selection control | | | | | | |
| Inverse Mill's ratio | -0.123** | (0.044) | -0.115** | (0.044) | -0.115** | (0.044) |
| Individual-level control variables | | | | | | |
| Age | 0.003*** | (0.000) | 0.003*** | (0.000) | 0.003*** | (0.000) |
| Gender | 0.176*** | (0.014) | 0.175*** | (0.014) | 0.175*** | (0.014) |
| Household income | 0.071*** | (0.009) | 0.074*** | (0.009) | 0.071*** | (0.009) |
| Educational attainment | 0.122*** | (0.007) | 0.120*** | (0.007) | 0.119*** | (0.007) |
| Country-level control variables | | | | | | |
| GDP per capital | 0.099+ | (0.053) | 0.110* | (0.053) | 0.108* | (0.053) |
| GDP growth | 0.584 | (0.674) | 0.380 | (0.678) | 0.299 | (0.679) |
| Individual-level predictors | | | | | | |
| Self-efficacy | | | | | 0.312 | (0.299) |
| Opportunity perception | 1.186*** | (0.311) | | | 1.046*** | (0.312) |
| Risk tolerance | | | 0.995** | (0.304) | 0.878** | (0.307) |
| Country-level predictor | | | | | | |
| IPR index | 0.087* | (0.040) | 0.054 | (0.040) | 0.044 | (0.040) |
| Cross-level two-way interaction | | | | | | |
| Self-efficacy * IPR index | | | | | 0.143* | (0.059) |
| Opportunity perception * IPR index | 0.087 | (0.060) | | | 0.053 | (0.060) |
| Risk tolerance * IPR index | | | 0.280*** | (0.060) | 0.253*** | (0.061) |
| Model Fit | | | | | | |
| Number of Observations | 97,711 | | 97,711 | | 97,711 | |
| Number of Countries | 91 | | 91 | | 91 | |
| Industry effect | controlled | | controlled | | controlled | |
| Log-likelihood | -86971.8 | | -86970.1 | | -86950.9 | |
| Akaike Information Criterion (AIC) | 173995.7 | | 173992.3 | | 173961.9 | |
| Bayesian Information Criterion (BIC) | 174242.5 | | 174239.1 | | 174246.5 | |
| Random effects parameters | | | | | | |
| sigma_u | 0.76 | | 0.77 | | 0.77 | |
| sigma_v | 0.10 | | 0.11 | | 0.11 | |

Note: *** p<0.001 ; ** p<0.01; * p<0.05; + p<0.1

Table 5. IPR Index in groups

| Country | IPR Index | Group | Country | IPR Index | Group | Country | IPR Index | Group |
|---------------|-----------|-------|-------------------|-----------|-------|------------------------|-----------|-------|
| Netherland | 90.00 | 2 | Slovenia | 60.00 | 2 | Algeria | 30.00 | 1 |
| Switzerland | 90.00 | 2 | Latvia | 53.18 | 2 | Nigeria | 30.00 | 1 |
| Austria | 90.00 | 2 | Costa Rica | 52.84 | 2 | Ethiopia | 30.00 | 1 |
| Sweden | 90.00 | 2 | Malaysia | 52.75 | 2 | Uganda | 30.00 | 1 |
| Norway | 90.00 | 2 | India | 52.09 | 2 | Zambia | 30.00 | 1 |
| Germany | 90.00 | 2 | Italy | 51.45 | 2 | Namibia | 30.00 | 1 |
| Australia | 90.00 | 2 | South Africa | 50.00 | 1 | Namibia | 30.00 | 1 |
| Singapore | 90.00 | 2 | Mexico | 50.00 | 1 | Bulgaria | 30.00 | 1 |
| Canada | 90.00 | 2 | Brazil | 50.00 | 1 | Kosovo | 30.00 | 1 |
| Luxembourg | 90.00 | 2 | Colombia | 50.00 | 1 | Belize | 30.00 | 1 |
| Finland | 90.00 | 2 | Turkey | 50.00 | 1 | Panama | 30.00 | 1 |
| UK | 89.58 | 2 | Ghana | 50.00 | 1 | Kazakhstan | 30.00 | 1 |
| Chile | 88.73 | 2 | Slovakia | 50.00 | 1 | Pakistan | 30.00 | 1 |
| Ireland | 88.70 | 2 | UAE | 50.00 | 1 | Guatemala | 27.58 | 1 |
| Estonia | 86.23 | 2 | Puerto Rico | 50.00 | 1 | Egypt | 27.32 | 1 |
| USA | 80.00 | 2 | Trinidad & Tobago | 50.00 | 1 | Russia | 25.00 | 1 |
| Belgium | 80.00 | 2 | Greece | 44.19 | 1 | Burkina Faso | 25.00 | 1 |
| France | 80.00 | 2 | Thailand | 44.08 | 1 | Cameroon | 25.00 | 1 |
| Japan | 80.00 | 2 | Romania | 40.00 | 1 | China | 20.00 | 1 |
| Barbados | 80.00 | 2 | Peru | 40.00 | 1 | Bosnia and Herzegovina | 20.00 | 1 |
| South Korea | 71.51 | 2 | Morocco | 40.00 | 1 | Bangladesh | 20.00 | 1 |
| Spain | 70.00 | 2 | Tunisia | 40.00 | 1 | Ecuador | 18.15 | 1 |
| Botswana | 70.00 | 2 | Croatia | 40.00 | 1 | Argentina | 17.35 | 1 |
| Portugal | 70.00 | 2 | El Salvador | 40.00 | 1 | Vietnam | 15.00 | 1 |
| Uruguay | 70.00 | 2 | Suriname | 40.00 | 1 | Angola | 15.00 | 1 |
| Taiwan, China | 70.00 | 2 | Jamaica | 40.00 | 1 | Iran | 10.00 | 1 |
| Israel | 70.00 | 2 | Georgia | 40.00 | 1 | Libya | 10.00 | 1 |
| Qatar | 70.00 | 2 | Macedonia | 35.00 | 1 | Bolivia | 10.00 | 1 |
| Hungary | 63.07 | 2 | Indonesia | 30.00 | 1 | Venezuela | 5.00 | 1 |
| Poland | 60.00 | 2 | Philippines | 30.00 | 1 | | | |
| Lithuania | 60.00 | 2 | Pakistan | 30.00 | 1 | | | |

Table 6. Multilevel ordinal logistic regression analysis results

| Model 7 | | |
|---|------------------|-----------------|
| | Low IPR regime | High IPR regime |
| Fixed effects parameters | | |
| Selection control | | |
| Inverse Mill's ratio | -0.062*** | -0.149* |
| Individual-level control variables | | |
| Age | 0.003*** | 0.001+ |
| Gender | 0.118*** | 0.218*** |
| Household income | 0.077*** | 0.063*** |
| Educational attainment | 0.097*** | 0.117*** |
| Country-level control variables | | |
| GDP per capital | 0.164 | 0.076+ |
| GDP growth | 0.464*** | 1.064 |
| Key predictors | | |
| Entrepreneurial Self-efficacy | 0.057** | 0.284*** |
| Opportunity perception | 0.321*** | 0.116*** |
| Risk tolerance | 0.062** | 0.329*** |

Note: *** p<0.001 ; ** p<0.01; * p<0.05; + p<0.1