Essays on Entrepreneurial Environment: Institutions and Entrepreneurship

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Declaration

I certify that the substance of this thesis has not already been submitted for any degree and is not currently being submitted for any other degree. I certify that any help received in preparing this thesis and all sources used have been acknowledged.

Vu Chu

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Abstract

While discussion of informal institutions received limited attention from entrepreneurship scholars, it remains detached from the broader context of formal institutions. This is partially attributed to the fact that entrepreneurship research is typically conducted within disciplinary boundaries when informal institutions cut across multiple disciplines, requiring multidisciplinary approach and intersection of different bodies of knowledge. Informal institutions, which are deeply rooted in cultural, social, and historical contexts, interact with formal institutions in complex ways. A broad spectrum of perspectives from sociology, psychology, economics, and management offers comprehensive understanding of informal institutions, enabling researchers to delve into these complexities and understand how informal institutions shape entrepreneurial behaviors.

Supported by the growing literature on informal institutions and interdisciplinary approaches in entrepreneurship research, the thesis explores how informal institutions can influence the individual intention to embark on entrepreneurial endeavors and how informal practices are employed by firms in the developing economics, which are characterized by underdeveloped institutions. The thesis consists of three individual essays. The first essay discusses the innovation strategies of informal entrepreneurship in the context of imperfect institutional environments. The second essay examines the role of civic engagement in fostering entrepreneurial intention. The third essay explores how religious identity is connected to experiences of eudaimonia that subsequently shapes entrepreneurial intent. These essays draw primarily on two cross-country datasets: The Gallup World Poll and the World Bank Enterprise Survey.

While the essays are connected by their focus on the influence of formal and informal institutional environments on entrepreneurship, they provide diverse contributions to a number

of influential theories across disciplines. First, the first essay challenges the existing perceptions of "informality costs" incurred by informally created firms and offers alternative insight into their behaviors regarding product introduction in developing countries. The essay also extends contingency theory to the context of formalized firms in developing economies. The second essay builds on the existing framework of self-determination theory to connect civic engagement and entrepreneurial intention. By doing so, it extends pro-social behaviors beyond the context of social entrepreneurship to further encompass entrepreneurial behaviors in a more general sense. Finally, the third essay refines the social identity theory by examining the multifaceted well-being of religious believers. This essay also revises the role of eudaimonic well-being as psychological resources for entrepreneurial intention.

The thesis presents important implications for both theory and practice. Theoretically, the thesis uncovers the profound influence of informal institutions on entrepreneurial behaviors through a wide range of disciplinary lenses. Future research may seek to expand upon the novel concepts and relationships introduced and refined in this thesis, laying the groundwork for further exploration and development. Practically, policy makers and organizational institutions would find our findings useful in their quest for building their own strategies of fostering entrepreneurial society.

Introduction

Background and research gaps

Entrepreneurship is broadly recognized as a significant driver of economic growth (Acs et al.., 2008; Wright & Stigliani, 2013; Wright & Marlow, 2011), and solutions to other socio-economic problems such as environmental degradation (Anderson & Leal, 2001; Dean & McMullen, 2007), market failure issues (Coase, 1974; Buchanan & Faith, 1981), and inequality (Packard & Byland, 2017). Thus, it is understandable that research on the environmental factors that support entrepreneurship constitutes a substantial and expanding body of literature, reflecting their critical role in the establishment and success of businesses within a nation (Gnyawali et al., 1994). General environmental conditions discussed in entrepreneurship literature include formal institutional frameworks comprising legal, political, and economic structures (Acs et al., 2008; El-Namaki, 1988; Gartner, 1985). While formal structures are essential, they can only provide partial explanations for cross-nation variations in entrepreneurial activity (Williams & Vorley, 2015) because many people coming from the societies with similar formal institutions show different attitudes towards entrepreneurship (Lee & Peterson, 2000, Thomas & Mueller, 2000). It is equally important to examine informal institutions such as norms, value systems, and codes of conduct as these informal elements influence entrepreneurial capacity and shape the behaviors of entrepreneurs (North, 1990; Frederking, 2004; Valdez & Richardson, 2013). The effects of informal institutional frameworks on entrepreneurship are especially profound in emerging economies where there is a large degree of formal institutional voids (Slade et al., 2018; Light & Dana, 2013; Mair et al., 2012). However, scholars have devoted less effort to understanding how informal institutions either support or limit entrepreneurial activities (Webb et al., 2019). Furthermore, there is a lack of fine-grained analysis that integrates formal and informal institutions and

analyzes the interaction between them (Aidis et al., 2008; Fuentelsaz et al., 2019). Failure to take these two dimensions into account could lead to myopic understanding of the relationship between institutions and entrepreneurship because institutions are intricate, multifaceted, and interconnected systems (Hutzschenreuter et al., 2016).

From an institutional perspective, informal institutions create incentives, through their influence on beliefs, values, and attitudes, that shape the desirability and feasibility of entrepreneurial behaviors (Díaz-Casero et al., 2012; North, 1990). According to North (1990), formal institutions are essentially a crystallized version of informal institutions as formal institutions originate as informal responses to societal problems, continue to diffuse, and eventually crystallize into established rules and standards that shape future behaviors (Tolbert & Zucker, 1996). When formal institutions erode and fail to offer acceptable solutions, individuals look for new (informal) solutions that better align with the evolving social context of society (Powell & DiMaggio, 2012). As entrepreneurship is equally a dynamic and holistic process in response to today's constantly changing environment (Zhao, 2005), it is no surprise that informal institutional factors tend to create greater synergies with human behaviors and leadership practices than formal ones (Urbano et al., 2021).

There are various combinations of mechanisms through which informal institutions can influence entrepreneurship given the fact that literature documents a diverse and wide variety of informal institutions that mirror the customs, traditions, and norms unique to particular societies, including ideology, cultural norms (Helmke & Levitsky, 2012), informal practices (Kaufmann et al., 2018), communities (Gartner et al., 2006), or family and unions (Aldrick & Cliff, 2003). For example, cultural parameters significantly influence the inclinations of the social groups from which entrepreneurship originates (Baughn & Neupert, 2003). Furthermore, cultural values embedded in the society can drive entrepreneurial intention by shaping the desire for achievements and the pursuit of utility maximization (Douglas & Shepherd, 2002,

Shane et al., 2003). Cultures that value higher-order needs such as self-expression, passion, or autonomy tend to experience greater levels of entrepreneurial activity (Pathak & Muralidharan, 2021). Similarly, entrepreneurship is a "livid experience" rooted in emotions and affects (Morriset et al., 2012), including experience for social engagement (Zimmer, 1986); religious salience (Smith et al., 2023); self-discovery (Gibb, 1993); learning (Cope & Watts, 2000); adaptation (Stoica & Schindehutte, 1999); an evolution (Andren et al. 2003); and grievance (Shepherd, 2003). Thus, whether these experiences are favorably managed and perceived by society or the individuals would not only improve overall well-being of the engaging entrepreneurs but also facilitate entrepreneurial behaviors. Motivated by this call, two essays in this thesis examine the role of different types of informal institutions in entrepreneurship by studying (1) the impact of civic engagement on entrepreneurial intention (Essay 1), and (2) the impact of religious identity on entrepreneurial intention (Essay 3)

While the inquiry into how informal institutions influence entrepreneurial decisions holds significant theoretical and practical importance, it is more so to examine relevance of informal institutions alongside formal institutions (Hayton et al., 2002). The interactive effects between informal and formal institutions carry more significance in the context of under-developed countries (Williams & Vorley, 2014). Developing countries are characterized by the limited ability or even the failure of the formal institutions to establish fundamental structures of governance, protect property rights, develop infrastructure, and uphold the rule of law (Khanna & Palepu, 1997). Even with formal institutional reforms, transition economies continue to be influenced by the lasting impact of central planning on societal attitudes and normative views regarding entrepreneurship (Williams & Vorley, 2014). Thus, entrepreneurs operating in transitional environments encounter higher levels of uncertainty and risks compared to their counterparts in more developed economies. In such unstable legal and economic environments, entrepreneurs usually need to rely informal institutions to fill the voids left by formal

institutions (Puffer et al., 2010). However, until the governments can successfully implement institutional reforms that better align formal and informal institutions, the institutional asymmetry will be likely to persist, suppress ambitions, and hinder entrepreneurial-led growth (Webb et al., 2020). The main challenge for these countries is that entrepreneurs' full reliance on formal institutions may not occur in the near future, owing to the entrenchment of informal institutions. The prevalent exploits of informal institutions such as bribery or illegal payments mean that entrepreneurs can operate informally and engage in corrupt acts, further undermining the progress of institutional reforms (Manolova & Yan, 2002; Tonoyan et al., 2010; Williams & Vorley, 2014). This raises numerous thought-provoking questions. How would those "bad" institutional entrepreneurs can exert detrimental effects on institutional reforms? Why would the co-existence of informal operations and corrupt activities be more probable and efficient in countries with formal institutional voids? How would informality and corruption deliver benefits to entrepreneurs in a variety of performance indicators such as revenue or innovation outputs? These questions will be addressed in the first essay.

Finally, previous research has concentrated on how institutions support entrepreneurship (Estrin & Mickiewicz 2011; McMullen et al., 2008; Sobel, 2008), primarily from country-level perspective (Cole et al., 2016; Amorós, 2009; Watson, 2013; Autio & Acs, 2010; Terjesen & Hessels, 2009; Bévort & Suddaby, 2016). However, the process of establishing new businesses functions across various levels (Davidsson & Wiklund, 2001), shaped by both micro-level (Bhagavatula et al., 2010; Davidsson & Honig, 2003) and macro-level factors (Aidis et al., 2008; Bowen & De Clercq, 2008). The oversight in examining the influence of institutions from individual-level perspective can be highly significant because new venture creation is largely influenced by individual resource endowment (Bhagavatula et al., 2010; Davidsson & Honig, 2003), and psychological resources (Foo, 2011; Nikolaev et al., 2018). Furthermore, individual behaviors are shaped by macro institutional contexts, there is a large variation in the

sensemaking and identity of the institutional logics even within one country. Research highlights how individuals might subjectively interpret, enact, and creatively sustain institutions (Everitt, 2012; 2013). Only a limited number of studies explore how both individual- and country-level factors jointly influence new business activity within a unified framework (Davidsson & Wiklund; Phan, 2004; Shepherd, 2011). Thus, it is intriguing to see how institutional framework might shape entrepreneurial behaviors through the lens of its individual actors' identification or sensemaking (i.e., intention to open a new venture, entrepreneurial decision-making, innovation strategies).

Research focus and methodology

The thesis examines the diverse effects of informal institutions on entrepreneurship, either in the general context or under the context of formal institutional voids. Taking an interdisciplinary approach using perspectives from psychology, sociology, and organizational theories, the thesis offers a nuanced, subtle, and sophisticated understanding of the complex relationships between the two influential phenomena. The thesis aims to look at how institutions in the form of actors' perceptions of institutional logics influence their behaviors or decision-making. Specifically, how individuals or firms interpret and make sense of the prevailing norms, values, and expectations within a given environment of informal institutions have strong implications on their entrepreneurial behaviors and business decisions. An overarching research question is posed:

Overarching RQ: How do informal institutions in the form of individuals' and firms' perceptions affect their entrepreneurial behaviors?

Drawing on insights from theories in psychology and sociology, this research first examines the impact of individual engagement in civic affairs on the intention to start a business and

become an entrepreneur. Then we continue investigating how individuals identify with or attach importance to their religion affect their entrepreneurial intention. The following two sub-research questions were posed:

Sub-RQ 1. What effects does civic engagement have on entrepreneurial intention?

Sub-RQ 2. What effects does religious identity have on entrepreneurial intention?

As argued in previous discussion, the analyses of informal institutions would hold more relevance to theory and practice in the presence of formal institutions as one of the boundary conditions. In developing countries, the institutional environment has seen incoherent and constantly changing business regulations (Aidis & Adachi, 2007), posing risks and uncertainty to businesses (Williams & Vorley, 2014). When formal institutions fail to offer acceptable protections, entrepreneurs may have to rely on informal tools in response to the rapid change in today's environment (Powell & DiMaggio, 2012). The reliance on informal practices can also alter the firms' strategies and day-to-day operations (Chen, 2009). On that account, the research expanded the analyses to the context of developing economies, posing another sub-research questions:

Sub RQ 3: How do institutional voids affect innovation strategies of firms in the informal sector?

Each of the above sub research questions will be addressed by the corresponding chapters in this thesis. The theoretical arguments in all the three essays are supported by rigorous statistical analyses. The statistical analyses mainly center on econometric methods that revolve around the application of multi-level regression models to analyze data of multiple hierarchies and test the hypothesized theories. Necessary robustness checks are also included depending on the nature of the essay.

Contributions

This thesis has both theoretical and practical implications. Overall, the thesis extends current knowledge on institutions and entrepreneurship (Muralidharan & Pathak, 2017; Fuentelsaz et al., 2019; Tonoyan et al., 2010).

The first essay shows that, in the presence of formal institutional voids, firms in developing countries rely on informal practices to gain competencies in their innovative product development. Firms that have operated in the informal sector for a long time not only avoid unnecessary costs of formal registration but also accumulate experience, expertise, and resources to help them navigate the "informality costs" proposed by existing literature. In addition, they are more capable of employing bribery as an informal institution to gain access to important resources and information that are largely controlled by corrupt officials. Formalized firms with more past "experience" in the informal sector engage more in innovative product introduction and less in imitative product introduction than other formalized firms or firms that never operate informally. When institutional quality improves, the separate and interactive effects of informality and bribery largely dissipate.

The thesis shows that civic engagement as an informal institution plays an important role in shaping entrepreneurial intention as human behavior. Civic engagement can be understood to bring many benefits to its participant, including social capital, socialization, learning, adaptive responses, cultural dynamics, and so on. Civic engagement can bring significant benefits to one's well-being. These benefits can foster the ambitions of individuals to become entrepreneurs. For example, volunteers who contribute to society can benefit from the norms of reciprocity, trust, and solidarity, enabling them to mobilize resources for future endeavors. Practically, policy makers can recognize the importance of civic engagement in shaping entrepreneurial behaviors. They can devise policies supporting strong civic attitudes or invest

more funding in those organizational institutions such as non-profit organizations or social enterprises.

It highlights how religious identity not only enhances overall well-being but also drives entrepreneurial intention. Religious identity as a fundamental aspect of individual lives influences individual's values, behaviors, and daily practices. Stronger identification with the norms, values, and religious institutions delivers experiences related to eudaimonia such as self-expression, autonomy, or personal growth. These experiences are associated with a higher propensity to become an entrepreneur. The findings further emphasize one of the rare commonalities among religious groups, which refers to the pursuit of eudaimonic well-being related to the sacred, traditions, and beliefs.

The rest of this section offers a brief description of every essay that is part of the thesis, along with an overview of the data sources and methodologies utilized. This includes justifications for the choices of methodological approaches and the compromises that are involved. Additionally, it includes declarations of authorship and a consolidated bibliography.

Summary of essays

Essay 1 - Innovation in developing countries: The role of Informality and Bribery

Chu, V. T., Tran, Hien Thu., Freel. M. (2024). Innovation in developing countries: The role of Informality and Bribery. Working paper.

Presented at the Academy of Management Conference (AOM), Chicago, Illinois, August 2024

The paper uses the World Bank Enterprise Survey to study the separate and interactive effects of years of informal operation and bribery on firms' new product development. Bu & Cuervo-Cazurra (2020) showed that informality costs associated with informally created firms persist throughout their lifespan, hindering their incentives and ability to innovate. Building on contingency theory, we hypothesized that, in the context of developing countries, firms that spend higher length of time in the informal sector accumulate more critical knowledge and greater adaptive capabilities (i.e., skills, resources), which could offset the negative consequences of informality costs, than firms that spend less time or never stay in the informal sector. Thus, years of informal operation are positively associated with innovative product introduction and negatively associated with imitative product introduction. Furthermore, the "experience" and "resources" obtained from the time spent informally render them efficient exploiters of bribery. In underdeveloped countries with larger degree of institutional asymmetries, engaging in informal and corrupt activities go together (Williams & Vorley, 2014). Moreover, the essay argues that the impacts of informal years of operation and bribery are less pronounced when institutional quality improves. Using multi-level regression models,

the results show that firms that spent extended length of time operating informally engage more in innovative product introduction even after formalization. However, the essay finds no significant difference between them and other firms with less "informal" time. The interaction between informal years and bribery on innovative product introduction/imitative product introduction are positive/negative and statistically significant. This confirms the effectiveness of firms' strategy to introduce innovative products in the presence of formal institutional voids. While entrepreneurs operating informally and engaging in corrupt acts might be the result of weakly-developed institutions (Khanna & Palepu, 1997; Gao, 2011), any institutional reforms to improve the quality of formal institutions could be undermined by those "bad" institutional entrepreneurs who operate informally and engage in corruption (Williams & Vorley, 2014). This is the paradox that policy makers in developing countries need to deal with.

The manuscript had been initially submitted to Strategic Entrepreneurship Journal and was rejected after one round of review. Currently, this essay is currently not published.

Essay 2 - Civic engagement, well-being, and entrepreneurial intention

Chu, V. T., Tran, Hien Thu., Freel. M. (2024). Civic engagement, well-being, and entrepreneurial intention. Working paper.

Presented at the Academy of Management Conference (AOM), Boston, Massachusetts, August 2023

Drawing upon data from the Gallup World Poll (2005 – 2012), this essay focuses on the impact of civic engagement on individual intention to start a new business. We also analyze how the relationship is mediated by hedonic well-being, which is related to life satisfaction, positive emotions, pleasure, and eudaimonic well-being, which is related to meaning, self-expression, and personal growth. Engagement in civic affairs such as philanthropic activities, volunteering, or political endeavors bring a wide variety of benefits to the participants (Wilson, 2000; Wilson, 2012). Those resources could be instrumental in nurturing entrepreneurial initiatives, encompassing the context of both social and non-social entrepreneurship. Furthermore, there is a rich literature on the benefits in terms of well-being from involvement in civic activities, including hedonia (Borgonovi, 2008; Martinson & Minkler, 2006) and eudaimonia (Son & Wilson, 2012). One of the distinctive features of psychological well-being is that it can play the role as either outcomes or resources (Ryff, 2019). Therefore, we feel inclined to test how hedonic well-being and eudaimonic well-being mediate the path from civic engagement to entrepreneurial intention. To evaluate the validity of our hypothesized associations across

multiple countries, we employ multi-level regression models with individual-level data nested within higher level units, which is country-level data. We found that civic engagement has a significant and positive impact on entrepreneurial intention. This relationship is largely mediated by eudaimonic well-being. In contrast, while being minimal, civic engagement is negatively associated with hedonic well-being. Our findings generate important implications from the perspective of social institutions that manifest itself through individual members. Governments and social organizations can cultivate entrepreneurial mindset by providing more meaning to motivated participants in their activities or offering chance for them to achieve personal ambitions and growth through various platforms.

The manuscript is currently under the second round of review at Entrepreneurship & Regional Development.

Essay 3 - From believer to entrepreneur: The mediating force of eudaimonic well-being

Chu, V. T., Tran, H. T. (2024). From believer to entrepreneur: The mediating force of eudaimonic well-being. Working paper.

Presented at the Academy of Management Conference (AOM), Chicago, Illinois, August 2024

This essay employs data from the Gallup World Poll and looks at eudaimonic well-being as the key channel that connects religion and entrepreneurship. Substantial body of literature viewed the relationship between religion and entrepreneurship through the lens of material motives, rational choice, or self-interested perspective, leading to a narrow understanding of religious beliefs (Kahneman, 2011; Giddens, 1981; Weber, 1930, Iannacone, 1998). The intrapersonal complexity of these religious beliefs would provide a more comprehensive explanation to the link between religion and entrepreneurship (Coşgel & Minkler, 2004). Building on the theory of social identity, we examine the mediation role of eudaimonic well-being in the relationship between religious identity and entrepreneurial intention. We employ a wide range of statistical methods such as multi-level mixed-effect logistic regression, path analysis, and Heckman two-stage models. The results generally show that strong religious identification is associated with a higher level of eudaimonic well-being, which significantly mediates the impact of religious identity regarding its impact on the intention to become an entrepreneur. The robustness checks indicate that the results are consistent across religious groups and different measures of religious identity. In summary, eudaimonic well-being could

serve as a pathway through which religious identity influences entrepreneurial intention. Individuals who experience a sense of alignment, purpose, resilience, social support, and self-actualization through their religious identity may be more likely to pursue entrepreneurial ventures as a means of expressing their values, realizing their potential, and contributing to the greater good. The results enhance our understanding of the relationship between religious institutions and entrepreneurship given that individual religious identity is shaped by various factors, including the teachings, practices, and norms propagated by religious institutions. Religious institutions manifest themselves through religious identity, influencing individuals' beliefs, practices, affiliations, and sense of belonging within their religious communities.

Surveys

The Gallup World Poll (GWP) and the World Bank Enterprise Surveys (WEBS) are two primary surveys employed in this thesis. They are both widely used cross-sectional datasets surveyed across multiple countries dating back as early as 2005. Both boast an expansive array of questionnaires that cover a broad range of topics about the surveyed respondents. There are some features of the surveys that were not discussed in the corresponding essays.

Gallup World Poll

GWP has been continually surveyed for over the last 90 years by Gallup, who is entirely responsible for its design, management, and oversight. Gallup was inspired by the principle that accurately gathering and sharing the opinions and aspirations of people worldwide is essential for our understanding of the world. GWP has covered more than 160 countries since its foundation in 2005, which represents more than 99% of the total population. Gallup typically surveys 1000 individuals per country, with the exception of India and China where the sample size for each is 2000 respondents. The standardized set of core questionnaires are translated into the main languages of each country. Telephone interviews last about 30 minutes and are conducted in countries where telephone coverage reaches at least 80% of the total population or telephone is the customary practice for surveys. Some places where telephone interview is a common method are U.S., Canada, Western Europe, Japan, and Australia The random-digit-dial (RDD) method or a nationally representative list of phone numbers is utilized in those countries where telephone interviews are employed. Finally, Gallup acquires telephone samples from different sample providers in each region, including Sample Answers and Sample Solutions. In contrast, In the developing world, which includes much of Latin America, the former

Soviet Union countries, most of Asia, the Middle East, and Africa, Gallup employs an area frame design for face-to-face interviews in randomly selected households. The typical timeframe for face-to-face interviews is 1 hour.

With some exceptions, all samples are probability-based and nationally representative of the resident population aged 15 and older. The coverage area encompasses the entire country, including rural regions, and the sampling frame represents the entire civilian, non-institutionalized adult population of the country. Exceptions include areas where the safety of the interviewing staff is at risk and sparsely populated islands in some countries. The sampling procedures involve the following stages:

- Stage 1 -- Selecting Primary Sampling Units (PSUs): The identification of PSUs is the first step in countries where face-to-face surveys are conducted based on stratification by population size and/or geography. Sample selection is based on probabilities proportional to population size when population data is available; otherwise, Gallup uses simple random sampling. While the random-digit-dial (RDD) method or a nationally representative list of phone numbers is more commonly used, Gallup uses a dual sampling frame in selected countries with high cellphone penetration. Gallup makes at least three attempts to contact an individual in each household.
- Stage 2 -- Household Selection: The selection of sampled households is based on random-route procedures. Unless an interviewee makes an outright decline to participate, interviewers make three attempts to survey the sampled household. To enhance the likelihood of contact and completion, interviewers make attempts at various times of the day and, when feasible, on different days. If the interviewer cannot conduct an interview at the initially sampled household, they employ a simple substitution method.

- Stage 3 -- The face-to-face and telephone approaches are used based on the random respondent selection, which is achieved through identification of the latest birthday or the Kish grid. Gallup enforces quality control measures to ensure the accurate selection of samples and that interviewers choose the appropriate individuals within each household.

World Bank Enterprise Surveys

WEBS are nationally representative surveys at the firm level on top managers and business owners in over 150 economies. These surveys cover a broad range of topics on business environments, including access to finance, corruption, infrastructure, and performance, among others. Since the information is conveyed through the lens of individual respondents, the surveys offer valuable insights into firms' perspective on the various aspects of business environments. The extensive data and analytical reports facilitate comparisons across multiple economies over time. The information gathered the surveys is publicly accessible at both the economy and firm levels from https://www.enterprisesurveys.org/en/enterprisesurveys. The respondents include both formal enterprises, informal enterprises, and "formalized" enterprises who used to operate in the informal sector. Informal firms are defined as firms who do not conduct formal registration with the governments. Representative samples of unregistered businesses are obtained through innovative sampling strategies. The WEBS also explore other pertinent topics such as topics related to the COVID-19 pandemic, financial literacy, green economy, and firms' innovation.

Methodology

The multi-level mixed-effects regression models are consistently applied across three essays. Supplementary statistical analyses are also provided contingent on the nature of each essay. The details of methodologies, techniques, and definitions are thoroughly outlined in the essays. Some additional notes not found elsewhere are detailed below.

Definitions

Both GWP and WEBS primarily report variables in the form of categorical or binary values. The use of non-numerical variables affected the interpretation and communication of our variables. For example, WEBS does not report the number of innovative outputs produced by firms but classify whether firms engaged in new products or new-to-the-market products. This affected the way we allocated innovation into two categories, which are innovative product introduction and imitative product introduction. In addition, WEBS does not provide information on the amount of bribery values or number of attempts to bribe. Instead, respondents were asked whether they are expected to pay bribes in a specific situation (i.e., getting a license). Even though the definition of bribery in the thesis was not completely altered, this limited the way the results of interpreted as well as how discussion is communicated.

Due to the cross-sectional nature of the datasets, we were unable to select panel data regression to establish and study the dynamic analysis of entrepreneurship over time that allows for more comprehensive understanding of casual relationships. Essay 2 and 3 aimed to study entrepreneurial intention as forward-looking mindset and inclination towards starting a new venture or engaging in entrepreneurial activities in the future. As a result, we cannot use the answer to the question about the respondents' current state of employment as a dependent variable to reflect individual's aspiration and motivations towards future endeavors. We measure entrepreneurial intention by the answer to either question "Do you plan to start a

business in 3 years?" or "Do you plan and consider to be an entrepreneur?". This method of measuring entrepreneurial intention has been widely used in entrepreneurship literature (Obschonka et al., 2010; Díaz-García, M. C., & Jiménez-Moreno, 2010).

Techniques

In order to ensure the validity of the datasets employed in this thesis, I also made attempts to replicate the results from past papers using my own dataset. For example, my regression models on the determinants of firm-level innovation in the first essay are not completely similar to Bu & Cuervo-Cazurra (2020) due to the availability of datasets and revision of questionnaire from WEBS. Using my own dataset collected from WEBS, I was able to ensure the confirm the creditability of the dataset since the replication results are generally consistent with Bu & Cuervo-Cazurra (2020).

Non-experimental data

The essays employed secondary data and we do not have control or manipulation over the variables. Thus, we used several methods to deal with the consequences of non-randomized dataset (Blundell & Costa Dias, 2000). For instance, in studying the impact of civic engagement on entrepreneurial intention, it is required that engagement in civic affairs is randomly chosen by individuals irrespective of other motives. However, it is not always the case because people volunteer for a mix of variety of reasons, including health benefits, religious beliefs, or recognition. Similar problems may arise when religious identification was employed as one of the independent variables. We use a variety of methods to address the problems, but they are not reported specifically in the essays.

One of the methods that was used to alleviate the problem of endogeneity is the two-stage Heckman selection model (Heckman, 1979). We had been concerned that the sample of religious individuals were not randomly selected from the population, leading to sample selection bias and inconsistent estimates. The Heckman model addresses this by explicitly modeling the selection process. In the first stage, we estimate the selection probability of engaging in civic work using a probit model in which the binary selection variable is a model of all independent variables, control variables, and the instrumental variable. In this case, youth development index, which was created to gauge how citizens perceive the efforts of their communities and countries in prioritizing the welfare of children, is chosen as the instrumental variable. Gallup noted in their recent report that youth development index is shown to be strongly correlated with civic engagement index. Adolescence is a crucial period for establishing one's role within society (Crocetti et al., 2014; Erikson, 1968; Havighurst, 1952).

Software

The thesis used Stata 17 for all analyses.

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Essay 1 - Innovation in developing countries: The role of Informality and Bribery

Abstract

This paper explores the independent and interactive effects of years of informality and bribery on new product introduction by firms in developing economies. We theorize that formalized firms that previously operated in the informal sector for a prolonged period tend to accumulate more relevant knowledge and entrepreneurial abilities for introducing innovative products than firms that spend less time or never stay in the informal sector. They can be more adept at leveraging bribery to offset the disadvantages associated with their "informal past". Using years of operation without formal registration as a proxy for informality, this paper finds that firms with more past "experience" in the informal sector are more likely to engage in innovative product development. There are no differences between them in terms of imitative product development. Furthermore, bribery results in a higher level of both innovative and imitative product development. Finally, the positive interactive effects between informal years and bribery on innovative (imitative) product development are positive (negative) and statistically significant. Empirical analysis of a sample of more than 72,000 formal enterprises during the 2006-2021 period from the World Bank Enterprise Survey confirms our general propositions.

Keywords

Informal years, bribery, corruption, innovative product development, imitative product development.

1.1. Introduction

Informally created firms, or business ventures initially starting out without official registration to government authorities, have recently received increasing interest from management scholars (Khavul et al., 2009; Godfrey, 2011; Bruton et al., 2012; Bu & Cuervo-Cazurra, 2020). The informal sector employs over 60% of the total workforce in many low-income economies (ILO, 2013), accounts for up the 50% of the economic activity in the developing countries (La Porta & Shleifer, 2014). While informal firms play a significant role in employment and income generation in emerging economies (Guven & Karlen, 2020; Bosma & Levie, 2010), the literature consistently painted a grim picture of informal firms in terms their struggles, vulnerabilities, and strategic behaviors. In response to the business environment characterized by underdeveloped markets and institutional voids, firms choose to stay informal to avoid higher transaction costs and bureaucratic regulations (Webb et al., 2013). Informal firms often face significant "informality costs", including resource constraints (Daniels, 2010), public and regulatory mistreatment (De Soto, 1989), various market imperfections (De Beer et al., 2016), and higher agency costs (Bu and Cuervo-Cazurra, 2020). These challenges tend to trigger strategic tendency to stay away from innovative product introductions towards imitative product introductions (Bu & Cuervo-Cazurra, 2020)[1].

However, some studies have pointed to the informal sector as the 'hotbeds of innovation' (De Beer et al., 2016) and called for policy attention to preserve 'informal-innovation modalities' in the face of institutionalization (Armstrong et al. 2018). Indeed, existing empirical work may run the risk of exaggerating the negative effects of informality performance (Nichter & Goldmark, 2009) if it fails to consider the benefits of "informal experience" for the later part of their animate lives to activities of new product introduction (NPD). In this way, a more

[1] Innovative product development refers to when a firm introduces a product that is new to both the firm itself and the market while imitative product development refers to when a firm introduces a product that is new to the firm but not new to the market (Leiponen & Helfat, 2011).

complete understanding of how informal firms accumulate knowledge and skills before the inevitable process of formalization, and the nature of the associated boundary conditions that amplify these advantages, is likely to be critical to developing effective innovation policies in developing economies. It is important to discuss the evolution of firm behavior after formalization in the context of informality (Williams, 2017). This study also is critical, interesting, and theoretically relevant. While imprinting theory often highlights the persistence of negative traits from informality, it can also be applied to argue that informal firms retain positive adaptive traits—such as the ability to innovate under pressure (Almeida et al., 2024) —which continue to serve them after formalization. Moreover, prior related knowledge is essential for interpreting and making use of new information, which is essential for NPD (Cohen & Levinthal, 1990). Studies on the long-term effects of informality can offer insightful perspective for theorization.

To address this critical theoretical gap, we study the impact of "informal experience" on innovation in emerging economies. While informality has traditionally been viewed as "an antagonist" of innovative products (Bu & Cuervo-Cazzura, 2020), staying unregistered for a prolonged spell can offer numerous benefits (Williams, 2017) that are arguably relevant for innovative product development after formalization. To explain this, we integrate insights from the resource-based theory and absorptive capacity to propose that formalized firms develop intangible resources, such as "informal networks", market knowledge, and superior entrepreneurial abilities (i.e., resourcefulness, bricolage), that are especially relevant in developing countries and are difficult to be acquired by formal firms. With better prior related knowledge and skills, formalized firms are more receptive to new information and thus novel inventions (Cohen & Levinthal, 1990). We further add depth to the discussion by integrating the: (1) moderation of bribery and (2) influence of institutional quality. Specifically, formalized firms are less familiar with the complex bureaucracies and have less time to establish

themselves due to being away from the formal market for a while. They can offset these disadvantages by the exploitation of bribery. Finally, we argue that the institutional environment plays an overarching role in shaping the interplay of illegal and unethical activities. Specifically, while "informal experience" and bribery can offer remedies in underdeveloped markets, these benefits subside in higher-quality institutional environment.

These ideas and findings provide important and novel contributions to study on innovation in emerging economies and research on different theoretical perspectives (i.e., absorptive capacity, resource-based view) in the context of low-quality institutional environments. First, this work is contrasted with recent large-scale empirical work (e.g., Bu & Cuervo-Cazurra, 2020) or qualitative fieldwork (e.g., Armstrong et al. 2018) that have emphasized the liabilities of informality, and finds that informal firms even after formalization are more likely to engage in imitative rather than innovative behaviors. Our findings highlight the importance of taking a long-term perspective on informality; one that allows for the possibility of learning effects. Operating in the informal sector for an extended period enables firms to overcome the liabilities of newness, to acquire essential resources, and to allow them to engage more in innovative product introduction and less in imitative product introduction. Through the lens of absorptive capacity theory and resource-based view, the intangible resources acquired from years of staying unregistered can be unique, difficult to imitate, and beneficial to future novel inventions.

Second, in the context of underdeveloped market-support institutions, formalized firms can 'learn to be informal' and engage in deviant behaviors and deploy illegal payments in the form of gifts or bribes to public officers, as necessary, which serves to reduce informality costs and overcome resource, market and administrative constraints (Sampath et al., 2018). This underscores the contingent nature of strategy. Informal payments are pervasive in low-quality institutional environments (Svensson, 2005); acting as "facilitation payments" to help grease

the wheel of the bureaucracies (Huntington, 2006) and increase the quality of resource allocation decisions. Informal firms are even more motivated to adopt "normative flexibility in pursuit of dominant cultural goals" (Messner and Rosenfeld, 2012) by engaging in the bribe-bidding system, offering the highest bribes to overcome their "underdogs" status (Baron et al., 2018; Bu & Cuervo-Cazurra, 2020), to win profitable projects (Beck & Maher, 1986) and strengthen their innovative behaviors and adaptive capabilities (Tran & Freel, 2023). This, in turn, may lead to stronger innovation performance (Leff, 1964; De Vaal & Ebben, 2011) and increased survival chances and firm growth (Cling et al., 2010; Leff, 1964; Schipper, 2020).

As a policy implication, this piece of work does not necessarily encourage informality as an ideal strategic adaptation. While informal experience can offer valuable knowledge skills, formalization provides the fundamental basis for innovative product introductions. Informality and bribery may offer short-term gains but long-term damages to socio-economic development. Thus, proactive approaches should be aimed at promoting formalization and enhancing the institutional quality. We reaffirm the critical moderating role of institutional quality. In the presence of market imperfections and weak governance, engagement in informality and corruption might be necessary to survive and thrive. But as institutional change led to the improvement of institutional quality, the collective effects of informality and corruption/bribery diminish, and ultimately disappear. To this end, it is the quality of formal institutions that ought to be the primary focus in fighting against pervasive corruption and reducing the size of the informal economy in many developing countries (Riley, 1998; Doig & Riley, 1998). A failure to transition to formality is thought to be caused the weak governance and institutional failings (Méon & Weill, 2010; Brass et al., 1998; Gentina et al., 2016; Turkson et al., 2020), and thus hamper economic growth and societal development (Avnimelech, 2014).

1.2. Literature review and hypothesis development

1.2.1. Years of informal operation and innovation

Firms that undergo formalization tend to be those that were once among the larger, more profitable, and more successful enterprises in the informal sector (De Mel et al., 2013; Bruhn & McKenzie, 2014). They can achieve significantly higher annual sales, employment, and productivity growth (Williams et al., 2017) because initial nonregistration allows new ventures to achieve social legitimacy and avoid the costs of registration, which can be burdensome (i.e., paying tax, bureaucratic regulations, informal payment) in emerging economies (Kistruck et al., 2015; La Porta & Schleifer, 2014; Tonoyan et al., 2010). By delaying registrations, new ventures can overcome the liability of newness and focus their limited resources on laying stronger foundation for future growth (Williams et al., 2017).

Larger formalized firms have more able owners with greater entrepreneurial ability than owners of larger formally created firms (McKenzie & Sakho, 2010; De Mel et al., 2013). After years operating informally, they develop an extensive network of stakeholders through "informal" clusters that attract proximate companies for innovative product development (Armstrong et al., 2018). In the developing world, through the lens of institutional theory, while formal legitimacy entails modest benefits and disproportionately substantial costs, delaying registration allows firms to achieve "social legitimacy" with consumers, suppliers, and employees to avoid high initial costs and reduce institutional asymmetries (Williams et al., 2017; Godfrey, 2011; Webb et al., 2009). In addition, formalized firms acquired critical knowledge from simple exchanges of ideas and technologies within their clusters or agglomerations (de Beer et al., 2016) to produce tailor-made products (Kraemer-Mbula & Wunsch-Vincent, 2016; Pansera & Martinez, 2017) and develop innovations that solve immediate problems closer to the needs of the public (Kraemer-Mbula & Wunsch-Vincent, 2016). Such intangible resources are deeply ingrained in uncodified practices and the informal firm's unique social environment, thus being socially complex, unique and hard to imitate (Peteraf, 1993; Black and Boal, 1994). New product development is a knowledge-intensive

activities that involves the learning and transfer of knowledge (Mehra and Dhawan, 2003; Goffin & Koners, 2011). The tacit knowledge gained through experience determines the ability of firms to utilize new knowledge (Cohen & Levinthal, 1990). It contributes to the firms' absorptive capacity, which is the ability to recognize valuable new knowledge, integrate it into the firm and use it productively (Lane & Lubatkin, 1998). It is the basis for solving problems in NPD and provides grounds for breakthrough innovations (Mascitelli, 2000, p. 182; Thomke & Fujimoto, 2000).

Next, developing countries are characterized by underdeveloped and volatile institutional environments (Khanna & Palepu, 1997) that require firms operating in these markets to respond to unpredictable shocks such as macroeconomic uncertainties or political risks (Gao et al., 2017). These are more relevant in the context of informal entrepreneurial activities in which entrepreneurs are faced with significant resource constraints and unstable institutional environments but rich in intangible resources of sociocultural nature. In response, they engage in a wide range of entwined practices, develop creative solutions, make use of networks and social positions, eventually enable important skills of entrepreneurial resourcefulness (Welter et al., 2017). The outputs produced by informal firms is less susceptible to macro-economic changes (Ohnsorge & Yu, 2021), indicating informal firms' greater ability to manage in hostile environments. Informal firms are typically adept at improvisation and skillful problem-solving (Kraemer-Mbula & Wunsch-Vincent, 2016; Fu et al., 2018). NPD involves the exploration and absorption of fragmented collection of new knowledge (Winter, 1984, Lane & Lubatkin, 1998). Entrepreneurial resourcefulness facilitates firms' adaptation to unfamiliar and changing contexts (Welter et al., 2017), creatively bringing resources to create values and achieve more innovative outcomes (Sonenshein, 2017; Williams et al., 2021).

Finally, informal firms tend to delay registration until they reach a certain optimal size (Williams et al., 2017) because only mid-sized firms benefit from registration (McKenzie &

Sakho, 2010; McCulloch et al., 2010). The time it takes until the benefits of registration outweigh its costs takes much longer in developing countries (Williams et al., 2017), as reflected by the continuing prevalence of the informal sector over the years (Salvi et al., 2023) Accordingly, we hypothesize that:

Hypothesis 1a. The number of years of informality is positively associated with innovative product introduction.

Hypothesis 1b. The number of years of informality is positively associated with imitative product introduction.

1.2.2. Bribery and Innovation

There is a longstanding economics literature associating corruption and bribery with a litany of negative outcomes (see Bahoo, Alon, and Floreani 2021 for a recent review)Nevertheless, empirical evidence indicates that corruption is pervasive and especially important in countries with weak institutional frameworks (Méon & Weill, 2010). Corruption has even been considered as an influential informal institution that represents a rational strategic response by firms to institutional adversity in developing economies (Krammer, 2017; Spencer & Gomez, 2011). Firms engage in bribery to "grease the wheel" of their business operations, to alleviate the distortions caused by poorly functioning institutions (Leff, 1964; Huntington, 1968), and to expedite inefficient bureaucracy (Méon & Weill, 2010).

As an informal institution, corruption substitutes for weak and under-developed formal institutions in emerging economies. It represents a widespread local norm that specifies reliable ways of contractual and transactional enforcement (Rashna, 2012; Gentina et al., 2016). Where large numbers of bureaucratic procedures and unreasonable minimum capital requirements deter productive entrepreneurial entry (Dreher and Gassebner, 2013), corruption may help foster innovation at the firm-level through several mechanisms. First, corruption facilitates

capital formulation and offers the means to cut through red tape (Nye, 1967). Petty corruption circumvents bureaucratic barriers (Martin et al., 2007; RoseAckerman, 1998), speeds up registration processes (Jain, 2001), and reduces transaction costs and information asymmetries (Kraemer-Mbula & Wunsch-Vincent, 2016). Second, bribery, as a specific form of corruption, provides innovators with the benefits of access to certain political or kin networks and affiliations (Krammer, 2017). In this way, bribery may safeguard against major political changes (Darendeli & Hill, 2016), and protect against burdensome regulatory, contractual, and financial restrictions that might adversely affect new product launches. (Hadjimanolis, 1999; D'Este et al., 2012).

Bribery is widely accepted in many societies characterized by severe formal institutional voids as an effective adaptive strategy, rather than an unethical behavior, for securing necessary resources in institutionally constrained contexts (de Waldemar, 2012; Dreher and Gassebner, 2013; Xie et al., 2019). Where governments and state-owned organizations hold a substantial control of key resources, those firms who can establish an exchange-based connection and affiliation with resource holders are able to take advantage of public resource pools for their innovation activities (Schøtt & Jensen, 2016; Tran and Freel, 2022). In this way, firms are pushed to engage in corruption as a contingent strategy to maximize returns from risky and uncertain product innovation (Beck & Maher, 1986; (Blackburn & Forgues-Puccio, 2009; Krammer, 2019). Following this, we hypothesize that:

Hypothesis 2a. Bribery is positively associated with innovative product introduction in developing countries.

Hypothesis 2b. Bribery is positively associated with imitative product introduction in developing countries.

1.2.3. Interaction of informal years and bribery

Informal firms with larger efficient scales and more capable owners rationally choose to formalize when they grow to such extent that the costs of being formal are outweighed by the benefits provided by formal institutions (de Mel et al., 2013). Due to higher visibility after formalization, they start interacting more with corrupt government officials, inducing them to bribe in low-quality institutional environments (Clarke, 2019; Rand & Tarp, 2012). Moreover, well-educated entrepreneurs with heightened awareness, stronger cognitive skills, and better decision-making capabilities may see bribes less as a burden but more as opportunities to gain business advantage (de Jong et al., 2011; Vu et al., 2024). Formalized firms' owners develop superior entrepreneurial abilities and market knowledge, but the extent to which their "informal assets" facilitate NPD may be contingent on the firm's engagement in bribery.

First, the longer a firm operates in the informal sector, the fewer opportunities it has to establish itself as a recognized legal entity in the formal economy. It would have limited time to build up itself as a member of certain political and kin networks. In developing countries with underdeveloped market-supporting institutions, entrepreneurs who have the "right" kinship ties, business ties, or political connections often gain access to improved decision-making processes (Leff, 1964; Wu, 2011). In contrast, innovators without such affiliations are more likely to encounter bureaucratic hurdles and arbitrary penalties due to inefficient and overly complex regulations (Galang, 2012). These challenges drain resources and reduce the capacity of such firms to comply with regulatory requirements necessary for the successful introduction of new products (Chryssochoidis & Wong, 1998). In this context, bribery becomes an appealing option to bypass bureaucratic obstacles and mitigate the adverse effects of cronyism, nepotism, and political favoritism (Kasuga, 2013), as it allows economic innovators to introduce new products before they have the chance to establish political connections (Leff, 1964: 11). In addition, bribery can be used to form relationships with local bureaucrats, "a more

or less stable groups" offering effective protection against potential political changes (Darendeli & Hill, 2016) that could negatively impact new product launches (Krammer, 2017). The frequent changes in political regimes and incoherence of legislative initiatives over time pose a pressing concern for firms (Acemoglu & Verdier, 2000). Innovators must navigate numerous challenges related to R&D, production, and marketing before introducing the new products to the market (Danneels, 2002). Paying bribes in the form of insurance to avoid costly delays would be even more critical for formalized firms who lack the experience and knowledge to navigate complex regulatory standards effectively.

Secondly, firms started informally to avoid paying tax and not to follow various bureaucratic regulations (Webb et al., 2014). Operating outside of the formal legal and regulatory framework for an extended period, firms may not be aware of the current regulatory systems and business requirements, including the patenting procedures and commercialization process in the case of innovative product introduction. Formalized firms are also likely to have weak governance systems, subpar structures of incentives, and inadequate talented employees because their "informal practices" become institutionalized into organizational processes and routines and persist even after formalization (Bu & Cuerrvo-Cazzura, 2020). Firms with the shortage of complementary assets, which refer to the set of assets, infrastructure, and capabilities to successfully commercialize an invention (Teece, 1986; Rothaermel, 2001), may struggle with bureaucratic complexities and face significant transaction costs, delays, and barriers in meeting regulatory requirements and obtaining licenses, approval, and certifications. In corrupt environments, while officials may impose arbitrary requirements or delays, paying corrupt bureaucrats facilitate the process of obtaining approvals and licenses (Bertrand et al., 2007; Hunt & Laszlo, 2012). Bribery can serve as a "strategic instrument" to compensate for the lack of these complementary assets, enabling formalized firms to bypass red tape and expedite the introduction of new products (Luo, 2005; Ahlin & Bose, 2007). It may take a long

time for formalized firms to adopt new ways of organizing business and develop new practices and acquire current knowledge about the formal sector (Bu & Cuervo-Cazzura, 2020). Engaging in bribery would help formalized firms to introduce new products in a timely fashion, thereby translating the improved entrepreneurial abilities and market knowledge from "informal experience" into successful innovative product introduction. Following these arguments, we hypothesize that:

Hypothesis 3. The interaction between informality and corruption is positively related to innovative product introduction in developing countries.

Institution refers to a system of rules that set of rules regulate human behaviors (North, 1990) to manage expectations and 'millions of people in a coherent order' (Lachmann, 1970). It is thus well-established that institutions play a key role in shaping how individuals and firms behave in society (North, 1990; 1991). Institutions have profound influence on economic performance through a wide range of mechanisms (De Luca et al., 2021). First, as institutional quality improves, corruption can be uprooted through various institutional reforms and government initiatives (Marquette, 2012; Uberti, 2016; Adam & Fazekas, 2021: 1). The rising cost and risks of uncovered corruption in high-quality institutional settings heighten the stigma associated with it and reduce its acceptability. Higher-quality institutions—characterized by clearer legal frameworks, more coherent legislative efforts, and stronger property rights—foster a more predictable and efficient business environment for firms. As a result, as transparency and equity in the business environment improves, firms will rely less on bribery to "grease the wheels" of their business operations (Bruton et al., 2010; Peng, 2001; 2009).

Secondly, while informal firms can bypass bureaucratic expenses related to adhering to rules and regulations (Assenova & Sorenson, 2017), these costs are likely to be negligible in an improved institutional environment, especially relative to the costs and risks associated with staying unregistered (i.e., lack of legal protection; risk of being detected). Thus, higher institutional quality would diminish the appeal of operating outside the formal legal frameworks and foster trust in the system, potentially leading to a decline in the prevalence of the informal sector (Aruoba, 2010; Torgler & Schneider, 2009). Firms that remain in the informal sector for an extended period are unlikely to acquire more relevant entrepreneurial abilities and market knowledge than those with less "informal experience". For example, informal firms would rely less on "informal networks" to compensate for the lack formal mechanisms for collaboration, growth, and protection. When the informal networks shrink in size and quality, these would be less likely to be unique and difficult-to-imitate intangible resources for formalized firms. Moreover, when informal firms are no longer under unrelenting pressure to navigate regulatory loopholes or overcoming operational shortages to introduce new products, they would not obtain superior entrepreneurial resourcefulness than others.

With a more level playing field for all economic actors, the interaction between informal years of operation and engagement in bribery delivers less benefits for firm's NPD. Thus, we hypothesize that:

Hypothesis 4. The interaction effect of informal years and bribery on innovative product introduction is less pronounced when institutional quality improves.

1.3. Methods

1.3.1. Data and sample

We tested our research hypotheses on a pooled cross-section of 72,387 formal firms from 130 developing economies. The number of participants in the survey fluctuate significantly from 200 firms in Kosovo to 9,281 firms in India. All firms participated in the survey only one time during the period from 2006 to 2021, and of these, 6,946 are informally created firms. Across countries in our sample, the figure varies from as low as only 1 informal firm in countries such as Dominica, Estonia, and Guinea to as high as 502 informal firms in Egypt. All 6,946 informally created firm stayed in the sample are later formalized and are classified as informal firms because (1) the imprinting informality costs continue to have an impact over the course of their life cycle even after formalization (Bu and Cuervo-Cazurra, 2020); and (2) we are interested in how long firms stayed in the informal sector. The mean age of informal firms is 24.55 years old, which is slightly higher than the corresponding figure for formal firms at 20.99. Approximately 88% of informal firms are SMEs, with fewer than 99 employees, while 80% of formal firms are SMEs. Table 1.1 provides a description of our variables and Table 2 provides summary statistics.

Our dataset is built from the combination of a variety of databases. The main source is firm-level data from the World Bank Enterprise Survey (WEBS). The WEBS is a common source of information on informal entrepreneurship, extensively used by researchers (i.e., Assenova & Sorenson, 2017; Williams et al., 2017; Bu & Cuervo-Cazurra, 2020). The WEBS uses a standardized questionnaire to limit variability across regions, and a stratified sampling method in which all participants have equal probability of being selected. The three strata are firm size, industry, and location. Survey respondents are top managers, business owners, and the self-employed who were asked about the past circumstances of their firms, allowing us to identify firms were launched informally and their year of inception.

In addition, we draw on data from the World Governance Indicators (WGI) database. The WGI is a commonly used source of data to measure dimensions of institution quality (e.g. Kaufmann et al., 2011; Pinar, 2014). The WGI project synthesizes six aggregate individual perception-based indicators of governance for each country: voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption. Each aggregate governance indicator is calculated from hundreds of individual questionnaires, ranging from -2.5 (lowest quality) to 2.5 (highest quality).

1.3.2. Measures

Dependent variable

Consistent with prior literature (Leiponen & Helfat, 2011; Bu and Cuervo-Cazurra, 2020), we distinguish innovative and imitative product innovation on the basis of a question that asks firms whether they introduced new products or significantly improved products. A new product introduction refers to products with features and purposes that are distinct from the firm's existing product lines. Firms were asked whether products were new to the market or new to the firm only. If a firm introduced products or services that were new to the market, we consider this innovative product innovation. If a firm introduced products that were new to the firm, but not new to the market, we considered this imitative product innovation. This resulted in two binary variables that are the dependent variables in our estimations.

Independent variables

Informality refers to the number of years that firms operated without formal registration. While previous studies using WBES data treat informality as a binary indicator (e.g., Assenova and Sorenson, 2017; Bu and Cuervo-Cazurra, 2020), we introduce the number of informal years as a measure of informality for three reasons. First, the initial informal status of the firm is imprinted on the rest of its life span and persists even after formalization (Bu and Cuervo-

Cazurra, 2020). Second, the number of years operating without formal registration is important but largely ignored indicator of informality, especially in light of recent evidence that enterprises remaining unregistered longer were found to have significantly higher sales, productivity, and employment growth (Williams, 2017). Third, existing literature documents the "embeddedness" effect of age on the accumulation of routines, legitimacy, or change resistance (Coad, 2018; Le Mens et al., 2014). The longer firms operate without registration, the higher the switching costs (or imprinting costs) and the more likely that the founding conditions that shape their subsequent behaviors are imprinted (Le Mens et al., 2011).

Bribery is a composite variable equal to the arithmetic sum of dummy responses to the questionnaire items on bribery. In addition, the sum was then normalized to reflect the fact that higher value is associated with a higher level of engagement in corrupt acts. These items include (i) if the firm expected to give gifts in meetings with tax officials; (ii) if the firm expected to give gifts to secure a government contract; (iii) if the firm expected to give gifts to public officials to get things done; (iv) if the firm expected to give gifts to get a phone connection; (v) if the firm expected to give gifts to get an electrical connection; (vi) if the firm expected to give gifts to get a water connection; (vii) if the firm expected to give gifts to get a construction permit; and (viii) if the firm expected to give gifts to get an operating license. According to Eisingae et al. (1991), this construction allows us to assess the compound effects of individual components of bribery and assess its impacts relative to other predictors. These questions do not directly ask whether the respondents specifically engaged in bribery but rather they "expect" to make payments to officials. While direct questions trigger defensive and strategic responses, leading to misrepresentation of bribery, these indirect questions help induce more honest and accurate answers (Ramdani et al., 2012).

Formal Institutions. There are six distinct aggregate dimensions of governance and institutional quality from the WGI, including (i) Voice and Accountability, (ii) Political stability and

absence of violence/terrorism, (iii) Government Effectiveness, (iv) Regulatory Quality, (v) Rule of Law, and (vi) Control of Corruption. The values in every dimension range from -2.5 to 2.5, and higher value is associated with higher level of institutional quality. Formal institutions is measured as the arithmetic mean of those 6 dimensions. Following earlier discussions (Lang et al., 2004), we split the countries into two institutional groups on either side of the median of institutional quality. The first half represents the countries with lower institutional quality and the second half represents the countries with higher institutional quality .

In addition, our models include a number of covariates that the empirical literature has shown associates with firm-level innovation. The measurement of these variables is outlined in Table 1.1.

1.3.3. Statistical analyses

The multi-level logit model is adopted to account for the hierarchies in our data. There are several reasons behind our choice of multi-level logit regression model: (i) our dependent variable is a binary variable of whether a firm introduced a new product; (ii) our data consists of a large number of countries with an inherent heterogeneity in the nature of informal businesses. Firm-level observations are nested within countries, suggesting our use of two-level mixed-effect (aka: multilevel) logit model. The industry fixed effects are also introduced to account for the heterogeneity of industries. We centered our independent variables on their means – informality and corruption – before creating an interaction term (Cronbach, 1987). Table 1 presents variable description.

[Insert Table 1.1 here]

Table 1.2 reports the descriptive statistics of our variables, and Table 1.3 reports the associated correlation matrix. Table 1.2 shows that 24% of firms in the sample introduced innovative products and 12% introduced imitative products. There is no statistical difference between

formal and informal firms in terms of the rate of both imitative and innovative product introduction. On average, informal firms are more likely to take part in corruption than formal counterparts, as the mean expected corruption for informal and formal firms are 0.08 and 0.06, respectively. The correlation matrix in Table 1.3 does not indicate any serious problems of multicollinearity among variables. As anticipated, manager's experience, R&D, and firm size are shown to be highly associated with innovation.

[Insert Table 1.2 here]

[Insert Table 1.3 here]

1.4. Empirical results

1.4.1. Test of informality and corruption

Table 1.4 presents the main empirical results of the paper, using innovative product introduction as the dependent variable. In Table 1.4, Model 1 consists of the corruption and control variables and Model 2 consists of the informality and control variables. Next, we include both informality and corruption in Model 3. Model 4 further includes informality squared in the list of controls, to test for diminishing returns to informality. Finally, Models 5 and 6 add the interaction between corruption and informality to explore the joint effect of corruption and informality on new product introduction. Table 1.5 follows the same sequence as Table 4 with imitative product introduction as the dependent variable.

The corruption coefficients are positive and statistically significant in all specifications in Table 1.4 and Table 1.5, which gives statistical support to Hypothesis 2. In other words, bribery or corruption in developing countries is associated with a higher likelihood of new product introduction – both innovative and imitative. The coefficients for informality are positive and statistically significant in Table 1.4 models 2, 3 and 4, which gives support for Hypothesis 1a predicting that experience of informality is positively related to innovative product introduction. The estimated coefficients of informality are positive at around 0.06 and significant at 1% in models 2, 3 and 4 in Table 1.4. The coefficients in the logistic regression model represent the average change in the form of log odds of the binary dependent variable, which is in response to one unit of change in independent variable. Thus, firms who stay in the informal sector have 6% greater odds of introducing innovative products to the market. However, the informality coefficients lose their significance in the full model when the interactions are included. Hypothesis 3a predicts that the interaction of informality and corruption is positively associated with innovative product introduction. Models 5 and 6 in

Table 1.4 record a positive and significant interaction term ($\beta = 0.65$ and 0.66, $p < 0.01$), supporting our proposition that bribery is a positive innovation strategy for firms who stay in the informal sector longer. Ceteris paribus, informal firms who expect to engage in bribery are shown to have 91% greater odds of introducing innovative products to the market in the full model 6.

In Table 1.5, where imitative product introduction was used as the dependent variable, the coefficients informal remain negative but inconclusive in statistical significance. The results suggest that staying in the informal sector over time would induce firms to reduce imitative product development. These results stand in contrast to recent work using WBES data, which finds lower likelihood of innovation and higher likelihood of imitation in informal firms (Bu and Cuervo-Cazurra, 2020). In our own attempt to replicate Bu & Cuervo-Cazurra (2020)'s recent paper, we were able to show that informality as a binary variable has a negative effect on innovation and positive effect on imitation. However, we believe that our use of informality, as measured by years before formalization, marks an important extension. As expected, in our replication, the results show that that being informal over time has statistically significant positive effects on innovative product introduction and negative effects on imitative product introduction.

The coefficients for corruption are positive and statistically significant in all models, confirming Hypothesis 2. Finally, the interaction terms between informal and corruption are negative at -0.51 (model 5) and statistically significant at the 1% level when imitative product introduction is used as the dependent variable. This result indicates the amplification effect of corruption on the negative relationship between informal years and imitative innovation. Based on average change in log odds, being informal for longer and engaging in bribery reduces the likelihood of producing new-to-the-firm but not new-to-the-market innovations by approximately 40%.

Our control variables are generally consistent with the literature on firm-level product innovation. First, the coefficient for formal training, and manager's experience are positive and statistically significant in all six specifications in table 4, which is in line with the literature on the importance of human capital for innovation (Bauernschuster et al., 2019; Dostie, 2017). Secondly, perceptions of obstacles such as taxation and labor regulations have a negative association with product innovation while the coefficients of political instability are not significant. The coefficients for firm size across all models are positive and significant. This is expected given that larger firm size associates with more resources, more and better qualified employees, higher investment in research and development, and more innovative outputs (Kleinknecht, 1989; Acs, Audretsch, Oi & Idson, 1999). Similarly, engagement in research and development strongly predicts product introduction. In terms of country-level controls, while the GDP growth rate is positively and significantly associated with new product introduction, the coefficients for GDP per capita and population are negative and, in the latter case, statistically significant. Larger developing countries tend to have lower rates of innovation (both imitative and innovative).

[Insert Table 1.4 here]

[Insert Table 1.5 here]

1.4.2. Analysis under different institutional contexts

Hypothesis 4 reassesses the strengths and validity of Hypotheses 1, 2 and 3 under different institutional settings by comparing the effects of informality and corruption (and their interaction) on product innovation among countries with lower- and higher-quality institutions. Consistent with prior research, countries in the bottom 50% and the top 50% of the institutional quality index were classified into lower and higher institutional groups, respectively (Fernández-Serrano et al., 2018; Su et al., 2019). The lower institution group includes countries

with a value of formal institution that is less than the median of the index, while the higher-institution group includes countries with greater than median institutional quality. The hierarchical analyses lead to our choice of using a multi-level regression model. Hypothesis 4 predicts that there would be a reduction in the combined effect of informality and corruption under higher quality institutions. This section examines how the interactive effect of informality and corruption might differ between institutional groups.

As noted, institutional quality is measured using six dimensions of governance quality: voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption (Kauffman et al., 2011). Values in all indices range from -2.5 (lowest quality) to 2.5 (highest quality). We split the sample into two groups according to ranking of formal institution. One half of the sample consists of firms operating in countries where a higher institutional index is observed, while the other half consists of firms operating in countries where a lower institutional index is observed. The cut-off point is the institutional median, with one sub-sample containing 34,000 observations and the other containing approximately 31,000 observations. We replicated the main empirical results on two truncated sub-samples and presented the results in Table 1.6.

[Insert Table 6 here]

Table 1.6 reports empirical evidence on Hypothesis 4. Overall, there is no noticeable differences between the two truncated samples in terms of the separate effects of *corruption* and *informality. Corruption* remains positive and statistically significant across models. There is no evidence of statistical significance for the coefficients of *Informality*. There are contrasting results between the two samples in terms of the combined effect of *informality* and *corruption*.

The results from model 1 to 4, in which innovative product introduction was employed as the dependent variable, show that the combined effect of *corruption* and *informality* subsides in the higher quality institutional environment. This confirms Hypothesis 4 that the impact of the interaction between informality and corruption becomes less pronounced, statistically and economically, in more developed institutional environments. What is more interesting is when imitative product introduction was the dependent variable in models 5 to 8. The interactive effect between *corruption* and *informality* changed from being insignificant in lower quality- to statistically significant at 10% in higher quality institutional environments. That means that informal firms would resort to bribery to reduce imitations in higher quality institutional settings. The interaction between informality and corruption becomes more pronounced in higher-quality institutions in the case of imitative product introductions, pointing to the positive effect of institutional change. In conclusion, Hypothesis 4 is supported only in situations when innovative product introduction is the response variable.

[Table 7]

1.4.3. Robustness check

Finally, Tables 1.7 and 1.8 replicate the main empirical results using the 9 different corruption components in place of the composite *corruption* measure. Each single component generated one additional analysis. Tables 1.7 and 1.8 use *innovative product introduction* and *imitative product introduction*, respectively. In Table 1.7, the coefficient for *informality* is consistently and significantly positive. Thus, Hypothesis 1a is supported. In addition, the coefficients for all the corruption dummies are positive and statistically significant at 1%, reaffirming the validity of Hypothesis 2. Out of the nine specifications in Table 1.7, we found 6 in which the interaction terms are positive and statistically significant at least at the 10% level. We are

confident that the data indicates that corruption amplifies the positive effect of informal years on innovative product introduction.

In Table 1.8, the coefficients on corruption factor dummies remain strong as expected. However, all the coefficients of informality are not statistically significant while the interaction terms are also negative and not significant in all 9 specifications. The results are consistent with our main analyses. By expecting to engage in bribery, informal firms in developing countries can have more resources and thus decrease the introduction of imitative products.

1.5. Conclusion

Unregistered firms are widely seen as detrimental to market functioning and to economic growth. Due to their informal status, such firms avoid tax, infringe property rights, under-investing in human capital, and escape regulation (Schneider et al., 2011). A large variety of policies and interventions targeting the informal economy have been launched by many national governments to formalize informal firms (Floridi et al., 2020). Different models have been suggested. These include interventions aimed at decreasing the costs of formality through, for example, one-stop-shops to simplify registration procedures (Campos et al., 2018; La Porta and Shleifer, 2014), improving access to credit and providing training and other business development services to informal business (Maloney, 2004), or strengthening the linkages and mutual support between informal and formal economy (Floridi et al., 2020). In analysing the contribution of innovation to firm performance, it is important to recognize the dual-economy system commonly observed in most of the developing countries (Fu et al., 2018). Informal and formal firms operate in two distinct spheres, with informal activities depicted as producing extremely crude products, being unproductive and an illegitimate threat to formal sector firms (La Porta & Shleifer, 2014 and 2008). This is the caricature of informal firms as: small,

unproductive, run by low educated entrepreneurs, use strong capital from families and relatives, and have different profile of customers. In this view the majority of informal firms carry out unproductive survival activities, engaging, at best, in imitative and basic innovations, ultimately crowded out by the market selection process, i.e., competition from highly productive formal firms (La Porta & Shleifer, 2014 and 2008).

In contrast, our work has provided additional evidence on the innovation behaviors of informal firms in the context of inconsistently developed institutions. Firms who stay in the informal sector for an extended period are likely to engage more in innovative product introductions. We speculate that this is due to (1) "increased legitimacy" that facilitates access to critical resources and knowledge, and (2) learning effects that enable firms to adapt to the particular challenges of informality, thus marking formalized firms as an increasingly important source of innovations. A key strategy that can be deployed to compete with formal firms involves engaging in bribery. Building on contingency theory, we explain how informal firms, in the face of adverse conditions, are drawn to deviant behavior, bribery, to increase overcome the constraints that past studies have shown lead to imitation rather than innovation (Bu and Cuervo-Cazurra, 2020). We highlight that corruption is a valuable solution for SMEs to alleviate resource constraints and resolve information asymmetries in emerging economies characterized by weak institutional development and a strong informal economy. However, the interactive effects of bribery and informality subside with the improvement of institutional quality. While the existing literature mostly examines the construct of corruption and informality separately, our study brings these two influential concepts together in the background of transition economies and sheds light on their multiplicative influence. Policy makers must address the two phenomena simultaneously if they are to fully gain from the entrepreneurial talent available in their countries.

Of course, corruption/bribery are widely held as being detrimental to social and economic prosperity, while the informal sector remains a distinct sphere in the dual economy. However, in weak institutional environments, informality and corruption/bribery collectively enhance the introduction of new products. Measures that seek to reduce informality and eradicate corruption might be counter-productive in the absence of a broader efforts aimed at upgrading formal institutions. National schemes that aim solely at eliminating the scourge of corruption might decrease the innovative capacity of informal firms and put their survival at risk, because informal firms will lose an important strategic mechanism that is effective in the Informal economy. Both informal economy activity and corruption arise, in large part, because of weakly developed institutions in developing countries. Therefore, policies and schemes that focus on the eradication of either corruption or informality might not address the root of the problem. As we demonstrate, when institutional quality improves, corruption and the collective effect of informality and corruption become less effective or even non-existent, in terms of firm-level innovation. Our intuition is that the elimination of an unethical and non-market corruption strategy means the removal of a barrier to market functioning and sustainable economic growth, only as long as there is sufficient institutional quality. However, this does not inevitably entail that a higher-quality institutional environment threatens the survival of the bottom-of-the-pyramid or innovations "for the poor by the poor"? The unofficial economy is growing and remains an important source of employment in many developing countries. The development of an inclusive growth model to ensure the survival of the most vulnerable groups while maintaining strong economic growth is a critical question for policy makers and future research.

This article has some limitations that open avenues for future research. First, the WEBS lack longitudinal data that provide detailed information on how firms have changed over the course of their formalization. Future research using panel data can study how informal firms and their

practices of bribery have changed over time, and how the impact of interaction between informality and corruption on firm's innovativeness have unfolded over the years. Second, we do not have a continuous measure of innovation such as number of patents or number of new products as we rely on a bivariate indicator of whether introduces a new product. We also do not have a specific measures of informality costs and how these vary under different institutional environments. Future research with more comprehensive measures could study how much informality costs link to firm's innovativeness and how these links are impacted by informal practices such as bribery/corruption. Finally, policy makers might be interested in the interaction effect of corruption and informality at the macro level, given that the unofficial economy and bribery are both conjectured to be harmful to socio-economic development. Future research could study how the informal sector and corruption collectively damage or enhance country's development.

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Appendix

Table 1.1. Variable description

Name	Description
Innovative Product	1 = Firm that introduced a new product/service to the firm and new to the firm's main market vs. 0 = otherwise
Imitative Product	1 = Firm that introduced a new product/service to the firm but not new to the firm's main market vs. 0 = otherwise
Informal	Number of years firms operated without formal registration divided by 10
Informal squared	The square of informal years
Bribery	Composite variable of corruption
Individual-level controls	
Tax	1 = Firm that identifies tax administration as an obstacle vs. 0 = otherwise
Labor regulations	1 = Firm that identifies labor regulations as an obstacle vs. 0 = otherwise
Political instability	1 = Firm that identifies political instability as an obstacle vs. 0 = otherwise
Training	1 = Firm offering formal training for workers vs. 0 = otherwise
R&D	1 = Firm that invests in research and development vs. 0 = otherwise
Manager's experience	Years of the top manager's experience working in the firm's sector
Firm size	Number of employees working at the firm
Age	Firm age
Higher-level controls	
GDP Growth	The annual growth rate in percentage of gross domestic product
GDP per capita	Gross Domestic Product per capita in log form
Population	Country-level population in log form
Sector	1 = Manufacturing, 2 = Services, 3 = Core, 4 = Micro, vs. 5 = Other
Ownership	1 = Publicly listed company, 2 = Private company, 3 = Sole Proprietorship, 4 = Partnership, 5 = Limited Partnership, vs. 6 = Other
Other variables	
Informal dummy	1 = Firm that did not register formally when started operation vs. 0 = otherwise

Table 1.2. Descriptive statistics

Variable	Whole sample (N = 72,387)				Formal firms (N = 65,441)				Informal firms (N = 6,946)			
	Mean	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**	**Mean**	SD	Min	Max
Innovative Product Introduction	0.24	0.43	0.00	1.00	0.24	0.43	0.00	1.00	0.25	0.43	0.00	1.00
Imitative Product Introduction	0.12	0.32	0.00	1.00	0.12	0.32	0.00	1.00	0.12	0.33	0.00	1.00
Bribery	0.07	0.10	0.00	0.90	0.06	0.09	0.00	0.90	0.08	0.11	0.00	0.80
Informal	0.06	0.42	0.00	16.50	0.00	0.00	0.00	0.00	0.68	1.21	0.00	16.50
Informal squared	0.18	3.17	0.00	272.3	0.00	0.00	0.00	0.00	1.92	10.22	0.00	272.25
GDP capita	8.48	1.18	5.55	11.67	8.51	1.18	5.55	11.67	8.14	1.11	5.55	11.67
Population	17.4	1.89	10.77	21.03	17.39	1.91	10.77	21.03	17.51	1.74	10.77	21.03
GDP growth	4.15	3.41	-8.62	11.65	4.12	3.43	-8.62	11.65	4.47	3.23	-8.62	11.65
Tax	0.14	0.35	0.00	1.00	0.15	0.35	0.00	1.00	0.11	0.32	0.00	1.00
Firm size	73.2	171.8	1.00	5000.0	75.42	175.41	1.00	5000.00	51.70	129.65	1.00	2500.00
Training	0.37	0.48	0.00	1.00	0.38	0.49	0.00	1.00	0.27	0.45	0.00	1.00
Manager's experience	19.6	11.37	0.00	60.00	19.64	11.34	1.00	60.00	19.23	11.61	0.00	60.00
R&D	0.20	0.40	0.00	1.00	0.20	0.40	0.00	1.00	0.17	0.38	0.00	1.00
Labor regulations	0.05	0.21	0.00	1.00	0.05	0.21	0.00	1.00	0.04	0.19	0.00	1.00
Political instability	0.12	0.32	0.00	1.00	0.12	0.32	0.00	1.00	0.10	0.30	0.00	1.00
Age	21.1	16.31	0.00	220.00	20.77	15.80	0.00	203.00	24.68	20.31	2.00	220.00
Informal dummy	0.09	0.29	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00

Table 1.3. Correlation matrix

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Innovative																
2	Imitative	-0.21															
3	Bribery	0.07	0.02														
4	Informal	0.03	0.01	0.02													
5	Informal squared	0.02	0.01	0.00	0.82												
6	Informal dummy	0.01	0.00	0.06	0.47	0.18											
7	Age	0.06	0.04	-0.04	0.28	0.24	0.07										
8	GDP capita	0.02	0.03	-0.26	0.02	0.04	-0.09	0.19									
9	Population	-0.05	-0.04	0.11	-0.03	-0.03	0.02	-0.06	-0.34								
10	GDP growth	0.02	0.02	0.12	-0.03	-0.04	0.03	-0.13	-0.40	0.37							
11	Firm size	0.06	0.02	0.02	0.00	0.01	-0.04	0.15	-0.01	0.09	0.05						
12	Tax	-0.04	-0.01	-0.05	-0.02	-0.01	-0.03	-0.03	0.10	0.01	-0.01	-0.02					
13	Training	0.19	0.09	0.04	0.00	0.01	-0.06	0.09	0.14	0.00	0.06	0.18	-0.02				
14	Manager's experience	0.03	0.02	-0.05	0.05	0.03	-0.01	0.37	0.26	-0.15	-0.14	0.04	0.00	0.06			
15	R&D	0.29	0.10	0.08	0.01	0.01	-0.02	0.09	0.05	0.08	0.05	0.15	-0.03	0.28	0.02		
16	Labor regulation	0.03	0.02	-0.02	0.01	0.02	-0.01	0.07	0.11	0.00	0.00	0.04	-0.09	0.05	0.03	0.04	
17	Political instability	-0.03	-0.02	0.04	-0.01	0.00	-0.02	0.01	-0.06	-0.05	-0.08	0.03	-0.15	-0.03	0.04	-0.04	-0.08

N=72,387. Correlation coefficient is statistically significant at 5% when its absolute value is greater than 0.02

Table 1.4. Effects of Bribery and Informality on Innovative Product Introduction

	Innovative Product Introduction					
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Bribery	0.884***		0.877***	0.876***	0.819***	0.819***
	(0.103)		(0.103)	(0.103)	(0.105)	(0.105)
Informal		0.0593***	0.0544**	0.0805**	0.0389*	0.00904
		(0.0219)	(0.0220)	(0.0382)	(0.0150)	(0.0449)
Corruption x Informal					0.646***	0.660***
					(0.209)	(0.221)
Informal squared				-0.00392		0.000935
				(0.00471)		(0.00497)
GDP capita	-0.0149	-0.0304	-0.0142	-0.0138	-0.0136	-0.0137
	(0.0623)	(0.0624)	(0.0623)	(0.0623)	(0.0622)	(0.0622)
Population	-0.212***	-0.211***	-0.212***	-0.212***	-0.211***	-0.211***
	(0.0498)	(0.0500)	(0.0498)	(0.0498)	(0.0498)	(0.0498)
GDP Growth	0.0217***	0.0224***	0.0218***	0.0218***	0.0216***	0.0216***
	(0.00783)	(0.00783)	(0.00783)	(0.00783)	(0.00784)	(0.00784)
Firm size	0.000338***	0.000340***	0.000343***	0.000344***	0.000343***	0.000342***
	(5.66e-05)	(5.67e-05)	(5.66e-05)	(5.66e-05)	(5.66e-05)	(5.66e-05)
Tax	-0.0918***	-0.0981***	-0.0918***	-0.0917***	-0.0913***	-0.0913***
	(0.0303)	(0.0303)	(0.0303)	(0.0303)	(0.0303)	(0.0303)
Formal training	0.510***	0.520***	0.511***	0.511***	0.511***	0.511***
	(0.0213)	(0.0213)	(0.0213)	(0.0213)	(0.0213)	(0.0213)
Manager's experience	0.00362***	0.00383***	0.00374***	0.00371***	0.00375***	0.00375***
	(0.000956)	(0.000957)	(0.000957)	(0.000958)	(0.000957)	(0.000958)
R&D	1.230***	1.245***	1.231***	1.231***	1.230***	1.230***
	(0.0233)	(0.0233)	(0.0233)	(0.0233)	(0.0233)	(0.0233)
Labor Regulation	0.0130	0.0124	0.0125	0.0128	0.0135	0.0135
	(0.0452)	(0.0452)	(0.0452)	(0.0452)	(0.0452)	(0.0452)
Political Instability	0.0349	0.0320	0.0357	0.0360	0.0368	0.0368
	(0.0339)	(0.0339)	(0.0339)	(0.0339)	(0.0339)	(0.0339)
Age	5.35e-05	-0.000530	-0.000464	-0.000464	-0.000476	-0.000476
	(0.000643)	(0.000677)	(0.000677)	(0.000677)	(0.000677)	(0.000677)
Private listed	-0.127***	-0.123**	-0.129***	-0.129***	-0.130***	-0.130***
	(0.0480)	(0.0480)	(0.0480)	(0.0480)	(0.0480)	(0.0480)
Sole Proprietorship	-0.161***	-0.162***	-0.165***	-0.166***	-0.167***	-0.167***
	(0.0517)	(0.0517)	(0.0518)	(0.0518)	(0.0518)	(0.0518)
Partnership	-0.163***	-0.150**	-0.165***	-0.165***	-0.166***	-0.166***
	(0.0591)	(0.0590)	(0.0591)	(0.0591)	(0.0591)	(0.0591)
Limited Partnership	0.0393	0.0424	0.0366	0.0365	0.0359	0.0359
	(0.0552)	(0.0552)	(0.0552)	(0.0552)	(0.0553)	(0.0553)
Other ownership	-0.0712	-0.0785	-0.0752	-0.0759	-0.0810	-0.0809
	(0.0895)	(0.0894)	(0.0896)	(0.0896)	(0.0898)	(0.0898)
Constant	1.472	1.617	1.475	1.471	1.468	1.468
	(1.220)	(1.223)	(1.219)	(1.219)	(1.219)	(1.219)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Wald	5047.45***	5047.45***	5052.38***	5052.84***	5052.47***	5052.32***
Log likelihood	-33392.86	-33425.51	-33389.79	-33389.44	-33384.57	-33384.55
LR test	2670.92	2702.23	2660.22	2657.8	2659.24	2658.69
Observations	72,387	72,387	72,387	72,387	72,387	72,387
Number of groups	130	130	130	130	130	130

Notes: This tables reports the main empirical results. All six models in the table were estimated using multi-level mixed-effect logistic regression method. The dependent variable is a new product dummy that takes the value of 1 if the firm introduces a new product that is also new to the market and 0 otherwise. The independent variables include informal years represented by the number of years operating in the informal sector, corruption represented by the composite variable of bribery, the interaction between informal years and corruption, and the control variables. Our final sample consists of 72,378 observations.
*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*

Table 1.5. Effect of Bribery and Informality on Imitative Product Introduction

	Imitative Product Introduction					
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Bribery	0.446***	-0.00106	0.446***	0.445***	0.489***	0.499***
	(0.131)	(0.0266)	(0.131)	(0.131)	(0.132)	(0.133)
Informal			-0.00310	-0.00118	-0.0211	0.0906
			(0.0267)	(0.0532)	(0.0288)	(0.0557)
Corruption x Informal					-0.506*	-0.653**
					(0.285)	(0.313)
Informal squared				-0.00510		-0.00968
				(0.00653)		(0.00700)
GDP capita	0.0672	0.0579	0.0671	0.0675	0.0668	0.0676
	(0.0585)	(0.0585)	(0.0585)	(0.0585)	(0.0585)	(0.0585)
Population	-0.122***	-0.121***	-0.122***	-0.122***	-0.122***	-0.122***
	(0.0436)	(0.0436)	(0.0436)	(0.0436)	(0.0436)	(0.0436)
GDP Growth	-0.00615	-0.00600	-0.00615	-0.00612	-0.00605	-0.00596
	(0.0102)	(0.0102)	(0.0102)	(0.0102)	(0.0102)	(0.0102)
Firm size	8.92e-05	8.53e-05	8.88e-05	8.95e-05	8.88e-05	9.01e-05
	(7.01e-05)	(7.02e-05)	(7.01e-05)	(7.01e-05)	(7.01e-05)	(7.01e-05)
Tax	0.0445	0.0414	0.0445	0.0447	0.0440	0.0442
	(0.0371)	(0.0370)	(0.0371)	(0.0371)	(0.0371)	(0.0371)
Formal training	0.210***	0.215***	0.210***	0.210***	0.211***	0.211***
	(0.0266)	(0.0266)	(0.0266)	(0.0266)	(0.0266)	(0.0266)
Manager's experience	0.000427	0.000487	0.000422	0.000387	0.000418	0.000351
	(0.00117)	(0.00117)	(0.00117)	(0.00117)	(0.00117)	(0.00117)
R&D	0.237***	0.243***	0.237***	0.237***	0.237***	0.237***
	(0.0293)	(0.0293)	(0.0293)	(0.0293)	(0.0293)	(0.0293)
Labor Regulation	-0.0273	-0.0280	-0.0273	-0.0268	-0.0281	-0.0274
	(0.0542)	(0.0542)	(0.0542)	(0.0542)	(0.0542)	(0.0542)
Political Instability	0.0111	0.00969	0.0111	0.0114	0.0102	0.0105
	(0.0434)	(0.0434)	(0.0434)	(0.0434)	(0.0434)	(0.0434)
Age	7.76e-05	6.50e-05	0.000106	0.000105	0.000111	0.000109
	(0.000767)	(0.000805)	(0.000805)	(0.000805)	(0.000805)	(0.000806)
Private listed	-0.0218	-0.0203	-0.0217	-0.0216	-0.0212	-0.0208
	(0.0596)	(0.0596)	(0.0597)	(0.0597)	(0.0597)	(0.0597)
Sole Proprietorship	-0.126*	-0.125*	-0.125*	-0.126*	-0.124*	-0.125*
	(0.0647)	(0.0648)	(0.0648)	(0.0648)	(0.0648)	(0.0648)
Partnership	-0.0500	-0.0432	-0.0498	-0.0500	-0.0493	-0.0495
	(0.0743)	(0.0743)	(0.0743)	(0.0743)	(0.0743)	(0.0743)
Limited Partnership	0.0451	0.0474	0.0453	0.0454	0.0458	0.0462
	(0.0689)	(0.0689)	(0.0690)	(0.0690)	(0.0690)	(0.0690)
Other ownership	0.0184	0.0164	0.0186	0.0182	0.0222	0.0221
	(0.110)	(0.110)	(0.110)	(0.110)	(0.110)	(0.110)
Constant	-0.695	-0.612	-0.696	-0.700	-0.695	-0.703
	(1.124)	(1.125)	(1.124)	(1.124)	(1.124)	(1.124)

Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Wald	547.73***	536.02***	547.75***	548.37***	551.3***	553.27***
Log likelihood	-23998.75	-24004.5	-23998.74	-23998.41	-23996.96	-23995.85
LR test	1618.64	1625.25	1618.23	1617.21	1617.41	1615.45
Observations	72,387	72,387	72,387	72,387	72,387	72,387
Number of groups	130	130	130	130	130	130

Notes: This tables reports the main empirical results. All six models in the table were estimated using multi-level mixed-effect logistic regression method. The dependent variable is a new product dummy that takes the value of 1 if the firm introduces a new product that is also new to the market and 0 otherwise. The independent variables include informal years represented by the number of years operating in the informal sector, bribery represented by the composite variable of corruption, the interaction between informal years and bribery, and the control variables. Our final sample consists of 72,387 observations.

*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.*

Table 1.6. Interaction of informality and corruption under different settings of institutional quality

Dependent variable	**Innovative product introduction**				**Imitative product introduction**			
Specification	Lower quality institution		Higher quality institution		Lower quality institution		Higher quality institution	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bribery	0.639***	0.641***	1.161***	1.163***	0.452**	0.458***	0.394*	0.376*
	(0.124)	(0.124)	(0.203)	(0.203)	(0.178)	(0.178)	(0.202)	(0.202)
Informal	0.0345	-0.0250	0.0312	0.0407	0.0495	-0.0618	0.155**	0.0320
	(0.0770)	(0.0538)	(0.0583)	(0.0288)	(0.126)	(0.0777)	(0.0679)	(0.0309)
Corruption x Informal	0.744***	0.731**	0.634	0.605	-0.114	-0.171	-1.098*	-0.692*
	(0.285)	(0.287)	(0.496)	(0.471)	(0.413)	(0.383)	(0.597)	(0.347)
Informal squared	-0.0159		0.00111		-0.0391		-0.0154*	
	(0.0152)		(0.00590)		(0.0367)		(0.00819)	
age	0.00127	0.00122	-0.00179**	-0.00179**	-0.00104	-0.00113	0.000554	0.000591
	(0.00107)	(0.00107)	(0.000882)	(0.000882)	(0.00157)	(0.00157)	(0.000943)	(0.000942)
GDP capita	-0.462***	-0.463***	0.330***	0.330***	-0.316***	-0.317***	0.270***	0.269***
	(0.119)	(0.119)	(0.0991)	(0.0991)	(0.112)	(0.112)	(0.0954)	(0.0954)
Population	-0.360***	-0.360***	-0.000919	-0.000872	-0.238***	-0.238***	-0.00661	-0.00707
	(0.0765)	(0.0765)	(0.0602)	(0.0602)	(0.0722)	(0.0722)	(0.0542)	(0.0542)
GDP Growth	0.0904***	0.0904***	-0.0411**	-0.0411**	0.0542**	0.0542**	-0.0144	-0.0142
	(0.0180)	(0.0180)	(0.0183)	(0.0183)	(0.0227)	(0.0227)	(0.0237)	(0.0237)
Firm size	0.000277***	0.000276***	0.000447***	0.000447***	0.000101	9.96e-05	6.38e-05	6.14e-05
	(7.11e-05)	(7.11e-05)	(9.55e-05)	(9.55e-05)	(9.88e-05)	(9.88e-05)	(9.98e-05)	(9.98e-05)
Tax	-0.0515	-0.0515	-0.137***	-0.137***	-0.139**	-0.140**	0.145***	0.144***
	(0.0419)	(0.0419)	(0.0442)	(0.0442)	(0.0660)	(0.0660)	(0.0452)	(0.0452)
Formal training	0.553***	0.553***	0.457***	0.457***	0.232***	0.232***	0.200***	0.200***
	(0.0293)	(0.0293)	(0.0312)	(0.0312)	(0.0445)	(0.0445)	(0.0334)	(0.0334)
Manager's experience	0.00583***	0.00591***	0.00137	0.00136	0.000309	0.000434	0.000222	0.000295
	(0.00140)	(0.00140)	(0.00133)	(0.00133)	(0.00200)	(0.00200)	(0.00146)	(0.00146)
R&D	1.281***	1.281***	1.173***	1.173***	0.271***	0.272***	0.220***	0.220***
	(0.0323)	(0.0323)	(0.0341)	(0.0341)	(0.0512)	(0.0512)	(0.0359)	(0.0359)
Labor Regulation	0.157**	0.158**	-0.0749	-0.0749	-0.225	-0.225	0.0139	0.0130

	(0.0745)	(0.0745)	(0.0567)	(0.0567)	(0.144)	(0.144)	(0.0589)	(0.0589)
Political Instability	0.0322	0.0316	0.00919	0.00918	-0.0206	-0.0216	0.0231	0.0234
	(0.0444)	(0.0444)	(0.0531)	(0.0531)	(0.0600)	(0.0600)	(0.0634)	(0.0634)
Private listed	-0.0581	-0.0577	-0.165**	-0.165**	0.0400	0.0400	-0.0239	-0.0256
	(0.0668)	(0.0668)	(0.0707)	(0.0707)	(0.0923)	(0.0923)	(0.0794)	(0.0794)
Sole Proprietorship	-0.104	-0.102	-0.218***	-0.218***	-0.0547	-0.0515	-0.169*	-0.169*
	(0.0678)	(0.0677)	(0.0819)	(0.0819)	(0.0950)	(0.0950)	(0.0890)	(0.0890)
Partnership	-0.0966	-0.0953	-0.253**	-0.253**	-0.0566	-0.0556	-0.0238	-0.0248
	(0.0748)	(0.0748)	(0.103)	(0.103)	(0.110)	(0.110)	(0.101)	(0.101)
Limited Partnership	0.0870	0.0878	-0.0260	-0.0259	0.138	0.138	-0.00313	-0.00520
	(0.0727)	(0.0727)	(0.0860)	(0.0860)	(0.104)	(0.104)	(0.0924)	(0.0924)
Other ownership	-0.0344	-0.0336	-0.120	-0.121	-0.0844	-0.0850	0.102	0.104
	(0.114)	(0.114)	(0.149)	(0.149)	(0.176)	(0.176)	(0.142)	(0.142)
Year fixed effects	-0.152***	-0.532**	-0.242***	1.868***	-0.319***	2.664***	-0.157***	1.887***
Industry fixed effects	(0.0442)	(0.236)	(0.0366)	(0.521)	(0.0623)	(0.452)	(0.0408)	(0.608)
Constant	6.540***	6.540***	-4.646***	-4.647***	1.274	1.275	-4.656***	-4.643***
	(1.577)	(1.577)	(1.538)	(1.538)	(1.542)	(1.543)	(1.445)	(1.445)
LR test	1327.27***	1330.59***	754.99***	754.98***	490.54***	491.53***	694.78***	695.66***
Log likelihood	-18301.73	-18302.34	-14980.33	-14980.35	-9590.48	-9591.13	-14303.74	-14305.89
Wald test	3068.31***	3066.86***	2069.5***	2069.46***	344.71***	344.23***	321.74***	317.38***
Observations	34,303	34,303	38,084	38,084	34,303	34,303	38,084	38,084
Number of groups	51	51	79	79	51	51	79	79

This table compares the main empirical results between two halves of the samples. The first half includes countries with higher quality institutions while the second half includes countries with lower quality institutions. Institutional quality is measured by 6 dimensions of institutions, including voice and accountability, government effectiveness, political stability, regulatory quality, rule of law, and control of corruption. All models in the table were estimated using multi-level logistic regression method. The dependent variable is a new product dummy that takes the value of 1 if the firm introduces a new product and 0 otherwise. The independent variables include informality represented by the number of years operating in the informal sector, corruption represented by the composite variable of bribery, the interaction between informality and corruption, and the control variables. The sample was split by median. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.

Table 1.7. Factors of Bribery and Innovative Product Introduction

	Innovative Product Introduction								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cor1	0.0659*								
	(0.0382)								
Cor1 x Informal	0.289***								
	(0.0818)								
Cor2		0.136***							
		(0.0513)							
Cor2 x Informal		0.245**							
		(0.121)							
Cor4			0.100***						
			(0.0285)						
Cor4 x Informal			0.146**						
			(0.0612)						
Cor5				0.240					
				(0.349)					
Cor5 x Informal				1.085					
				(1.367)					
Cor6					0.321***				
					(0.0732)				
Cor6 x Informal					-0.383				
					(0.249)				
Cor7						0.363***			
						(0.110)			
Cor7 x Informal						-0.148			
						(0.299)			
Cor8							0.210***		

							(0.0606)		
Cor8 x Informal							0.255*		
							(0.139)		
Cor9								0.463***	
								(0.0837)	
Cor9 x Informal								0.323*	
								(0.195)	
Cor10									0.0952*
									(0.0544)
Cor10 x Informal									0.428***
									(0.165)
Informality	0.0368*	0.0506**	0.0388*	0.0588***	0.0616***	0.0597***	0.0507**	0.0511**	0.0488**
	(0.0228)	(0.0223)	(0.0233)	(0.0219)	(0.0220)	(0.0220)	(0.0223)	(0.0222)	(0.0223)
GDP capita	-0.0273	-0.0280	-0.0251	-0.0306	-0.0267	-0.0283	-0.0276	-0.0273	-0.0295
	(0.0624)	(0.0624)	(0.0624)	(0.0625)	(0.0624)	(0.0624)	(0.0623)	(0.0624)	(0.0624)
Population	-0.211***	-0.211***	-0.211***	-0.211***	-0.210***	-0.210***	-0.210***	-0.210***	-0.210***
	(0.0500)	(0.0500)	(0.0500)	(0.0500)	(0.0499)	(0.0500)	(0.0499)	(0.0500)	(0.0500)
GDP Growth	0.0220***	0.0221***	0.0217***	0.0223***	0.0221***	0.0220***	0.0216***	0.0216***	0.0220***
	(0.00784)	(0.00783)	(0.00784)	(0.00784)	(0.00783)	(0.00784)	(0.00784)	(0.00784)	(0.00784)
Firm size	0.00034***	0.00034***	0.00034***	0.00034***	0.00034***	0.00034***	0.00033***	0.00033***	0.00034***
	(5.67e-05)	(5.67e-05)	(5.67e-05)	(5.67e-05)	(5.67e-05)	(5.67e-05)	(5.67e-05)	(5.67e-05)	(5.67e-05)
Tax	-0.0973***	-0.0973***	-0.0959***	-0.0981***	-0.0974***	-0.0977***	-0.0963***	-0.0968***	-0.0975***
	(0.0303)	(0.0303)	(0.0303)	(0.0303)	(0.0303)	(0.0303)	(0.0303)	(0.0303)	(0.0303)
Formal training	0.518***	0.517***	0.518***	0.520***	0.518***	0.519***	0.518***	0.517***	0.518***
	(0.0213)	(0.0213)	(0.0213)	(0.0213)	(0.0213)	(0.0213)	(0.0213)	(0.0213)	(0.0213)
Manager’s experience	0.00388***	0.00378***	0.00378***	0.00383***	0.00386***	0.00381***	0.00386***	0.00386***	0.00386***
	(0.000957)	(0.000957)	(0.000957)	(0.000957)	(0.000957)	(0.000957)	(0.000957)	(0.000957)	(0.000957)
R&D	1.241***	1.243***	1.243***	1.245***	1.242***	1.243***	1.238***	1.238***	1.241***
	(0.0233)	(0.0233)	(0.0233)	(0.0233)	(0.0233)	(0.0233)	(0.0233)	(0.0233)	(0.0233)

Labor Regulation	0.0126	0.0134	0.0130	0.0124	0.0112	0.0119	0.0123	0.0113	0.0124
	(0.0452)	(0.0452)	(0.0452)	(0.0452)	(0.0452)	(0.0452)	(0.0452)	(0.0452)	(0.0452)
Political Instability	0.0346	0.0324	0.0350	0.0316	0.0331	0.0333	0.0330	0.0374	0.0333
	(0.0339)	(0.0339)	(0.0339)	(0.0339)	(0.0339)	(0.0339)	(0.0339)	(0.0339)	(0.0339)
Age	-0.000538	-0.000532	-0.000522	-0.000531	-0.000499	-0.000519	-0.000524	-0.000502	-0.000527
	(0.000677)	(0.000677)	(0.000677)	(0.000677)	(0.000677)	(0.000677)	(0.000677)	(0.000677)	(0.000677)
Private listed	-0.126***	-0.124***	-0.125***	-0.123**	-0.124***	-0.124***	-0.125***	-0.124***	-0.124***
	(0.0480)	(0.0480)	(0.0480)	(0.0480)	(0.0480)	(0.0480)	(0.0480)	(0.0480)	(0.0480)
Sole Proprietorship	-0.165***	-0.163***	-0.164***	-0.162***	-0.162***	-0.163***	-0.165***	-0.160***	-0.164***
	(0.0517)	(0.0517)	(0.0517)	(0.0517)	(0.0517)	(0.0517)	(0.0517)	(0.0518)	(0.0517)
Partnership	-0.154***	-0.153***	-0.155***	-0.150**	-0.152**	-0.151**	-0.152**	-0.153***	-0.151**
	(0.0590)	(0.0590)	(0.0590)	(0.0590)	(0.0590)	(0.0590)	(0.0590)	(0.0591)	(0.0590)
Limited Partnership	0.0391	0.0419	0.0402	0.0425	0.0422	0.0426	0.0406	0.0419	0.0419
	(0.0552)	(0.0552)	(0.0552)	(0.0552)	(0.0552)	(0.0552)	(0.0552)	(0.0552)	(0.0552)
Other ownership	-0.0858	-0.0837	-0.0779	-0.0781	-0.0759	-0.0761	-0.0838	-0.0820	-0.0846
	(0.0897)	(0.0896)	(0.0895)	(0.0894)	(0.0894)	(0.0895)	(0.0896)	(0.0897)	(0.0897)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.592	1.596	1.576	1.625	1.573	1.594	1.580	1.600	1.603
	(1.223)	(1.222)	(1.223)	(1.224)	(1.222)	(1.223)	(1.221)	(1.224)	(1.223)
Wald	5004.03***	5003.73***	5011.64***	4995.12***	5009.96***	5003.12***	5005.03***	5017.92***	4996.47***
LR Test	2690.24***	2690.06***	2686.25***	2702.87***	2692.4***	2695.82***	2687.28***	2705.52***	2691.69***
Log likelihood	-33415.88	-33418.38	-33414.73	-33424.53	-33415.96	-33420.16	-33415.81	-33406.47	-33418.37
Observations	72,387	72,387	72,387	72,387	72,387	72,387	72,387	72,387	72,387
Number of groups	130	130	130	130	130	130	130	130	130

Notes: This table re-evaluates the main empirical results by examining the interaction between years of informal operation and individual item of corruption. All nine models in the table were estimated using multi-level logistic regression model. Corr1 stands for whether firms are expected to give gifts in meetings with tax officials. Corr2 stands for whether firms are expected to give gifts secure a government contract. Corr4 stands for whether firms are expected to give gifts to get things done. Corr5 stands for whether firms are expected to give gifts to get phone connection. Corr1 stands for whether firms are expected to give gifts to get electrical connection. Corr1 stands for whether firms are expected to give gifts to get water connection. Corr8 stands for whether firms are expected to give gifts to get a construction permit. Corr10 stands for whether firms are expected to give gifts to get an operating license. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 1.8. Factors of Bribery and Imitative Product Introduction

	Imitative Product Introduction								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cor1	0.0800*								
	(0.0487)								
Cor1 x Informal	-0.141								
	(0.123)								
Cor2		0.182***							
		(0.0637)							
Cor2 x Informal		-0.204							
		(0.180)							
Cor4			0.119***						
			(0.0357)						
Cor4 x Informal			-0.0296						
			(0.0807)						
Cor5				0.0638					
				(0.350)					
Cor5 x Informal				-0.715					
				(1.387)					
Cor6					0.0721				
					(0.0958)				
Cor6 x Informal					-0.170				
					(0.313)				
Cor7						0.131			
						(0.147)			
Cor7 x Informal						-0.889			
						(0.851)			
Cor8							0.0977		

							(0.0772)		
Cor8 x Informal							-0.224		
							(0.202)		
Cor9								0.168	
								(0.108)	
Cor9 x Informal								-0.492	
								(0.373)	
Cor10									0.182***
									(0.0678)
Cor10 x Informal									-0.407
									(0.270)
Informality	0.00577	0.00358	0.00112	-0.000666	1.54e-05	0.000674	0.00341	0.00405	0.00500
	(0.0271)	(0.0268)	(0.0280)	(0.0266)	(0.0267)	(0.0266)	(0.0268)	(0.0267)	(0.0266)
GDP capita	0.0602	0.0604	0.0634	0.0579	0.0586	0.0583	0.0588	0.0588	0.0597
	(0.0585)	(0.0585)	(0.0585)	(0.0585)	(0.0585)	(0.0585)	(0.0585)	(0.0585)	(0.0585)
Population	-0.122***	-0.121***	-0.122***	-0.121***	-0.121***	-0.121***	-0.121***	-0.121***	-0.121***
	(0.0436)	(0.0437)	(0.0437)	(0.0436)	(0.0436)	(0.0437)	(0.0436)	(0.0436)	(0.0436)
GDP Growth	-0.00611	-0.00601	-0.00634	-0.00599	-0.00602	-0.00605	-0.00609	-0.00606	-0.00603
	(0.0102)	(0.0102)	(0.0102)	(0.0102)	(0.0102)	(0.0102)	(0.0102)	(0.0102)	(0.0102)
Firm size	8.57e-05	8.93e-05	8.71e-05	8.53e-05	8.51e-05	8.53e-05	8.41e-05	8.41e-05	8.74e-05
	(7.02e-05)	(7.02e-05)	(7.01e-05)	(7.02e-05)	(7.02e-05)	(7.02e-05)	(7.02e-05)	(7.02e-05)	(7.02e-05)
Tax	0.0418	0.0418	0.0435	0.0414	0.0415	0.0413	0.0417	0.0412	0.0417
	(0.0370)	(0.0371)	(0.0371)	(0.0370)	(0.0370)	(0.0370)	(0.0371)	(0.0370)	(0.0371)
Formal training	0.214***	0.212***	0.213***	0.215***	0.214***	0.214***	0.214***	0.214***	0.214***
	(0.0266)	(0.0266)	(0.0266)	(0.0266)	(0.0266)	(0.0266)	(0.0266)	(0.0266)	(0.0266)
Manager's experience	0.000483	0.000435	0.000458	0.000488	0.000496	0.000482	0.000483	0.000462	0.000470
	(0.00117)	(0.00117)	(0.00117)	(0.00117)	(0.00117)	(0.00117)	(0.00117)	(0.00117)	(0.00117)
R&D	0.242***	0.242***	0.242***	0.244***	0.243***	0.243***	0.242***	0.243***	0.240***
	(0.0293)	(0.0293)	(0.0293)	(0.0293)	(0.0293)	(0.0293)	(0.0293)	(0.0293)	(0.0293)

Labor Regulation	-0.0283	-0.0277	-0.0281	-0.0280	-0.0282	-0.0282	-0.0279	-0.0280	-0.0277
	(0.0542)	(0.0542)	(0.0542)	(0.0542)	(0.0542)	(0.0542)	(0.0542)	(0.0542)	(0.0542)
Political Instability	0.00971	0.00998	0.0131	0.0101	0.00993	0.00975	0.00950	0.0106	0.0103
	(0.0434)	(0.0434)	(0.0434)	(0.0434)	(0.0434)	(0.0434)	(0.0434)	(0.0434)	(0.0434)
Age	7.38e-05	5.18e-05	7.54e-05	6.54e-05	7.09e-05	6.57e-05	6.53e-05	6.98e-05	8.43e-05
	(0.000805)	(0.000805)	(0.000805)	(0.000805)	(0.000805)	(0.000805)	(0.000805)	(0.000805)	(0.000805)
Private listed	-0.0203	-0.0195	-0.0210	-0.0201	-0.0202	-0.0202	-0.0203	-0.0205	-0.0197
	(0.0596)	(0.0596)	(0.0596)	(0.0596)	(0.0596)	(0.0596)	(0.0596)	(0.0596)	(0.0597)
Sole Proprietorship	-0.125*	-0.123*	-0.126*	-0.125*	-0.125*	-0.124*	-0.125*	-0.124*	-0.123*
	(0.0648)	(0.0648)	(0.0648)	(0.0648)	(0.0648)	(0.0648)	(0.0648)	(0.0648)	(0.0648)
Partnership	-0.0452	-0.0436	-0.0474	-0.0429	-0.0435	-0.0433	-0.0429	-0.0434	-0.0429
	(0.0743)	(0.0743)	(0.0743)	(0.0743)	(0.0743)	(0.0743)	(0.0743)	(0.0743)	(0.0743)
Limited Partnership	0.0472	0.0477	0.0455	0.0476	0.0474	0.0475	0.0473	0.0473	0.0490
	(0.0689)	(0.0690)	(0.0689)	(0.0689)	(0.0689)	(0.0689)	(0.0689)	(0.0689)	(0.0690)
Other ownership	0.0206	0.0165	0.0173	0.0164	0.0169	0.0175	0.0194	0.0200	0.0207
	(0.110)	(0.110)	(0.110)	(0.110)	(0.110)	(0.110)	(0.110)	(0.110)	(0.110)
Industry fixed effects	-0.207***	-0.206***	-0.206***	-0.207***	-0.207***	-0.207***	-0.206***	-0.207***	-0.207***
Year fixed effects	(0.0404)	(0.0404)	(0.0404)	(0.0404)	(0.0404)	(0.0404)	(0.0404)	(0.0404)	(0.0404)
Constant	-0.632	-0.635	-0.656	-0.612	-0.621	-0.618	-0.624	-0.621	-0.637
	539.50****	544.63***	546.9***	536.34***	536.69***	524.6***	538.64***	540.27***	544.78***
Wald	-24002.74	-24000.31	-23999.04	-24004.31	-24004.2	-24003.38	-24003.21	-24002.23	-24000.1
LR Test	1622.37	1624.22***	1619.87***	1625.19***	1624.63***	1625.72***	1624.17***	1624.67***	1623.33***
Log likelihood	72,387	72,387	72,387	72,387	72,387	72,387	72,387	72,387	72,387
Observations	130	130	130	130	130	130	130	130	130
Number of groups	-0.207***	-0.206***	-0.206***	-0.207***	-0.207***	-0.207***	-0.206***	-0.207***	-0.207***

Notes: This table re-evaluates the main empirical results by examining the interaction between years of informal operation and individual item of corruption. All nine models in the table were estimated using multi-level logistic regression model. Corr1 stands for whether firms are expected to give gifts in meetings with tax officials. Corr2 stands for whether firms are expected to give gifts secure a government contract. Corr4 stands for whether firms are expected to give gifts to get things done. Corr5 stands for whether firms are expected to give gifts to get phone connection. Corr1 stands for whether firms are expected to give gifts to get electrical connection. Corr1 stands for whether firms are expected to give gifts to get water connection. Corr8 stands for whether firms are expected to give gifts to get a construction permit. Corr10 stands for whether firms are expected to give gifts to get an operating license. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Essay 2 – Civic Engagement, Well-being, and Entrepreneurial Intention

Abstract

The role of civic engagement in promoting entrepreneurial intentions, along with the underlying mechanism of this relationship, remains unclear. The purpose of this paper is to develop a theoretical model in which the relationship between civic engagement and entrepreneurial intention is mediated by eudaimonic/hedonic well-being. The model was tested on a representative sample obtained from the Gallup World Poll, which consists of more than 104,342 individuals across 35 countries worldwide. The study employed multilevel mixed effect logistic regression model as the main methodology and structural equation modelling as supplementary analysis. Our findings indicate that active engagement in civic affairs aimed at improving one's community or addressing wider public concerns is strongly associated with the intention to start a business. More importantly, we highlight the mediation of well-being – with eudaimonic dimensions at its core – as the primary benefit of civic engagement, providing emotional impetus for entrepreneurial endeavors. In contrast, the hedonic dimension of well-being plays a minor role in mediating the nexus between civic participation and entrepreneurship. We also discuss how the theoretical framework of this study is compatible to self-determination theory. Finally, this paper advances understanding in entrepreneurship research by (1) uncovering the formation of entrepreneurial intent from the psychological benefits of civic engagement, (2) disentangling hedonic and eudaimonic well-being, and (3) demonstrating well-being as important resources for venturing ambitions.

Keywords: Civic engagement, Hedonic well-being, Eudaimonic well-being, Entrepreneurial intention

2.1. Introduction

Literature highlights the practical and theoretical importance of civic engagement on individual development and behaviors (Crocetti et al., 2012). However, much of this discussion is centered around political and social activity contexts (Skocpol & Fiorina, 2004; Schneider, 2007; Theiss-Morse & Hibbing, 2005). Recent contributions have begun to explore the prosocial motivations driving entrepreneurship, following decades of research that has privileged the economic motivations of entrepreneurs (e.g. Conger et al. 2018; Kibler et al, 2019; Bacq and Alt, 2018). Few studies have examined the connection between specific forms of civic engagement and entrepreneurship, often based on the assumption that engaged citizens primarily pursue social entrepreneurship due to their familiarity with social issues and opportunities gained through prior involvement in social activities (Forster & Grichnik, 2013; Hockerts, 2017; Jain, 2009). To date, no research has studied the underlying mechanisms through which civic engagement fosters the development of general entrepreneurial intentions, which is defined as the conscious state of mind that directs personal attention, experience, and behavior toward planned entrepreneurial behavior (Bird, 1988).

We addressed these gaps by showing that prosocial behaviours manifest in civic engagement – encompassing activities such as volunteering, involvement in philanthropic endeavors, or political engagement – may also positively influence the development of general entrepreneurial intents (Amini Sedeh et al., 2020; Ma & Wang, 2019). Engaging in civic activities fosters a heightened sense of connection, interdependence, and commitment to the community (Diller, 2001). Moreover, it enhances participants skills, knowledge, and motivation, while providing resources that can be instrumental in nurturing entrepreneurial activity (Wilson, 2000; Wilson, 2012; Beneson, 2015). Civic engagement facilitates the development of social and leadership skills

(Putnam, 1993b), transferable employment-related skills (Cavendish, 2000; Frumkin & Jastrzab, 2010), and political acumen (van der Meer & Van Ingen, 2009). Engaged citizens are more optimistic about their communities and interpersonal connections, and more familiar with the social issues and opportunities for social value creation that all firms aspire to address (Forster & Grichnik, 2013; Hockerts, 2017; Jain, 2009). This can be likened to processes in which perceptions of environmental munificence led to greater certainty regarding the beliefs and attitudes influencing intentions to establish entrepreneurial ventures (Schlaegel & Koenig, 2014). In essence, civic engagement heightens the likelihood that individuals perceive themselves as capable and inclined to pursue entrepreneurship.

The contribution of the paper is threefold. First, we develop a theoretical framework that offers a nuanced understanding of the intricate mechanisms underlying entrepreneurial motivations within communities. In essence, our research question is: How do the returns to civic engagement shape individuals' motivations to initiate a new venture? While previous research has established a direct association between civic engagement and entrepreneurial intent (focusing on physical resources, social networks, and the human capital derived from civic activities as foundational pathway to venture startup), our research goes beyond these conventional 'resources' to highlight psychological 'returns' to civic engagement as a driving force underlying entrepreneurial endeavours. In particular, while we control for the effects of physical and human capital derived from civic engagement, our primary focus is in studying the relationship through the lens of well-being as a psychological return to civic activities. Given evidence suggesting that civic engagement may contribute to increased happiness (e.g. Neira et al., 2019) and fulfillment (e.g. Steger et al., 2008), we distinguish between hedonic (subjective) and eudaimonic (psychological)

well-being[2]. Colloquially, one might think of these as happiness and fulfilment, respectively. Identifying this as potential mechanism linking civic engagement to entrepreneurial intent allows us to add to the growing body of literature that explores the role of well-being in entrepreneurship (see Wiklund et al. 2019).

Second, beside the direct effect of psychological resources, this study reveals their mediating role in strengthening or weakening the effect of civic engagement on entrepreneurial aspirations, opening avenues for targeted interventions aimed at enhancing both individual well-being and entrepreneurial outcomes. While studies largely use eudaimonic well-being as static variables, our study adds to the recent call by employing eudaimonic well-being as both outcomes and resources (Ryff, 2019). To fulfill these objectives, we utilize data gathered from various sources including the Gallup World Poll (GWP), the Global Entrepreneurship Monitor (GEM), and the Global Leadership and Organizational Behavior Effectiveness (GLOBE) project.

Finally, our findings reveal a distinction between hedonic and eudemonic well-being. Although both types of well-being mediate the relationship between civic engagement and entrepreneurial intent, the effect of hedonic well-being is marginal. Interestingly, while small, the direct relationship between civic engagement and hedonic well-being is negative. Conversely, eudaimonic well-being exhibits larger and positive direct and mediation effects. In summary, it is the eudaimonic returns to civic engagement that serve as the primary link to entrepreneurial intent. In other words, the fulfillment derived from engagement holds greater significance than mere

[2] Hedonic well-being has often been operationalized as the cognitive appraisal of moods and emotions or the self-evaluation of life and job satisfaction (Diener & Lucas, 1999), happiness and subjective well-being (Chan & Mak, 2020).

The eudaimonic approach to mental well-being that emphasizes self-actualization, purpose, autonomy, and personal development (Stephan et al., 2020; Deci et al., 2001; Ryff & Keyes, 1995) in achieving a fulfilling life, authenticity, and goals (Waterman et al., 2010; Diener et al., 2010; Diener & Seligman, 2004), has been less commonly applied in entrepreneurship research (Pathak & Muralidharan, 2021)

happiness. To this end, our study offers actionable insights for policy makers, educators, and community leaders seeking to promote entrepreneurship and societal well-being simultaneously. Strategies that foster a supportive civic environment, promote social connectedness, and cultivate a sense of purpose and fulfillment are likely to not only bolster individuals' well-being but also stimulate their entrepreneurial aspirations. This holistic approach holds the potential to catalyze transformative change and foster resilient, inclusive, and thriving communities.

The structure of this paper is as follows: Section 2 provides a review of the existing literature, drawing from different theoretical perspectives to develop our hypotheses. Section 3 outlines the data and methodology. Sections 4 and 5 present the empirical findings and additional analysis, respectively. Section 6 discusses the overall results. Section 7 concludes the study.

2.2. Literature review

2.2.1. Civic engagement and entrepreneurship

Civic engagement refers to the experience of a sense of connection, interrelatedness, and, naturally, commitment towards the greater community (Diller, 2001). Actively engaged citizens are optimistic about their communities and participate in public work aimed at improving the well-being of others and shaping the future of their community. This involvement spans various activities, including charitable giving, membership in associations, political engagement, volunteering, and community service (Martinson & Minkler, 2006). Engagement, either individually or collectively, is increasingly viewed as critical to addressing ‘grand challenges’ (Swinburn et al. 2019), including inequality, climate change, and poverty (Le Blanc, 2015). The

entrepreneurship literature relies on the assumption that social entrepreneurs are motivated by social motives (Miller et., 2012). That is, social entrepreneurs are concerned with effecting social change and creating sustaintable solutions to social problems arising from market and government failures (Santos, 2012, p. 345). Prosocial motivations encourage entrepreneurial actions targeted at social problems that, it is assumed, are unlikely to provide sufficient financial incentives for "regular entrepreneurs" to act (Mair & Martí, 2006). In this way, prosocially motivated entrepreneurs create value for their communities by opening new ventures that alleviate suffering and improve well-being (Williams and Shepherd, 2016) and, in doing so, social entrepreneurs gain a sense of fulfilment and improved well-being (Grimes et al., 2013; Shepherd, 2015).

Previous research indicates that civic engagement yields benefits for both rational actors, who take part in civic work when the perceived benefits outweigh the costs of involvement, and 'irrational' prosocial actors (Riker & Ordeshook, 1968; Pattie et al., 2003). Engagement in civic activities within social organizations, such as charities, religious institutions, or community groups, promotes personal interactions, communication, and the cultivation of trust and reciprocity among individuals (Kenworthy, 1997; Putnam, 1993b; Pattie et al., 2003). Trust, functioning both as a precursor to and a product of relationships, generates social capital (Nooteboom, 2007), which in turn encourages cooperation and facilitates economic and political exchanges among individuals (Putnam, 1993a; Putnam, 1993b). To this end, individuals can leverage the social capital accrued from their civic engagement to access benefical and useful economic opportunities, including laying the groundwork for entrepreneurial endeavors (Benenson, 2017) or transitioning to self-employment (Halpern, 2005).

Furthermore, individuals may leverage their political involvement within civic networks to navigate the political dimensions of new venture creation processes (Pattie et al., 2003), tap into

new opportunities (Trajano et al., 2023), and enhance bricolage skills for resource mobilization (Desa, 2012). Additionally, prior family exposure (Carr & Sequeira, 2007; Chlosta et al., 2012) and experience gained through working with social organizations or movements (Kautonen et al., 2010) may equip potential entrepreneurs with organisational, advocacy and leadership skills that can be effectively utilized in entrepreneurial contexts (Hockerts, 2017). The acquisition of such skills is likely to bolster self-efficacy and perceptions of behavioral control, both of which have been shown to predict entreprenrial intent (Schlaegel and Koenig, 2014; Giles et al., 2004; Zhao et al., 2005). In light of these arguments, we hypothesize that:

Hypothesis 1: Civic engagement is positively associated with entrepreneurial intent

2.2.2. Civic engagement and well-being

Well-being is defined as the function of subjective and objective influences an individual's experience of a fully functioning life (Wiklund et al., 2019). There are multiple approaches to the measurement of well-being, encompassing life satisfaction, physical well-being, societal well-being, or financial well-being. In contemporary psychology and entrepreneurship literatures, well-being is comprised of two dimensions: hedonia and eudaimonia (Ryan & Deci, 2001). Much attention has been paid to hedonic well-being, which is defined as the experience of pleasure, happiness, and enjoyment (Ryan & Deci, 2001). Eudaimonic well-being, in contrast, is related to self-actualization and personal growth (Ryff, 1989).

The literature on the relationship between civic engagement and hedonic well-being presents conflicting findings. Traditionally, Aristotlean ethics positioned civic engagement as the foundation of a happy life, suggesting that individuals could attain fulfillment and happiness by

living virtuous lives, which included civic or 'other-oriented' virtues (Aristotle, 1984). Recent empirical research appears to support this perspective, providing evidence that individuals may enhance their well-being by 'doing well by doing good' (Borgonovi, 2008), leading to improvements in their mental health and subjective well-being (Martinson & Minkler, 2006; Morrow-Howell et al., 2003; Flanagan & Bundick, 2011; Hart et al., 2014).

In contrast, certain types of civic engagement, such as efforts against injustice, may evoked mixed emotions including anger, despair, hope, and enthusiasm (van Zomeren et al., 2008). These conflicting emotions can lead to stress, physical exhaustion, or negative affect, ultimately resulting in decreased subjective well-being (Attree et al., 2011; Windsor et al., 2008), lower life satisfaction, and diminished enjoyment (Ding et al., 2015; Hawkins et al., 2009).

Given these conflicting perspectives, we are hesitant to propose a single hypothesis. However, based on our review of the literature, in terms of general rather than specific forms of engagement, civic engagement is generally shown to positively associate with subjective (i.e. hedonic) well-being (e.g. Wray-Lake et al., 2019). This leads us to hypothesize that:

Hypothesis 2a: Civic engagement is positively associated with hedonic well-being

While hedonic well-being focuses on life satisfaction and positive affect (or the absence of negative affect), eudaimonic well-being derives from self-actualization, personal development, and a sense of purpose (Ryff and Keyes, 1995; Ryff, 2019). Eudaimonic well-being is manifest in self-acceptance, self-confidence, personal growth, independence, autonomy, as well as the ability to establish and maintain positive relationships and manage complex environments (Ryff, 2019; Wiklund et al., 2019). Evidence suggests that individuals engaged in civic activities report higher

levels of eudaimonic well-being (Pancer, 2014; Chan & Mak, 2020). For instance, participation in community initiatives, such as volunteering, have been linked to increased self-esteem, self-confidence (Attree et al., 2011), and self-efficacy (Brown, Hoye, & Nicholson, 2012; Ohmer, 2007).

Reinforcing this body of research, other studies, often focusing on younger adults, indicate that civic engagement is associated with a diverse range of psychological and behavioral outcomes, including improved emotional regulation (Hansen et al., 2003), increased social support (Pancer et al., 2007), decreased depressive symptoms (Landstedt et al., 2016), and fewer instances of substance use of violent behaviors (Vieno et al., 2007). Additionally, active involvement in civic affairs has been found to facilitate the establishment of satisfying and trusting relationships within the community, contributing to individuals' eudaimonic well-being (Jarrett et al., 2005). By actively engaging in community activities, individuals understand what is happening in their society (Cicognani et al., 2015), fulfill their social responsibility and make positive contributions (Wray-Lake et al., 2016). In essence, civic engagement enables individuals to realize their potential and derive a sense of meaning in their lives (Son & Wilson, 2012). Therefore, we hypothesize that:

Hypothesis 2b: Civic engagement is positively associated with eudaimonic well-being

2.2.3. Well-being and entrepreneurship

While there is a longstanding tradition of associating entrepreneurship with hedonic or subjective-well-being (e.g. Blanchflower & Oswald, 2008), recent research has investigated both hedonic and eudaimonic well-being (Wiklund et al. 2019). In the case of hedonic well-being, characterized by feelings of happiness and contentment, it has been argued to provide the foundation for successful

entrepreneurship. The mechanisms facilitating this connection are multifaceted, including increased cognitive flexibility[3] (Baron, 2008), expanded "thought-action repertoires"[4] and heightened alertness to opportunities (Fredrickson, 2004, 1998; Miller et al., 2012; Foo et al., 2015), perceiving challenging situations as manageable and less risky (Krueger and Dickson, 1994; Shepherd and Patzelt, 2018), more positive social interactions (Lyubomirsky et al., 2005; Erdogan et al., 2012; Miller et al., 2012), and possessing 'better' physical, intellectual, psychological and social resources (Dijkhuizen et al., 2018; Pathak & Muralidharan, 2021; Pathak, 2020). In broader terms, it is argued that societies with individuals who, on average, report higher levels of hedonic well-being will exhibit greater resourcefulness and vitality, and a more favourale disposition toward seizing entrepreneurial opportunities (Sweida & Sherman, 2020; Zhou & George, 2013; Podoynitsyna et al., 2012).

However, hedonic well-being might inconsistently predict entrepreneurship. For instance, while postive affect may increase one's cognitive flexibility, it may also limit cognitive processing capacity (Isen, 1987; Wegener et al., 1995). In this way, 'happy' individuals may demonstrate higher levels of opportunity recognition but may lack the capacity to transform ideas into viable new ventures. Additionally, as argued by Hahn et al. (2012), experiencing contentment (i.e. having high levels of hedonic well-being) does not necessarily promote either task-oriented or relationship-oriented initiatives, which are crucial predictors of engagement in entrepreneurship. Engaging in entrepreneurship demands cognitive effort, brainstorming, initiative and self-

[3] Cognitive flexibility is characterized by a ready capability to adapt to new, different, or changing requirements" (Isen, 2002)
[4] Thought-action repertoires are the collection of thoughts and actions that an individual could take in response to a situation.

regulation (Sweida & Sherman, 2020), attributes that are often derived from experiences of meaning and purposes rather than indulgence and enjoyment (Hahn et al., 2012).

Conversely, poor impulse control, unrealistic goal setting, and the pursuit of extreme happiness, have been shown to have adverse effects on building social capital (Mauss et al., 2012; Ucbasaran et al., 2013), resulting in feeling of loneliness, grief, and anxiety (Shepherd, 2019). Consequently, high levels of hedonic well-being may be associated with a decreased propensity for entrepreneurship. On this basis, it is again tempting to propose two competing hypotheses. However, for simplicity and based on our thorough review of prior research, we hypothesise that:

Hypothesis 3a: Hedonic well-being is negatively associated with entrepreneurial intention.

As previously mentioned, eudaimonic well-being encompasses personal fulfillment, purposefulness, and expressiveness (Ryff & Keyes, 1995; Ryff, 2019) and is manifest in various forms, including in self-efficacy, self actualization, independence, and adept social skills (Ryff, 2019; Wiklund et al., 2019). These facets of eudaimonic well-being may serve as crucial resources that enhance entrepreneurs' abilities to be independent, challenge conventions, and undertake risky ventures (Ryff, 2019). For instance, self efficacy has been identified as a robust predictor of entrepreneurial behavior (Bandura & Wessels, 1994; Bandura, 1986; Bandura and Locke, 2003), as it signifies "a broad and stable sense of personal competence to deal effectively with a variety of stressful situations" in the face of uncertainty and limited resources (Luszczynska et al., 2005: p. 81).

Eudaimonic well-being may also be considered to instigate action-orientation and perseverance in entrepreneurial contexts (Baumeister et al., 2003; Cardon and Kirk, 2015) by fostering feelings of

capability, preparedness (Milam et al., 2019), self-fulfilment and purposefulness (Cassar and Friedman, 2009). In this vein, for instance, Hahn and colleagues (2012) discover evidence of a positive correlation between eudaimonic well-being and personal initiative among entreprenreurs, while failing to observe a similar correlation between hedomic well-being and initiative.

The broader study of eudaimonic well-being represents a natural extension from prior studies focusing on its constituent parts, such as self-efficacy or self-esteem. Indeed, eudaimonic well-being is likely to signify individuals' awareness of their own strengths or weaknesses, enabling them to approach their ventures with confidence and optimism (Bauer & Baumeister, 2011; Shir & Ryff, 2021; Gielnik et al., 2020), to manage daily challenges and frequent contextual changes (Ryff, 2019), and cultivate positive relationships with key venture stakeholders (Shir & Ryff, 2021). In line with previous research emphasizing the role of psychological resources (i.e., confidence, determination, perseverance) to unleash entrepreneurial spirit (Su et al., 2021; Pathak, 2020), we propose that eudaimonic well-being may serve as a predictor of both entrepreneurial intentions and entrepreneurial success (Shephard & Patzelt, 2015). For the purposes of our study, we hypothesize that:

Hypothesis 3b: Eudaimonic well-being is positively associated with entrepreneurial intention.

2.2.4. The mediation of eudaimonic well-being

In the preceding discussion, we elaborated the dynamics that may link civic engagement, well-being, and entrepreneurial intent. Our discussion suggests an important role for well-being as a mediator of the relationship between civic engagement and entrepreneurial aspirations. On one

hand, civic engagement, spanning various forms of active involvement in community affairs, is seen as a potent driver of well-being. This resonates with existing research highlighting the psychological and social benefits that individuals derive from civic participation, fostering a sense of competence, autonomy and social interconnectedness. On the other hand, our discussion reflected upon the predictive power of well-being, contrasting eudaimonic and hedonic dimensions, on entrepreneurial intent. Individuals with heightened levels of eudaimonic well-being may exhibit a greater inclination towards entrepreneurship, propelled by a profound sense of purpose and fulfillment. As noted, we anticipate that these two forms of well-being will exhibit differing relationships with entrepreneurial intentions (see H3a and H3b), potentially counterbalancing each other's mediation effects. The degree to which hedonic and eudaimonic well-being may converge empirically poses an intriguing question, and indicates a potentially partial mediation effect of wellbeing. Indeed, although we anticipate that well-being will serve as a crucial pathway through which civic engagement influences entrepreneurial intentions, there are, of course, other mechanisms involved in shaping entrepreneurial intent. Therefore, our hypotheses are limited to expectations of partial mediation:

H4a: Hedonic well-being mediates the relationship between civic engagement and entrepreneurial intent.

H4b: Eudaimonic well-being mediates the relationship between civic engagement and entrepreneurial intent.

2.3. Methods

2.3.1. Data and sample

The Gallup World Poll (GWP) annually surveys nationally representative samples of adults in 134 countries, weighted to represent more than 98% of the world's adult population. The survey covers a wide range of topics, including key economic and social indicators. GWP has been commonly used in studies of self-employment and entrepreneurship (e.g., Chu & Tran, 2023; Bencsik & Chuluun, 2021). The Gallup survey utilizes a universal questionnaire, which is conducted in all participating countries, that asks respondents a broad set of questions on socio-economic background, civic engagement, life satisfaction, and different aspects of well-being (Boarini et al., 2012). The sample size in each country is 1000 respondents except for China and India where the sample sizes are 2000 respondents. There are several unique features of this survey that makes it the optimal choice of dataset for our study. First, this survey includes information on both subjective evaluation of life (such as different facets of well-being) and self-assessment of individual objectives (such as entrepreneurial intention). The availability of a wide variety of questions on well-being allows for broad-based measurement. Second, the inclusion of questions on entrepreneurial intention allows us to draw inferences on the future goals rather than the current economic status (such as employment status) of survey respondents[5]. Third, the Gallup World Poll uses post-stratification weights, and the samples are nationally representative aged 15 and older from both urban and rural areas. This methodology allows for comparisons across countries.

Data on individual-level variables including the dependent variable, independent variables, and controls were all collected from GWP. To control for country-level effects, we link this data to institutional measures from the Global Entrepreneurship Monitor (GEM)[6] and the GLOBE[7]

[5] Unfortunately, GWP stopped asking the entrepreneurial intention question across all countries after 2012.
[6] GEM is a global research program developed to study entrepreneurship either directly from individuals or at the national context in which individuals start businesses. The Adult Population Survey examines the motivations, demographic background, and ambitions of entrepreneurs while the National Expert Survey looks at the legal, economic, political, and social environment that influences entrepreneurship.
[7] GLOBE is a global multi-phase, multi-method, multi sample research project that explored the interrelationships between societal culture, societal effectiveness and organizational leadership. The first phase of the project provided a rigorous comprehensive study

project. From the GEM, we included data on both formal institutions (Taxes and Bureacracy) and informal institutions (Social and Cultural Norms). From the GLOBE, we employ a measure of social cohesion (Collectivism). GDP per capita was obtained from the World Bank Database. All institutional variables are aggregated at the country level. We matched the institutional variables with individual-level variables from the GWP based on country and year. By merging these three datasets, we created a sample of 103,342 individual-level observations. The use of GEM and GLOBE datasets restricts out sample to the 35 countries for which these data were available. Thus, our dataset covers 35 countries from 2007 to 2012. The summary statistics of all variables and their descriptions are provided in Table 1.

To examine the representativeness of the sample survey, we compare the differences between the sample study and the whole survey in terms of mean values of variables obtained from Table 3 (Table A1 in Appendix). The entire survey includes responses from more than 900,000 individuals across 134 countries from 2007 to 2022. The individual-level variables include education level, age, married, immigrant, female; country-level variables include Social and cultural norms, GDP per capita, and Collectivism. The differences in means of all variables are small and not statistically significant. The results in Table A1 also show general similarities in mean values between 2007-2012 dataset and more recent data. This reveals consistencies in the patterns of the sample over time, suggesting that the chosen period from 2007 to 2012 does not distort our analysis. We also examine the distributions of respondents by income quintiles as another approach of assessing the representativeness of the sample (Table A2 in Appendix A). The Gallup Organization collects data on respondents' annual household incomes in the local currency and

of nine dimensions of societal culture (e.g. Assertiveness, Institutional Collectivism, Power Distance,…), which was collected using conventional psychometric procedures (e.g., item analysis, factor analysis, generalizability analysis).

then classifies them into five income brackets. The survey sample is representative of these income quintiles if the proportion of respondents in each quintile is 20%. Table A.2 shows that the proportions of respondents in each income quintile of the samples are close to 20% ranging from 16% to 25%.

2.3.2. Measurement

To measure entrepreneurial intention, previous studies used either a single question (Shinnar et al., 2012; Kibler, 2013) or multiple questions (Solesvik et al., 2013), but all were related to "Have you considered becoming an entrepreneur" (Westhead & Solesvik, 2016). The adoption of a single-item construct has been shown to be a reliable and acceptable measurement method, even for multidimensional concepts (BarNir et al., 2011; Arrighetti et al., 2016). Following the measurement methodology of previous studies (Kibler, 2013; Westhead & Solesvik, 2016), our **dependent variable** was measured with a dummy variable *Entrepreneurial intention*, which took a value of 1 if respondents answered to either of the two questions "Do you plan to start a business in three years?" or "Do you consider or plan to start a business". Individuals who responds 'yes' to the question are assigned a code of 1, and 0 otherwise.

Following existing literature on civic engagement (Levine, 2008; Levine & Youniss, 2006; Sherrod & Lauchardt, 2009), we propose three interrelated constructs that characterize active and civically engaged individuals: social capital (trust, bonding to others, generalized reciprocity), positive civic attitudes (willingness to contribute to society, satisfaction with the community), and participation in civic activities (volunteering, giving, and donation). In this paper, the **independent predictor** *civic engagement* is operationalized using the Active and Engaged Citizenship index (Zaff et al., 2010), which provides an integrated measure of civic engagement. The index is calculated from 8 binary questions categorized into 3 groups as follows:

1. *Social capital*: (i) If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?; (ii) In the city of area where you live, do you have confidence in the local police force?
2. *Civic attitude:* (i) Are you satisfied or dissatisfied with the city or area where you live? (ii) In the next 12 months, are you likely or unlikely to move away from the city or area where you live? (iii) Would you recommend the city or area where you live to a friend or associate as a place to live, or not?
3. Civic participation: (i) Have you done any of the following in the past month? How about donated money to an organization?; (ii) Have you done any of the following in the past month? How about volunteered your time to an organization?; (iii) Have you done any of the following in the past month? How about helped a stranger or someone you didn't know who needed help?

Index scores are calculated at the individual record level. For each individual record, the following procedure applies: The eight items are recoded so that positive (or favorable) answers are scored as a "1" and all other answers (including 'don't know' and 'refused') are assigned a score of "0." If a record has no answer for an item, then that item is not eligible for inclusion in the calculations.

The **first mediator** *hedonic well-being* is the numeric response to the question "All things considered, how satisfied are you with your life as a whole these days?" with the options ranging from 1 – worst life possible to 10 – best life possible. The data setup means that higher values indicate higher level of hedonic well-being.

Inspired by Joshanloo (2018), the **second mediator** *eudaimonic well-being* is calculated as an arithmetic mean of four binary questions from the Gallup World Poll that assess four key areas of eudaimonic well-being. Those include (i) **Learning** (personal growth) from the response to the question "Did you learn or do something interesting yesterday?";, (iii) **Respect** (or relatedness) from the response to the question "Were you treated with respect all day yesterday?"; (iv) **Efficacy** (or competence) from the response to the question "Can people in this country get ahead by working hard, or not?"; (v) **Freedom** (or autonomy) from the response to the question "In (this country), are you satisfied or dissatisfied with your freedom to choose what you do with your life?". The data is renormalized so that higher values indicate higher level of eudaimonic well-being.

To reduce problems of omitted variable bias, we include a range of demographic control variables that have been shown to be significant predictors of both well-being and entrepreneurial intent. First, we control for marital status, *married* as being married, which is shown to increase happiness (Easterlin, 2004) and has been extensively studied in entrepreneurship literature (Dutta, 2023). Similarly, *age, educational level, female* can be all indicators of well-being (Toshkov, 2022; Cuñado & De Gracia, 2012; Mookerjee & Beron, 2005) and entrepreneurial tendency (Hatak et al., 2015; Passaro et al., 2018; Yordanova & Tarrazon, 2010). Next, we control for whether an individual is an *immigrant* because immigrants are perceived to be highly entrepreneurial (Lofstrom, 2019) and have been the subject of numerous happiness studies[8]. As institutions significantly shape and constrain human behaviors, we further control for both formal and informal institutions. At the individual level, we control for *institutional perceptions*, as the degree to which

[8] Immigrants' motives to move to another country include seeking higher standard of living quality and better economic progress (Calvo & Cheung, 2017).

the quality of institutions in the country is perceived by the individual respondent. Our country-level control variable are *Taxes and bureaucracy*, *Cultural and Social Norms*, and *Collectivism,* and *GDP per capita*. The way a society is organized has a significant influence on the rate and type of entrepreneurship (Baumol, 1990). For example, research documents the influences of taxation on the returns to self-employment (Bowen & De Clercq, 2008; Baumol, 1990) while social norms or cultural values determine the supportiveness of the environment for a new business (Hayton et al., 2002). The description of variables and sources of data are provided in Table 1.

[Insert Table 1 here]

2.3.3. Methodology

This paper employs a multilevel mixed-effect logistic model to study the relationship between civic engagement and entrepreneurial intention, and the extent to which this is mediated by eudaimonic and hedonic well-being. A significant likelihood ratio test shows that multilevel logistic model is superior to ordinary logistic regression. There are several advantages of multilevel mixed effect logistic regression. First, it accounts for the non-independent observations from the same country. Second, it separates different levels of variance to address the hierarchies of our data, which includes individual data nested within higher-level country units. Third, it allows researchers to estimate fixed effects and random coefficients simultaneously.

Our data comprises 104,342 individuals grouped across 35 countries, resulting in a nested or clustered database. The Intra Class-Correlation (ICC) ratio indicates that 7% of the variance in individual entrepreneurial intention stems from factors at the country level. Hence, we included country-level controls that allow us to consider the impact of contextual influences on individual

entrepreneurship. The presence of a large ICC also indicated that the use of Ordinary Least Squares was inappropriate as it can produce biased estimates. We run the following equations:

$$\text{Hedonic}_i = \varphi + ¥_1 \text{ Civic engagement}_i + \omega X_i + €_i \quad (1)$$

$$\text{Eudaimonic}_i = \varphi + ¥_1 \text{ Civic engagement}_i + \omega X_i + €_i \quad (2)$$

$$\text{Entrepreneurial intention}_i = \alpha + \beta_1 \text{ Hedonic}_i + \gamma X_i + \theta \text{ Civic engagement}_i + \nu_i \quad (3)$$

$$\text{Entrepreneurial intention}_i = \alpha + \beta_2 \text{ Eudaimonic}_i + \gamma X_i + \theta \text{ Civic engagement}_i + \nu_i \quad (4)$$

$$\text{Entrepreneurial intention}_i = \alpha + \beta_1 \text{ Hedonic}_i + \beta_2 \text{ Eudaimonic}_i + \gamma X_i + \theta \text{ Civic engagement}_i + \nu_i \quad (5)$$

where *Entrepreneurial intention*$_i$ is the binary variable (1 = plan to start a business and 0 = has no plan to start a business). Hedonic$_i$ is hedonic well-being while Eudaimonic$_i$ represents eudaimonic well-being. X represents the set of control variables for the determinants of entrepreneurship including individual-level (education level, married, female, age, immigrant, institutional perceptions), and country-level variables (Taxes and bureaucracy, Social and cultural norms, Collectivism, and GDP per capita). $€_i$ and ν_i are the random error terms.

The constant term is allowed to vary randomly at the country level. We assess the mediating influences by observing the reduction in effect sizes and statistical significance of the predictor when the mediators are included. This test, proposed by Sobel (1982) and Preacher & Hayes (2008), is commonly recognized as a formal test of mediation in multiple linear regression. We tested the mediating effect of each form of well-being separately to examine how civic engagement influences entrepreneurial intention through each form of well-being. We also tested the mediating effects of both well-being forms simultaneously.

2.4. Estimation results

Table 1 presents variable descriptions and summary statistics. Notably, 9% of the population plans to start a new business. The sample consists of 58% females, with 25% of them being immigrants, 52% married, and with an average age of 44. The correlation matrices of individual-level variables and country-level variables are reported in Table 2a and 2b, respectively. The values of correlations range from 0.01 to 0.21. Additionally, the variance inflation factors (VIFs) are provided as a check for multicollinearity. In both tables, there are no unusually high correlations between any two variables, and there is no evidence of multicollinearity, as the highest VIF value is 1.27.

[Insert Table 3 here]

We adopted a multilevel logistic regression model to examine the mediating role of hedonic well-being and eudaimonic well-being in the relationship between civic engagement and entrepreneurial intention. Table 3 presents the main findings of the paper organized into models 1 to 6. Models 1 and 2 depict the results with hedonic well-being and eudaimonic well-being as dependent variables, respectively. Models 3 to 6 display the results where well-being variables act as mediators and entrepreneurial intention as the dependent variable. Based on goodness-of-fit measures (Wald test, log likelihood, and LR test), all six models demonstrate a reasonable fit to the underlying structure of our variables.

Models 1 and 2 show that civic engagement has a significant and positive effect on eudaimonic well-being ($\beta = 0.472$; $p < 0.01$) and a significant and negative effect on hedonic well-being ($\beta = -0.01$; $p < 0.01$). Thus, hypothesis 2a is rejected, but consistent with the mixed findings in the literature regarding the impact of civic participation on life satisfaction. Conversely, civic engagement positively contributes to the subjective experiences associated with eudaimonia,

supporting Hypothesis 2b. This result also suggests that only the eudaimonic aspect of well-being may be relevant to the mediation chain.

When entrepreneurial intention is the dependent variable in models 3 to 6, the coefficient for civic engagement is positive and statistically significant at 1% level. This finding provides support for our Hypothesis 1 regarding the positive influence of individual civic engagement on entrepreneurial intentions. In model 6, the coefficient of *civic engagement* (0.21) indicates that a 1% increase in the standardized civic engagement index leads to a 21% increase in the odds of entrepreneurial intention. We further calculate the marginal effect of *civic engagement* in model 6 and find that, holding other variables constant, one change in standardized civic engagement would predict 10% probability of intending to become an entrepreneur.

Next, the coefficients of hedonic well-being in models 4 and 6 are negative at -0.06 and statistically significant at 1%, indicating that hedonic well-being has a negative impact on entrepreneurial intent. In contrast, the coefficients of eudaimonic well-being in models 5 and 6 are positive at 0.15 and statistically significant at 1%, indicating the positive impact of eudaimonic well-being on entrepreneurial intent. To conclude, the findings offer support for both hypothesis 3a and 3b.

5.1. Mediation effect of well-being

According to Freedman & Schatzkin (1992), the mediation effect is present if there exists a drop in the effect sizes of the coefficient for *civic engagement* in Model 3 when both forms of well-being are included in the model in combination with the civic engagement (Model 4,5, and 6). The coefficient of *civic engagement* decreases from 0.284 ($p = 0.012$) in Model 3 to that of 0.217 ($p = 0.014$) in Model 5, resulting in a loss of both statistical and economic significance. This observation suggests a partial mediation effect of eudaimonic well-being on the civic engagement

– entrepreneurship relationship. The coefficient on civic engagement in the presence of hedonic well-being remain almost unchanged from Model 3 to Model 4, remaining at 0.284 ($p = 0.012$). This finding suggests that hedonic well-being does not mediate the influence of civic engagement on entrepreneurial intention.

In assessing the presence of the mediation effects of hedonic well-being and eudaimonic well-being when both are simultaneously introduced in the full model 6, we continue observing the change in the effect sizes of coefficient *civic engagement* across models. The effect sizes and statistical significance of *civic engagement* in Model 6 are approximately equivalent to those in Model 5. These results support the notion that only eudaimonic well-being mediates the impact of eudaimonic well-being on entrepreneurial intention, while hedonic well-being plays a minimal role in this relationship.

Our findings contribute to the growing literature on eudaimonic well-being and entrepreneurship. First, economic growth is not the sole precursor to happiness and entrepreneurial intention. This may elucidate why certain African countries exhibit higher rate of entrepreneurship, potentially driven by elevated levels of civic engagement and subsequent well-being. Sub-Saharan African countries notably report higher rates of formal participation in civic society organizations compared to the global average (UN, 2011). In an unreported analysis of our sample, Nigeria's level of intended entrepreneurship is 29.5% (ranked third in the sample), which corresponds to their higher rate of civic participation (45.1% and also ranked third in the sample). In contrast, Japan exhibits the lowest rate of individuals intending to start a business at 1%, alongsize a civic participation rate of 22%, ranking 25th out of 35 countries in the sample. In the same vein, Nigeria's level of standardized eudaimonic well-being (0.44) far surpasses that of Japan (-0.19), while the reverse is true when Nigeria's level of standardized hedonic well-being (at -0.01) is lower

than Japan (at 0.14). Thus, civic engagement and subsequently eudaimonic well-being may be more significant determinants of personal development, thereby fostering entrepreneurial behaviors. Since the types of entrepreneurship (necessity-based or opportunity-based) could determine the level of each form of well-being (Pathak & Muralidharan, 2021), future research could delve deeper into these areas and conceptualize the impact of civic engagement and eudaimonic well-being on each type of entrepreneurship.

Some noteworthy findings in our control variables are: (i) higher level of education significantly enhances entrepreneurial intentions, which is consistent with numerous prior studies (Bates, 1995; Reynolds, 1997; Delmar and Davidsson, 2000); (ii) in line with recent evidence, being older is negatively associated with the entrepreneurial intent; (iii) being a female or older is associated with lower level of hedonic well-being but higher level of eudaimonic well-being, and thus higher probability of entrepreneurial intentions; (iv) immigrants have an above-average propensity for entrepreneurial behaviors, highlighting the importance of minority entrepreneurship (Simoes et al., 2015). In terms of country-level controls, countries characterized by higher taxation and bureaucracy, or higher GDP capita tend to dampen intentions to start new ventures. In contrast, countries with favorable social and cultural norms towards entrepreneurship support higher level of entrepreneurship. Interestingly, our sample indicates that countries with higher collectivism are associated with higher levels of entrepreneurial intention.

2.5. Supplementary analysis

[Insert Table 4 here]

In a supplementary analysis, we employs a path analysis model to examine the direct effect of civic engagement on individual entrepreneurial intentions and the indirect effects through the mediation of two forms of well-being. We choose path analysis to test our hypotheses for three reasons. Firstly, path analysis is well-suited for simultaneously testing interrelated hypotheses (Schumacker & Lomax, 2004; Byrne, 2009), aligning with the aim of our study to examine the interplay among two mediating variables, one predictor, and one response variable. Secondly, path analysis is applicable in the absence of latent variables, which is relevant to our model as all variables are either observed or manually pre-constructed. Finally, path analysis enables an alternative test of the indirect effects of our proposed relationship, which is the bootstrapping method. The bootstrapping methodology, a nonparametric resampling procedure, is recommended as it does not require the normality assumption on the sampling distribution (Preacher & Hayes, 2008). This method allows us to confirm the statistical significance of the indirect effect (Preacher & Hayes, 2004).

Table 4 shows the standardized path coefficients (β) and their significance (t-values). Table 5 presents the results of the mediation test. The t-values are calculated through a bias-corrected bootstrap based on 5000 samples. The results confirm the findings from the first study. Hypothesis 1 posited that civic engagement would influence entrepreneurial intentions and the results confirm this prediction ($\beta = 0.014$, $t = 14.24$, $p > 0.01$). Additionally, we hypothesized that civic engagement would be directly linked with hedonic and eudaimonic well-being. The findings support a relationship between civic engagement and eudaimonic well-being ($\beta = 0.531$, $t = 213.04$, $p < 0.01$), while no significant association was found between civic engagement and hedonic well-being ($\beta = 0.003$, $t = 0.003$, $p > 0.12$). Thus, Hypothesis 2a is not supported, while Hypothesis 2b is confirmed. Furthermore, the results show that eudaimonic well-

being has positive and significant influence on entrepreneurial intent ($\beta = 0.026$, $t = 26.49$, $p < 0.01$), whereas hedeonic well-being exerts a negative and significant influence on entrepreneurial intentions ($\beta = -0.004$, $t = -5.02$, $p < 0.01$). Moreover, the economic significance of the coefficient for *eudaimonic well-being* is notably larger than that of *hedonic well-being.*

Table 5 shows that the mediation path from civic engagement to hedonic well-being, and then to entrepreneurial intention was statistically insignificant, with effect sizes close to 0. In contrast, the mediation path from civic engagement to eudaimonic well-being, and to entrepreneurial intention demonstrates both economic and statistical significance ($\beta = 0.015$, $t = 26.53$, $p < 0.001$). The total effect of civic engagement on entrepreneurial intention, calculated as the sum of the direct and indirect effect, amounted to 0.028 ($t = 33.32$, $p < 0.001$). Therefore, the indirect effect through eudaimonic well-being accounts for 53% of the total effects of civic engagement on entrepreneurial intention, which is much larger than the figure for hedonic well-being.

[Insert Table 5 here]

2.6. Discussion

Despite fundamental differences in the rationale of social and commercial enterprises (Estrin et al., 2013), the individual-level entrepreneurial processes exhibit similarities (Estrin et al., 2011). The formation of entrepreneurial intent in both for-profit and social contexts has been shown to be a function of available social, human, and psychological capital. Engagement in civic activities has the potential to enhance all of these forms of capital, thereby improving economic cooperation,

entrepreneurial skills, and self-efficacy (Putnam, 1993a; Putnam, 1993b; McIntyre et al., 2023; Kautonen et al., 2010; Desa, 2012). For instance, in a recent study of Brazilian volunteers, Trajano et al. (2023, p.465) found that "factors such as self-efficacy, perceived social support, and opportunity recognition, influence volunteers' [entrepreneurial intent]".

The direct relationship between civic engagement and entrepreneurial intent is noteworthy, particularly as it is partially mediated through eudaimonic well-being. To shed light on this indirect relationship, we draw on self-determination theory, which posits that all individuals have an inherent inclination for personal growth and the fulfilment of their potential (Haivas et al., 2012). To achieve this purpose, they need to satisfy all three psychological needs: autonomy, competence, relatedness (Deci & Ryan, 2000a, 2000b, 1987). These needs are more closely associated with eudaimonic well-being than with hedonic well-being (Church et al., 2013). Autonomy is fulfilled when individuals feel ownership of their actions and behaviours (Deci & Ryan, 2000a). Compentence is achieved when they experience mastery over a task or successfully attain desired outcomes and meet performance expectations (Boezeman & Ellemers, 2009; Vansteenkiste et al., 2007). Relatedness is fulfilled when individuals feel a sense of connectedness with others (Vansteenkiste et al., 2007). The satisfaction of these self-determination needs predicts eudaimonic well-being (Church et al., 2013). Furthermore, eudaimonic well-being predicts the development of "intrinsic motivation", which is the inherent tendency to seek out novelty, to extend and exercise one's capacities, to explore, and to learn (Ryan & Deci, 2000a; Deci, 1975; Deci & Ryan, 2000b). For example, volunteering enables individuals to experience freedom of choice, to feel competent in one's volunteering work environment and connected to others (Church et al., 2013). According to self-determination theory, intrinsic motivation is the intention to pursue things purely out of personal enjoyment and is a significant predictor of individual's social entrepreneurial intention

(Yamini et al., 2022). McIntyre et al. (2023) found that the fulfilment of psychological needs such as relatedness and competency, which are two important elements of eudaimonic well-being (Duncan et al., 2012), increase confidence towards autonomous-based behaviors such as entrepreneurship.

Our data suggest that eudaimonic well-being (satisfaction of psychological needs) is foundational for entrepreneurial intent, while hedonic well-being is not. The eudaimonic outcome accounts for 90% of the average combined well-being benefits from civic engagement (-0.002 vs 0.02 in the magnitude of the coefficients). Furthermore, eudaimonic well-being is positively and significantly related to entrepreneurial intent. Hedonic well-being is negatively related to entrepreneurial intent, but the economic magnitude of this relationship is much less significant than the correlation between eudaimonic well-being and entrepreneurial intent. That only eudaimonic well-being meaningfully mediates the relationship between civic engagement and entrepreneurial intent further underscores the need to distinguish between these two types of well-being in future entrepreneurship research.

2.7. Conclusion

Our research make contributions to the entrepreneurship literature by extending work on the prosocial foundations of social entrepreneurship, emphasizing the multifaceted nature of the relationship between civic enagement, well-being, and entrepreneurial intent. To achieve this, we draw upon a large scale international dataset to investigate both the direct relationship between engagement and entrepeneurial intent, as well as the indirect relationship through well-being. Notably, we emphasize the superiority of eudaimonic well-being over hedonic well-being, suggesting that fullfillment holds greater significance than mere contentment. However, while well-being plays a pivotal role in elucidating how civic engagement fuels entrepreneurial

aspirations, further research is needed to uncover complementary and alternative drivers of this relationship. By understanding the nuanced interplay between civic engagement, well-being, and entrepreneurial intent, we can inform targeted interventions and policies aimed at fostering entrepreneurship and enhancing societal well-being.

Our study holds significant practical implications. Given that entrepreneurship continues to be a fundamental catalyst for economic advancement, it is crucial to acknowledge the influence of non-economic factors on entrepreneurial endeavors. We highlight the benefits of civic engagement activities on entrepreneurship, extending beyond traditional not-for-profit endeavors. Participation in social organizations or the perception of a robust civic society can equip individuals with valuable psychological and other resources, motivating them to pursue both for-profit entrepreneurial ventures and social initiatives.

Institutions and organizations dedicated to catalyzing change, fostering innovation, and nurturing entrepreneurial spirit recognize the pivotal role of promoting civic engagement. By encouraging active participation in civic activities, they not only cultivate pro-entrepeneurial social and human capital, but also bolster psychological well-being. Institutionalizing civic engagement in such contexts can accelerate progress towards societal transformation and economic prosperity. Governments can collaborate with social organizations to establish initiatives that provide business development support tailored for civically engaged individuals, particularly focusing on enhancing the psychological benefits derived from civic participation, including autonomy, competence, and social connectedness.

Comprehending the relationships unveiled in this research equips academics with insights to tailor educational programs that acknowledge and nurture these connections effectively. Such initiatives hold the potential to not only inspire active participation in social endeavors but also provice

essential support for budding entrepreneurial ventures. By backing students' and young individuals' initiatives in collaboration with social organizations, we can cultivate and fortify their entrepreneurial ambitions. Moreover, social institutions can play a pivotal role in instilling a culture of lifelong learning, encouraging individuals to explore unconventional avenues, and embark on entrepreneurial pursuits beyond conventional boundaries. Central to this endeavor is the reinforcement of psychological fulfillment, which serves as a cornerstone for fostering intrinsic motivation and cultivating a keen interest in acquiring entrepreneurial skills over time. Encouraging young people to engage in social entrepreneurial ventures through volunteerism and other community-oriented activities offers them a platform for meaningful experimentation and skill refinement for the goal of delivering community services (McIntyre et al., 2023).

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Appendix

Table 2.1. Summary statistics and variable description

Variable	Description	Source	Mean	SD	Obs
Entrepreneurial intention	Do you consider and plan to start a business (1 = Yes, 0 = No)	GWP	0.09	0.29	104,342
Eudaimonic well-being	Composite index of eudaimonic well-being	GWP	0.70	0.26	104,342
Hedonic well-being	Life satisfaction (from 1 = very dissastified to 10 = very satisfied)	GWP	6.97	9.19	104,342
Civic engagement	Civic engagement index measures a respondent's attachment and commitment to the community in which he or she lives and is designed in the scale from 1 to 100	GWP	30.68	31.28	104,342
Institution	Index of the individual perceptions of institutional quality	GWP	55.77	35.82	104,342
Female	Whether you are male or female (1 = Female, 0 = Male)	GWP	0.58	0.49	104,342
Immigrant	Whether you are born in the country (1 = No and 0 = Yes)	GWP	0.25	0.13	104,342
Education	Education level (2 = Tertiary, 1 = Secondary, and 0 = Elementary)	GWP	1.92	0.69	104,342
Age	Age	GWP	43.15	13.78	104,342
Married	Whether you are married or not (1 = Married, and 0 = otherwise)	GWP	0.52	0.50	104,342
Tax and Bureacracy	The extent to which public policies support entrepreneurship - taxes or regulations are either size-neutral or encourage new and SMEs	GEM	3.91	0.75	104,342
Cultural Social Norms	The extent to which social and cultural norms encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income	GLOBE	4.62	0.73	104,342

Collectivism	The degree to which individuals express (and should express) pride, loyalty, and cohesiveness in their organizations or families.	GLOBE	5.61	0.42	104,342
GDP capita	The degree to which individuals express (and should express) pride, loyalty, and cohesiveness in their organizations or families.	World Bank	18.03	17.65	104,342

Table 2.2a. Correlation matrix of individual-level variables

	1	2	3	4	5	6	7	8	9	10	VIF
Entrepreneurial intention	1.00										1.13
Eudaimonic well-being	0.12	1.00									1,48
Hedonic well-being	-0.02	-0.04	1.00								1.33
Civic engagement	0.10	0.21	0.00	1.00							1.08
Education	0.01	0.13	0.02	0.14	1.00						1.06
Age	-0.11	-0.06	0.02	0.03	-0.10	1.00					1.05
Immigrant	-0.01	0.02	0.01	0.05	0.08	0.07	1.00				1.02
Female	-0.04	-0.01	0.02	0.00	-0.04	0.03	0.01	1.00			1.00
Institutional perceptions	-0.03	0.21	-0.01	0.08	0.00	0.04	0.05	-0.04	1.00		1.01
Married	-0.01	-0.04	-0.01	0.03	-0.02	0.21	0.02	-0.02	0.06	1.00	1.07

Correlation matrix on 104,342 individuals across groups of 35 countries

Table 2.2b. Correlation matrix of country-level variables

	1	2	3	4	VIF
Taxes and bureacracy	1.00				1.27
Social-cultural norms	0.32	1.00			1.25
Collectivism	-0.18	-0.21	1.00		1.21
GDP per capita	-0.22	-0.11	-0.34	1.00	1.15

Correlation matrix on the group of 35 countries

Table 2.3. Multilevel regression models on mediation effect

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
Independent variables	Eudaimonic well-being	Hedonic well-being	Entrepreneurial intention	Entrepreneurial intention	Entrepreneurial intention	Entrepreneurial intention
Eudaimonic well-being					0.147***	0.146***
					(0.0171)	(0.0172)
Hedonic well-being				-0.0563***		-0.0553***
				(0.0162)		(0.0166)
Civic engagement	0.472***	-0.00779**	0.284***	0.284***	0.217***	0.218***
	(0.00257)	(0.00330)	(0.0115)	(0.0115)	(0.0139)	(0.0139)
Education level	0.0632***	0.00220	0.108***	0.109***	0.0996***	0.101***
	(0.00270)	(0.00347)	(0.0130)	(0.0130)	(0.0131)	(0.0131)
Age	-0.0636***	0.0229***	-0.364***	-0.364***	-0.357***	-0.357***
	(0.00320)	(0.00412)	(0.0170)	(0.0170)	(0.0171)	(0.0171)
Immigrant	-0.0354***	0.00682	0.407***	0.406***	0.413***	0.412***
	(0.0108)	(0.0138)	(0.0558)	(0.0558)	(0.0558)	(0.0558)
Female	-5.67e-05	0.0394***	-0.355***	-0.352***	-0.354***	-0.352***
	(0.00494)	(0.00637)	(0.0238)	(0.0238)	(0.0238)	(0.0238)
Institution	0.209***	-0.0122***	-0.00272	-0.00229	-0.0267**	-0.0260**
	(0.00258)	(0.00332)	(0.0124)	(0.0124)	(0.0127)	(0.0127)
Married	0.294***	-0.263***	0.0523	0.0454	0.0208	0.0149
	(0.0348)	(0.0449)	(0.178)	(0.178)	(0.178)	(0.178)
Taxes & Burearacy	-0.0107	0.0394***	-0.113***	-0.110***	-0.111***	-0.108**
	(0.00937)	(0.0104)	(0.0426)	(0.0426)	(0.0425)	(0.0425)

Social-cultural norms	0.0149*	-0.0120	0.132***	0.130***	0.134***	0.132***
	(0.00770)	(0.00907)	(0.0352)	(0.0352)	(0.0352)	(0.0352)
Collectivism	0.182***	0.0130	0.378***	0.379***	0.354***	0.355***
	(0.0414)	(0.0186)	(0.117)	(0.117)	(0.113)	(0.113)
GDP capita	0.00439***	0.00368***	-0.0190***	-0.0188***	-0.0198***	-0.0197***
	(0.00100)	(0.000882)	(0.00471)	(0.00471)	(0.00464)	(0.00465)
var(cons[country])	0.0634	0.011	0.458***	0.458***	0.426***	0.427***
	(0.015)	(0.002)	(0.115)	(0.115)	(0.108)	(0.108)
Constant	-0.325***	0.151***	-2.500***	-2.499***	-2.467***	-2.467***
	(0.0611)	(0.0539)	(0.243)	(0.244)	(0.241)	(0.241)
LR test	10000.58	1016.54	2417.92	2416.31	2118.86	2116.93
Log likelihood	-120686.65	-147163.6	-26570.71	-26563.76	-26852.01	-26526.427
Wald	44525.73	171.68	1825.04	1833.02	1890.63	1896.77
Observations	104,342	104,342	104,342	104,342	104,342	104,342
Number of groups	35	35	35	35	35	35

**** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses; Statistical significance of the LR test indicates that a multi-level regression model is preferred; Model 1 and 2 use multilevel mixed-effect regression while Model 3 to 6 use mixed-effect logistic regression models; All continous variables are z-standardized across countries (yielding mean = 0, standard deviation = 1). GDP per capita is in thousand dollars*

Table 2.4. Path analysis estimates

	Hypotheses	β	t-value	Results
1	Civic engagement -> Entrepreneurial intention	0.014	14.24***	Supported
2a	Civic engagement -> Hedonic well-being	0.003	0.003	Not supported
2b	Civic engagement -> Eudaimonic well-being	0.531	213.04***	Supported
3a	Hedonic well -being -> Entrepreneurial intention	-0.004	-5.02***	Supported
3b	Eudaimonic well-being -> Entrepreneurial intention	0.026	26.49***	Supported

**** p< 0.01; LR test: 241.92***; Log likelihood: -491,405.93*

Table 2.5. Direct and indirect effects of civic engagement on entrepreneurship

Model A - Hedonic well-being as a mediator			
Path	**Estimate**	**t-value**	**95% CI**
Total effect			
CE-> EI	0.028***	33.32	(0.026; 0.029)
Direct effect			
CE-> EI	0.028***	33.32	(0.026; 0.029)
Indirect effect			
CE-> Hedonic well-being-> EI	-0.000	-1.23	(-0.000; 0.000)

Model A - Eudaimonic well-being as a mediator			
Path	**Estimate**	**t-value**	**95% CI**
Total effect			
CE-> EI	0.028***	33.32	(0.026; 0.029)
Direct effect			
CE-> EI	0.013***	14.11	(0.012;0.016)
Indirect effect			
CE-> Eudaimonic well-being -> EI	0.015***	26.53	(0.013;0.015)

*CE: Civic engagement; EI: Entrepreneurial intention*** p < 0.001. 95% CI: Bias corrected bootstrap 95% confidence interval based on 5000 samples.*

Table A1. Mean differences between study sample and survey population

Variables	Mean		
	Study sample (35 countries)	Study population (137 countries)	Differences
Education level	1.92 (0.69)	1.88 (0.71)	0.04
Age	43.15 (13.78)	41.34 (17.84)	1.81

	0.25	0.24	0.01
Immigrant	(0.13)	(0.11)	
	0.58	0.55	0.03*
Female	(0.49)	(0.49)	
	0.52	0.52	0.00
Married	(0.50)	(0.49)	
	3.91	3.88	0.03
Taxes & Burearacy	(0.75)	(0.75)	
	3.62	3.55	0.07
Social-cultural norms	(0.75)	(0.69)	
	5.61	5.88	0.25
Collectivism	(0.42)	(0.44)	
	18.03	17.55	0.48*
GDP capita	(17.65)	(15.99)	

Note: This table compares the mean of individual-level demographic variables and country-level controls between the study sample of 35 countries and the total survey population. The standard error of the estimates are reported in parentheses.
**** p < 0.01, ** p < 0.05, * p < 0.1: denote the significance level of the t-test of equality of the means between the study sample and study population.*

Table A2. Income quintiles of respondents

Income quintiles	**Frequency**	**Percent**
Poorest 20%	16,487	15.8
Second 20%	18,497	17.7
Middle 20%	20,060	19.2
Fourth 20%	22,510	21.6
Richest 20%	26,788	25.7
Total	**104,342**	**100.0**

Note: This tables reports the distribution of respondents by the income quintiles. Respondents are classified into five income brackets, which are obtained by calculating quintiles of the annual household income in local currency. If the study sample is representative along the income quintiles, the proportion of respondents in each quintile should be around 20%.

Essay 3 – From believer to entrepreneur: The mediating force of eudaimonic well-being

Abstract

Existing research suggests that eudaimonic well-being (i.e., competence, autonomy, relatedness) significantly predicts self-initiated entrepreneurial ventures. This study aims to examine the potential mediating effects of eudaimonic well-being, as compared to hedonic well-being (i.e., life satisfaction, positive emotions), on the relationship between religious identity and entrepreneurial intentions. Drawing upon insights from the social identity theory and self-determination perspective, we argue that the stronger a person's identification with his/her religious group the more likely that he/she reaps greater eudaimonic benefits, which in turn substantially shapes the formation of entrepreneurial intentions. The study employs a multi-level mixed effects logistic regression model to test our hypotheses using a sample of 25,572 individuals from various religions backgrounds across multiple countries. Path analysis is used to quantify the relative significance of mediation effects to the total effects. The results indicate that stronger religious identification is associated with a higher level of eudaimonic well-being. Furthermore, eudaimonic well-being significantly mediates the impact of religious identity on the formation of entrepreneurial intentions. Conversely, individuals with high religious identification exhibit lower levels of hedonic well-being, and there is no evidence to suggest a mediating role of hedonic well-being in influencing entrepreneurial intentions. Results are consistent across unrelated religious groups. Finally, there is no evidence that individualism affects the intensity of hypothesized relationships. The study recommends religious organizations to take a more active role in the entrepreneurial ecosystem as they can serve as incubators or supporters for startups, providing both financial backing and moral encouragement. Policymakers could take steps to enhance the psychological

benefits of social engagement, including involvement in religious activities. The paper has built on the social identity theory to advance our understanding of the increasing intertwining of religion and entrepreneurship. By so doing, the study contributes to a recent call for a theological turn in entrepreneurship by offering a fresh perspective on a noteworthy phenomenon related to the non-economic incentives behind entrepreneurship. Finally, the findings enrich the literature on the multifaceted nature of well-being, highlighting the pivotal role of eudaimonic well-being as both an outcome and a resource in the entrepreneurial process

Keywords: Social identity, religious identity, hedonic well-being, eudaimonic well-being, entrepreneurial intention.

3.1. Introduction

The inquiry into why and how certain religious followers are driven by their belief systems to make entrepreneurial decisions holds significant theoretical and practical importance (Dana; 2010; McIntyre et al., 2023). The dialogue around this inquiry has seen a growing interest from researchers, including Block et al. (2020), Roundy et al. (2016), and multiple studies from Smith et al. (2021, 2023a, 2023b). Tracing back to Weber's concept of Protestant ethics (Weber, 1930), the notion that religion shapes economic behaviours has been established, with subsequent literature reinforcing the substantial role of religion in fostering entrepreneurial engagement (Dana, 2010; Benjamin et al., 2016).

Despite this historical perspective, the exploration of religion in entrepreneurship has been insufficiently developed, lacking depth and clarity (Dubard Barbosa & Smith, 2023; Gümüsay, 2020). Findings in this field have been inconsistent, showing effects that range from supportive to inhibitory, or even negligible (Balog et al., 2014; Minns & Rizov, 2005; Audretsch et al., 2013). This inconsistency highlights several gaps in this niche topic. Initially, the widespread application of economic paradigm in the field of entrepreneurship placed excessive attention to materialism, rational choice, and self-interested perspective that led to myopic perception of religious thinking (Kahneman, 2011; Giddens, 1981; Weber, 1930), with early work by Iannacone (1998) suggesting that the spiritual thinking of faith believers is based on purely rational motives. Furthermore, the use of the concept "religiosity" broadly can be misleading due to its complexity and multi-dimensional nature, and scholars may approach religiosity from differing viewpoints, further complicating its interpretation (Holdcroft, 2006). Most importantly, literature on religion and entrepreneurship lacks a theoretical framework that effectively captures its underlying mechanisms (Henley et al., 2017).

This study addressed these gaps by showing how religious identity, which refers to the sense of group belonging and representation of a religion (Arweck & Nesbitt, 2010; King et al., 1997), can catalyze or influence entrepreneurial activities. Although an economic decision can be directly influenced by available profit-seeking opportunities and social pressures in the religion, it is the degree of intrapersonal commitments to these beliefs that can provide a satisfactory explanation to this relationship (Coşgel & Minkler, 2004). This connection is critical due to the intertwined nature of personal and business identities – an interdependency that is well documented in research by Navis & Glynn (2011) and Fisher et al. (2016). These studies highlight the profound influence of personal beliefs on business decisions or outcomes (Powell & Baker, 2014; Fauchart & Gruber, 2011).

In particular, building on the social identity framework, our research addresses a notable gap in the extant literature: the understudied psychosocial effects of religious social identity. We highlight how religious identity, by enhancing individual well-being and psychosocial functioning (Ysseldyk et al., 2010), influences economic decisions and fosters a propensity towards entrepreneurship (Haslam et al., 2009; Pathak & Muralidharan, 2021; Chu et al., 2024). While both forms of well-being, eudaimonic and hedonic, have been extensively studied for their broad interdisciplinary implications (Wiklund et al., 2019; Stephan et al., 2023; Ryff, 2019) and their impact on crucial outcomes such as creativity, innovation (Baron, 2008; Baron & Tang, 2011), opportunity identification, and the execution of future-oriented entrepreneurial tasks (Welpe et al., 2012: Foo et al., 2009), the specific role of well-being in spurring entrepreneurial actions in the context of religious engagement remains underexplored.

Furthermore, much of the literature treats well-being as a static, isolated attribute, and overlooking its dynamic, mediating role in the context of religious commitment (Skakon et al., 2010). Our study

seeks to address this gap by focusing on how eudaimonic well-being - characterized in the literature as both outcomes and resources (Ryff, 2019; Obschonka et al., 2015) and activated through strong identification with one's group (Greenaway et al., 2016; Branscombe et al., 1999) – is a crucial driver of entrepreneurial intent and a mediator in the entrepreneurial process. Unlike hedonic well-being, which focuses on pleasure or happiness, eudaimonic well-being is fostered within religious communities and plays an important role in not only enhancing psychological satisfaction but also catalyzing entrepreneurial behavior. By delving into this dynamic aspect, our study not only advances the conversation on how personal beliefs intersect with professional pursuits, but also provides a more comprehensive understanding of how psychological well-being, shaped by religious identification, acts as a central mechanism in entrepreneurial engagement.

In summary, the contribution of this paper is fourfold. First, given that religion greatly influences happiness and well-being (Lim & Putnam, 2010) and that over 80% of the global population identifies themselves as religious (Pew, 2010), our research sheds insights into the behavioral effects of religion and religious identification. This is crucial, as neglecting the impact of religious beliefs would limit our understanding of the factors leading to entrepreneurial intent (Pokimica et al., 2012; McIntyre et al., 2023). Second, through a social identity lens, we establish a connection between religious identification and entrepreneurial intent, mediated by both hedonic and eudaimonic well-being. Research has demonstrated that a strong religious identity positively correlates with both forms of well-being: hedonic (Diener et al., 2011) and eudaimonic (Abeyta & Routledge, 2018). Moreover, the satisfaction of basic psychological needs enhances both intrinsic and extrinsic motivations, which are critical across various life domains, including entrepreneurship (Deci & Ryan, 2008; Wiklund et al., 2019). Third, we contribute to the literature on the multifaceted nature of well-being and suggest that only eudaimonic well-being plays a

significant role as both an outcome and a resource in the entrepreneurial process. We find that the benefits of religious identification are primarily related to experiences of eudaimonia (rather than hedonia), which in turn motivate entrepreneurial intentions. Finally, our empirical evidence is derived from a large and comprehensive dataset from the Gallup World Poll, encompassing over 100,000 individuals across various religions and countries. We employ a variety of methods to address the endogeneity issue and untangle the complex mechanisms underlying the relationship between religious participation and entrepreneurial intentions. By doing so, we highlight the importance of considering religion as a social choice when examining its impact on human behavior.

The remainder of this paper is organized as follows. Section 2 reviews the existing literature, synthesizing insights from various theoretical frameworks to formulate our hypotheses. Section 3 describes the data and methodology employed in our study. Section 4 and 5 details the empirical results and supplementary analysis, respectively. Section 6 presents robustness tests. Finally, Section 7 discusses the findings, draws conclusions, and highlights possible directions for future research.

3.2. Literature review

3.2.1. Social identity and religious identity

Identity refers to how individuals perceive, comprehend, and evaluate themselves as social entities (Héliot et al., 2020). As a social beings, individuals develop interests, values, and norms through their roles in various social contexts, such as their nationality, profession, or religious affiliation (Ashforth & Mael, 1989; Tajfel & Turner, 1979). As explained by the social identity approach

(Haslam, 2004), people align themselves with social groups or categories that resonate their self-concepts (Tajfel & Turner, 1979), providing them with a sense of self-esteem and self-respect (Héliot et al., 2020). Thus, an individual can possess multiple identities, each influencing their decisions, behaviors, and both social and psychological processes (Turner et al., 1987; Greenaway et al., 2016).

Drawing on social identity theory, we define religious identity as an individual's affiliation with or sense of belonging to a specific religious group. Religious identity is a form of social identity linked to a system of faiths and beliefs. Religion comprises a set of guiding beliefs and practices (Haslam et al., 2009) commonly held by a community that shares collective spiritual experiences (Mueller et al., 2001). Individuals have the autonomy to choose their level of participation and adherence to the beliefs and practices of an organized religion (Mueller et al., 2001). Those deeply connected with their religious group not only share common beliefs but also view their religious membership as central to their self-identity (Ysseldyk et al., 2010). Religious identity differs from other types of identities due to its connection with affective experiences and moral authority that encompasses concepts like self-transcendence and the sacred (Wellman & Tokuno, 2004; Héliot et al., 2020). This distinction means that religious identity might offer greater personal significance to the individuals than other forms of identities (Kinnvall, 2004; Verkuyten & Yildiz, 2007). The profound connection to a belief system is crucial for understanding why believers feel a strong identification with their religious groups (Ysseldyk et a., 2010). These systems provide a framework for self-understanding (Robinson & Kirkeby, 2005), offer meaning to one's life by interpreting daily emotions and experiences (Park, 2007), and shape psychological and social processes (Jost et al., 2008). Therefore, individuals who are less identified or not identified with

their religious groups likely reap fewer benefits from their systems of beliefs and find that these systems have a minimal impact on shaping their behaviors and psychological processes.

3.2.2. Hedonic well-being, eudaimonic well-being, and religiosity

Well-being is an umbrella construct that captures multiple dimensions of individuals' experience of a fully functioning life (Deci & Ryan, 2006). The literature generally manifests well-being as the overall internal state of mental wellness, incorporating both mental fulfilment, positive affects and suffering avoidance, characteristics of the hedonic approach, as well as aspects like vitality, values, self-acceptance, and self-realization of mental wellness, which are central to the eudaimonic approach (Keyes, 2006; Ryff, 1989; Deci et al., 2001). Despite extensive research on the relationship between religion and different aspects of well-being, there is scarcity of studies that distinguish between eudaimonic and hedonic well-being (Joshanloo, 2011).

In the realm of social identities, religious identification fulfills several psychological needs, including self-esteem, meaningful existence, belonging, and control (Greenaway et al., 2015). Membership in a social group influences individual psychology by shaping beliefs, attitudes, and behaviors (Tajfel & Turner, 1979; Turner et al., 1987). Individual develop a sense of self through their identification with these social identities, providing a foundation for self-construal (Greenaway et al., 2015). The benefits to well-being that stem from group membership are not merely derived from the groups themselves, but from the sense of social identity that the membership provides, functioning through what is known as the mechanism of social cure (Haslam et al., 2009; Jetten et al., 2012). Consistent with this perspective, research indicates that a person's subjective sense of belonging to social groups (such as religious affiliation) is a better predictor of well-being than the mere frequency of their interactions with these groups (such as attending religious services) (Sani et al., 2012; Cruwys et al., 2014).

Religious involvement provides numerous resources to enhance psychological well-being, such as a supportive social network (Ellison, 1991), which increases perceived social support (Fatima et al., 2018), develops a sense of meaning and purpose (Park, 2005), fosters hope and optimism (Koenig, 1994), and strengthens perceptions of control (Fiori et al., 2006). First, individuals who are religious often benefit from significant social support from fellow members of their religious community, leading to more favorable psychological results (Lim & Putnam, 2010; Park, 2007). Such communities not only fulfill the fundamental human need for belongingness as described by Maslow (1943) and Baumeister and Leary (1995) but also provide a unique form of identification that is reinforcing and supportive[9] (Lim & Putnam, 2010). Second, those strongly identified with their religion often develop strong coping strategies, including an increased propensity for praying and the use of both religious and non-religious coping mechanisms (Ysseldyk et al., 2010). Spirituality serves as a resilience resource, helping individuals cope with daily challenges and adversities (Malone & Dadswell, 2018). This resilience is especially evident in their responses to trauma memories (Ysseldyk et al., 2011) and unexpected challenges to their religious identity (Ysseldyk et al., 2010). Religious belief also enhances a sense of control, enabling individuals to adapt to reality and take constructive actions (Fiori et al., 2006). Additionally, seeking "spiritual support" as a coping mechanism (Pargament, 2002) indicates a proactive approach to managing stress, which contributes to positive outcomes for those deeply connected to their faith. Third, according to (Park, 2007), religiosity provides a comprehensive system of meaning, particularly valuable to those for whom religious group membership and beliefs are central to their identity. These guiding beliefs confer a sense of purpose and meaning in life, which are crucial for overall health and well-being (Deci & Ryan, 2000). Fourth, religious identity gains importance when one's

[9] "Engaging in communal prayer is better than both bowling together and praying alone (Lim & Putnam, 2010).

self-esteem is threatened, providing not only support but also status within a community (Tajfel & Turner, 1979). From a social identity viewpoint, individuals are motivated to distinguish their group from others to maintain positive self-esteem or achieve self-improvement. Highly religious individuals often view negative events as opportunities for spiritual growth (Ellison, 1991). Finally, individuals with higher degree of religiosity tend to score higher across all four dimensions of self-efficacy (Abdel-Khalek & Lester, 2017), which is a significant element of eudaimonic well-being and a strong predictor of behaviors, outcomes and intentions (Bandura, 2002, Luszczynska et al., 2005b).

Religious individuals often develop a positive social identity, influenced by healthier lifestyles and dietary choices, supported by research findings from Tiliouine et al. (2009). Regular attendance at religious services not only promotes the formation of social networks and capital, but is also associated with heightened personal well-being and life satisfaction, as highlighted by Helliwell & Putnam (2005) and Diener & Seligman (2004). Moreover, religious beliefs and practices can act as a buffer against negative emotions such as anxiety and pessimism (Tiliouine et al., 2009), potentially reducing symptoms of depression and enhancing a sense of contentment (Mossakowski, 2003; Ellison & Levin, 1998). Additionally, studies found that religious factors account for 5% to 7% of the variation in life satisfaction (Ellison, 1991), with deeply religious individuals reporting higher levels of happiness (Myers, 2000). These individuals often possess stronger coping mechanisms that enable resilience against various stressors, leading to better mental and physical health outcomes and reduced distress (Ellison & Fan, 2008; Patrick & Kinney, 2003; Haslam et al., 2005; Muldoon et al., 2009; Hackney & Sanders, 2003; Seybold & Hill, 2001).

However, it is important to acknowledge conflicting viewpoints in the literature. Some studies suggest a limited or even negative effect of religiosity on hedonic well-being (Lewis et al., 2000;

Francis et al., 2004; Okulicz-Kozaryn, 2010) and show no discernible benefits related to specific religious beliefs (Dilmaghani, 2018). Whereas Green & Elliot (2010) reported no significant health differences between followers of difference religions. In some instances, religiosity has also been associated with elevated personal distress (King & Schafer, 1992).

At a broader level, there are considerations regarding the macroeconomic effects of religion on health. Studies have suggested that religious practices may negatively impact health expenditure (Herzer, 2022) and impede the accumulation of technical knowledge, measured by total factor productivity (Herzer & Strulik, 2020). In light of these diverse perspectives, it becomes apparent that while religiosity can significantly influence individual and social well-being, its effects are complex and potentially adverse. Within the scope of this research, we propose:

Hypothesis 1a: Religious identity is positively associated with eudaimonic well-being.

Hypothesis 1b: Religious identity is positively associated with hedonic well-being**.**

3.2.3. Well-being and entrepreneurship

Eudaimonic well-being, a derivative of personal fulfillment, purposefulness, and expressiveness, significantly influences individual capabilities in complex environment (Ryff & Keyes, 1995; Ryff, 2019). This form of well-being encompasses emancipative values, self-acceptance, confidence, personal growth, independence, autonomy, and the capacity to establish and maintain positive relationships (Ryff, 2019; Wiklund et al., 2019). Such traits are invaluable for entrepreneurs, enhancing their independence, innovativeness, and willingness to embark on high-risk ventures (Ryff, 2019; Ha et al., 2021).

Research has demonstrated a strong correlation between eudaimonic (or psychological) well-being and entrepreneurial behavior (Bandura, 1994; Bandura and Locke, 2003), posting that individuals

with higher levels of this well-being possess "a broad and stable sense of personal competence to deal effectively with a variety of stressful situations", even under conditions of uncertainty and limited resources (Luszczynska et al., 2005: p. 81). Moreover, psychological well-being also triggers action-orientation and perseverance in entrepreneurial contexts (Baumeister et al., 2003; Cardon and Kirk, 2015) through feelings of capability, preparedness (Milam et al., 2019), self-fulfilment and purposefulness (Cassar and Friedman, 2009). The study of psychological well-being is a natural extension of the more widely studied individual-level attributes of self-efficacy and self-esteem. Indeed, psychological wellbeing is associated with individuals' ability to be aware of own strengths or weaknesses to approach their ventures with confidence and optimism (Bauer and Baumeister, 2011; Shir and Ryff, 2021; Gielnik et al., 2020). This self-awareness also aids in navigating daily challenges and adapting to frequent contextual changes (Ryff, 2019), while forming positive bonds with key stakeholders that are essential for executing entrepreneurial plans (Shir and Ryff, 2021). Taken together, the benefits of psychological wellbeing create a virtuous cycle, where psychological resources not only initiate but also sustain entrepreneurial success (Shephard and Patzelt, 2015). This suggests that fostering psychological well-being could be a strategic focus for enhancing entrepreneurial effectiveness and outcomes.

Hedonic (subjective) well-being, characterized by feelings of happiness and contentment, significantly contribute to entrepreneurial success. This form of well-being enhances cognitive flexibility, which expands an individual's "thought-action repertoire", fostering greater awareness and the discovery and realization of new opportunities (Baron, 2008; Fredrickson, 2004; Miller et al., 2012; Foo et al., 2015). It also shifts perceptions of challenging situations, making them seem more manageable and less risky, which is crucial for entrepreneurial decision-making (Krueger and Dickson, 1994; Shepherd and Patzelt, 2017). Moreover, hedonic well-being facilitates

beneficial social interactions and relationships, which is vital for navigating the entrepreneurial landscape (Lyubomirsky et al., 2005; Erdogan et al., 2012; Miller et al., 2012), and supports the building of relevant physical, intellectual, psychological and social resources (Dijkhuizen et al., 2018; Pathak & Muralidharan, 2021). At the macro level, it has been suggested that societies with higher average levels of subjective well-being tend to be more resourceful and energetic, displaying a greater propensity to seize entrepreneurial opportunities (Sweida and Sherman, 2020; Podoynitsyna et al., 2012). Such environments are also more conducive to fostering innovation and enhancing entrepreneurial performance (Baron and Tang, 2009).

However, it is important to recognize that happiness or subjective wellbeing does not necessarily predict entrepreneurship. First, positive moods, despite increasing one's cognitive flexibility, may paradoxically diminish cognitive processing capacity, potentially limiting the ability to transform recognized opportunities into actionable projects (Isen, 1987; Wegener et al., 1995). Happy individuals often excel at opportunity recognition but may struggle with the practical aspects of implementation, thus failing to complete the entrepreneurial process. Second, Hahn et al. (2011) argue that a high level of subjective wellbeing does not necessarily promote task-oriented or relationship-oriented initiatives, both of which are critical for engaging in self-employment. The cognitive effort, brainstorming, initiatives and self-regulatory energies required for entrepreneurship are often fueled by experiences of meaning and purpose, rather than mere pleasure or contentment (Sweida and Sherman, 2020; Hahn et al., 2011). Finally, an excessive focus on personal happiness can lead to unrealistic goal and selfish behaviors, which may have a detrimental effect on social connections and social capital (Mauss et al., 2012; Ucbasaran et al., 2013). These tendencies can lead to loneliness, grief, and anxiety (Shepherd, 2019), further diminishing the likelihood of engaging in self-employment.

While Patzelt and Shepherd (2011) observed that the self-employed individuals generally experience fewer negative emotions, alternative research suggests that negative emotions may actually serve as a catalyst for entrepreneurial activities. According to the affect-as-information theory, intense emotional states – both positive and negative – can act as motivators that drive individuals to actively search and identify opportunities (Foo et al., 2015; Lyubomirsky et al., 2005; Gendolla and Krusken, 2002). Specifically, a negative state of well-being might alert nascent entrepreneurs to potential issues , pushing them to increase efforts in their entrepreneurial ventures and better prepare for upcoming challenges (Foo et al., 2009).

Unlike happy individuals, unhappy ones often adopt a more cautious, risk-averse approach, prioritizing thorough information gathering to reduce uncertainties (Schwarz and Clore, 1996). Moreover, the presence of negative emotions may promote resilience and creativity, as these emotional states drive individuals to go an extra mile to secure creative outcomes (Zhou & George, 2001) and to discover new initiatives through enhanced self-regulation (Scheier & Carver, 2014). While people in positive emotions tend to rely on heuristic processes influenced by past experiences, those experiencing negative moods tend to resort to analytical thinking, applying novel approaches to tasks where previous knowledge proves insufficient and irrelevant (Mackie and Worth, 1989; Park and Banaji, 2000; Isen, 2000). Therefore, by stimulating active search and creative problem-solving, unhappy individuals might actually show a higher propensity for self-employment than those with consistently high levels of subjective or hedonic wellbeing.

In their early work on self-determination theory (SDT), Ryan and Deci proposed that specific psychological needs must be fulfilled for individuals to reach their maximum potential, akin to how plants need essential nutrients to flourish (Deci & Ryan, 2000; Ryan & Deci, 2008). Following their seminal work, SDT theorists have emphasized the distinction between euadaimonic and

hedonic well-being (Deci & Ryan, 2008; Ryan & Deci, 2001). Considering their nature, SDT needs might have a closer connection to psychological or eudaimonic well-being aspects rather than hedonic well-being (Church et al., 2013). Based on these insights, we hypothesize that:

Hypothesis 2a: Eudaimonic well-being is positively associated with higher likelihood of entrepreneurial intention.

Hypothesis 2b: Hedonic well-being is negatively associated with higher likelihood of entrepreneurial intention.

3.2.4. Theoretical framework and its complexity

[Insert Figure 1 here]

Theological perspectives could broaden our comprehension of diverse institutional, spatial, temporal, and social contexts within entrepreneurship (Zahra et al., 2014; Welter, 2011). In this line of reasoning, contexts could also complexity to the relationship between religion and entrepreneurship. The relationship between religious identity and entrepreneurial intention is not always straightforward and can be influenced by other variables.

Mediating role of eudaimonic well-being

Identity processes are vital in explaining the essence of entrepreneurs (Mmbaga et al., 2020), encompassing their heterogeneous motives, decision-making processes, and strategic behaviors (Powell & Baker, 2014). Therefore, the formation of religious identity influences "who we are and what we will do", which then influences the formation of entrepreneurial intention. Religious identity grounded on the sacred brings values of eudaimonia that motivate individuals to live according to a set of personal values that resonate with one's authentic self (Huta, 2012). Given the importance of entrepreneurial work as a potential source of personal fulfilment and self-

determination, it is necessary to acknowledge well-being of eudaimonia as an essential mediator in the path from religious identity to entrepreneurial intention. This unique motivational process corroborates a recent call for a theological turn in entrepreneurship research, suggesting a profound connection between religion and entrepreneurship rooted in intrinsic values and spiritual motivations. Such motivations often transcend conventional, self-serving aims or mere profit maximization, fostering the pursuit of a higher calling or purpose that is deeply aligned with one's religious beliefs. Smith et al (2021) highlight how these spiritual underpinnings can inspire entrepreneurs to undertake ventures that not only seek financial success but also strive to contribute to their communities and enact positive social change.

McIntyre et al. (2023) highlighted that self-efficacy and self-construal, two important components of eudaimonic well-being (Duncan et al., 2012), significantly mediate the relationship between religiosity and entrepreneurial intention. Individuals require the fulfillment of these psychological needs (eudaimonic well-being) for optimal growth and well-being (Deci & Ryan, 2000). They suggest that the satisfaction of all these psychological needs lays the foundation for an individual's ability to achieve effectiveness and intrinsic motivation. Building on this, Greenaway et al. (2015) argue that a strong and positive social identity is a prerequisite for improved eudaimonic well-being because strong affiliation with social groups satisfies all these psychological needs. This is especially true for religious high identifiers because they tend to perceive whatever they do through the lenses of caring, service, and transcendence, imbuing their work with a deeper sense of significance and purpose (Curlin et al., 2007; Rosso et al., 2010). Those with strong religious identity view their profession as a divine calling, or as an "invitation from God" and experience an enhanced sense of significance in their work (Rosso et al., 2010: 107). This explains why many faith believers would opt for starting-up their own businesses rather than other regular employment

because entrepreneurial endeavors are more meaningful (Hughes, 2005). Entrepreneurial endeavors are now more often driven by "postmaterialist" values, like self-realization, meaningfulness, and quality of life, rather than the conventional "materialist" values focused on wealth accumulation (Uhlaner & Thurick, 2010). Likewise, the growing body of literature on social entrepreneurship indicates that a rising number of entrepreneurs are driven more by the desire to tackle economic and social problems through their new ventures than by the pursuit of wealth (Shaw & Carter, 2007). Furthermore, those with a higher level of eudaimonic well-being will develop greater intrinsic motivations and find their work more enjoyable knowing that it will serve a particular purpose (Yamini et al., 2022). Thus, an individual with a strong inclination to fulfil a particular purpose by establishing a new business will have a higher probability of undertaking such endeavor if he or she likes it. Individuals with a deep connection to their religious communities are more likely to pursue challenges and new experiences, thereby extending their capabilities, exploring and learning (Ryan & Deci, 2000).

Taken together, these arguments suggest that strong identification with religion can be a significant predictor of an individual's intention to engage in social entrepreneurship, mediated through the enhancement of eudaimonic or psychological well-being. This complex interplay between religious commitment, psychological well-being, and entrepreneurial intent underpins our hypothesis:

Hypothesis 3: Eudaimonic well-being mediates the relationship between religious identity and entrepreneurial intention.

Motivating force of religious identity across cultures

Inglehart (2020) attributed the recent decline in the influence of religion across countries to cultural change, identifying the increasing endorsement of individual-choice values as the primary driver

behind the trend towards secularization. Studies have highlighted cultural differences in terms of how individuals perceive life satisfaction or the importance they attribute to psychological needs (Cohen et al., 2017; Spencer-Rodgers et al., 2004; Gelfand et al., 2011). Collective cultures promote the cultivation of interconnected selves, where individuals perceive themselves as closely linked with others and prioritize maintaining strong relationships over personal goals. Conversely, individualistic cultures promote the development of independent self-concepts, where individuals view themselves as distinct from others, and emphasize pursuing their own objectives, motivations, and personality traits. (Markus & Kitayama, 1991; Triandis, 1995). Individualistic societies tend to exhibit higher levels of well-being on average because they afford individuals greater freedom to pursue personal goals and chart their own life paths (Sheldon et al., 2011; Heine et al., 1999). North Americans tend to report elevated levels of self-esteem, a trait linked with values that prioritize individualism. (Heine et al., 1999).

Western religions such as Christianity encourage intense, individualized emotions, whereas Eastern religions such as Buddhism promote emotions that contribute to preserving unity and harmonization (Cohen et al., 2016). In the same vein, Tsai (2007) proposed that Western religions, such as Christianity, may encourage high-arousal-positive (HAP) states that include enthusiastic, elated, or excited. She also mentioned that East Asian religions (i.e., Buddhism) emphasize low-arousal-positive (LAP) emotions, including calm, relaxed, peaceful, which are exemplified in calm religious practices such as mediation (Koopmann-Holm et al., 2013). These high-arousal feelings of elation and excitement are associated with heightened readiness for action and behavioral activation (Bradley & Lang, 2007; Harmon-Jones et al., 2013; Lowe, 2011). Essentially, individuals are more motivated to take actions when they are highly aroused. In contrast, these low-

arousal feelings such as calmness and relaxation are associated with decreased motivation and behavioral activation (Watson et al., 1999).

These arguments imply a level of complexity in the hypothesized relationships. For example, strong identification with the religions that put greater emphasis on individualistic values will bring enhanced eudaimonic well-being (i.e., self-esteem, self-realization, meaning), which comprises more high-arousal-positive elements that lead to heightened intention to start a business. Conversely, the significance of these relationships is expected to be less pronounced in a more tranquil and collectivistic setting such as followers of Buddhism.

3.3. Data and methodology

3.3.1. Data and measures

The analyses were undertaken on a comprehensive survey from the Gallup World Poll (GWP) that monitors a wide variety of human development indicators worldwide, encompassing essential economic and social metrics. The Gallup World Poll, a repeated cross-sectional survey, covers at least 134 countries every year from 2006, weighted to be representative of 98% of the global adult population. GWP has been utilized in a number of studies on self-employment or small businesses (e.g., Chu et al., 2024; Chu & Tran, 2023; Bencsik & Chuluun, 2021). The Gallup survey employs a standardized questionnaire administered in all participating countries, covering a broad spectrum of questions on demographic background, values and perceptions, and various aspects of well-being (Boarini et al., 2012). The sample size for China and India is 2000 respondents each whereas the sample size for the other countries is 1000 respondents. This survey has several unique attributes that render it an ideal dataset for our study. Firstly, it encompasses both subjective

assessments of life and self-appraisals of individual aspirations. The extensive range of questions enables more comprehensive measurement of our variables. Secondly, the inclusion of queries regarding entrepreneurial intentions enables us to infer future objectives rather than solely focusing on current economic circumstances (such as employment status) of respondents. Thirdly, GWP utilizes post-stratification weights, ensuring nationally representative samples aged 15 and above from both urban and rural areas. This methodology facilitates cross-country comparisons.

Data on individual-level variables, including the dependent variable, independent variables, and controls, were sourced from the GWP. To account for country-level effects, we linked this data with institutional measures from the World Governance Indicator (WGI)[10]. Six dimensions of culture were obtained from the Hofstede's website[11], including power distance index (PDI), masculinity (MAS), long-term orientation (LTOWVS), uncertainty avoidance index (UAI), Indulgence versus restraints (IVR), and individualism (IDV). GDP per capita and population were sourced from the World Bank. We matched country-level controls with individual-level variables from the GWP based on country and year. By merging these three datasets, we constructed a sample of 25,572 individual-level observations. The utilization of the WGI and Hofstede datasets limited our sample to the 21 countries for which these data were available. Consequently, our dataset spans 21 countries from 2007 to 2012. Summary statistics of all variables and their descriptions are provided in Table 1.

To evaluate how well the sample survey represents the entire survey population, we compare the average values of variables between the sampled study and the complete survey dataset, outlined

[10] WGI project provides governance indicators for more than 200 countries and territories from 1996 to 2021, reporting on both overall trends and specific data for each. It examines six aspects of governance.
[11] The 6 dimensions of culture is drawn from cultural preferences research conducted by Gert Jan Hofstede and his research teams.

in Table A1 in the Appendix. The full survey encompasses responses from over 900,000 individuals across 134 countries spanning from 2007 to 2022. Individual-level variables include education level, age, marital status, immigrant status, and gender, while country-level variables cover GDP per capita, population and institutional quality. The disparities in averages for all variables are uniformly minimal and lack statistical significance. Moreover, the findings in Table A1 suggest a consistent pattern in average values between the dataset from 2007 to 2012 and more recent data, indicating that our analysis is not biased by the chosen time frame. Another method employed to evaluate the representativeness of the sample is examining the distribution of respondents across income quintiles, illustrated in Table A2 in Appendix A. The Gallup Organization gathers data on respondents' annual household incomes in local currency and groups them into five income brackets. The survey sample is deemed representative if the proportion of respondents in each quintile is approximately 20%. Table A2 illustrates that the proportions of respondents in each income quintile closely adhere to this criterion, ranging from 18% to 22%.

Religion. Following Greenfield & Marks (2007)[12] and Green & Elliott (2010), we employed the index of religious identity to capture the degree of how an individual identifies with his/her religion of choice. The question asks how much the individual identifies with the religion in a ladder scale (1 = Not at all, 2 = Only a little, 3 = Moderately strong, 4 = very strongly, and 5 = extremely strong). A higher value indicates that an individual is more likely to believe in the religion of choice as part of his or her identity. In other words, it indicates a stronger degree to which an individual thinks of himself/herself as belonging to and reflecting the values of a particular religion.

[12] The longitudinal dataset of midlife in the United States (MIDUS) uses the question "How closely do you identify with being a member of your religious group" with a ladder scale from 1 to 4 to measure religious identity.

Entrepreneurship. The dependent variable is represented by the answer to the either of the two question “Do you plan to start a business within the next three years?” or “Do you consider becoming an entrepreneur and starting your own business?”. Thus, entrepreneurial intention is a dummy variable, indicating whether an individual intent to become an entrepreneur (1 = yes, 0 = no).

Hedonic well-being. Gallup's Life Evaluation Index involves participants envisioning a ladder, where the lowest scale symbolizes the worst possible life, and the highest scale signifies the best possible one. Each scale is assigned a number from zero to 10, according to the Cantril Self-Anchoring Striving Scale. Following Gallup World Poll Methodology, hedonic well-being is measured by averaging the answers from the three questions: (1) All things considered, how satisfied are you with your life as a whole these days?; (2) Anticipated life in 5 years; and (3) Life 5 years ago. Responses for the three questions range from 1, representing the ‘worst life possible’, to 10, indicating the ‘best life possible’. Higher score on this scale indicates higher level of hedonic well-being.

Eudaimonic well-being. Drawing on Joshanloo (2018), this second mediator is calculated as an arithmetic mean of responses to 7 binary questions from the Gallup World Poll, which assess seven key areas of eudaimonic well-being. Those include (i) **Learning** is captured by the response to the question “Did you learn or do something interesting yesterday?”;, (ii) **Respect** is based on the response to “Were you treated with respect all day yesterday?”; (iii) **Efficacy** is from the response to “Can people in this country get ahead by working hard, or not?”; (iv) **Freedom** is from the response to “In (this country), are you satisfied or dissatisfied with your freedom to choose what you do with your life? ”. (v) **Helping** is determined by asking “Have you helped a stranger or someone you didn’t know who needed help?”. (vi) **Volunteering** is from the response to “Have

you volunteered your time to an organization?". (vii) **Social support** is based on the response to "If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?". Higher incorporated value indicates higher level of eudaimonic well-being.

***Control variables*.** The statistical analyses adjust for the socio-demographic background of respondents, incorporating individual-level and country-level control variables with details provided in Table 1.

[Insert Table 1 here]

[Insert Table 2 here]

3.3.2. Statistical analyses

This study utilizes a multilevel mixed-effect logistic model to explore the impact of religious identity on entrepreneurial intention, while also examining the potential mediation of eudaimonic and hedonic well-being. A significant likelihood ratio test indicates that the multilevel logistic model outperforms the ordinary logistic regression. Multilevel mixed effect logistic regression offers numerous benefits. Firstly, it accommodates the interdependent nature of observations within the same country. Secondly, it dissects various layers of variability, catering to the hierarchical structure of our dataset, which encompasses individual data nested within broader country units. Thirdly, it enables researchers to concurrently estimate both fixed effects and random coefficients.

The paper' sample consists of 25,572 individuals organized into 21 countries, forming a nested or clustered structure. The Intra Class-Correlation (ICC) ratio shows that it is necessary to incorporate

country-level controls to account for contextual influences on individual entrepreneurship. Given the substantial ICC, Ordinary Least Squares was deemed unsuitable as it may yield biased estimates. Therefore, we conducted the following equations:

$$Hedonic_i = \varphi + ¥_1\ Religion_i + \omega\ X_i + €_i \qquad (1)$$

$$Eudaimonic_i = \varphi + ¥_1\ Religion_i + \omega\ X_i + €_i \qquad (2)$$

$$Entrepreneurship_i = \alpha + \beta_1\ Hedonic_i + \gamma\ X_i + \theta\ Religion_i + \nu_i \quad (3)$$

$$Entrepreneurship_i = \alpha + \beta_2\ Eudaimonic_i + \gamma\ X_i + \theta\ Religion_i + \nu_i \quad (4)$$

$$Entrepreneurship_i = \alpha + \beta_1\ Hedonic_i + \beta_2\ Eudaimonic_i + \gamma\ X_i + \theta\ Religion_i + \nu_i \quad (5)$$

where *Entrepreneurship*$_i$ is the binary variable (1 = intent to start a business and 0 = has no intent to start a business); $Religion_i$ represents religious identity; $Hedonic_i$ represents level of hedonic well-being while $Eudaimonic_i$ represents level of eudaimonic well-being. X is the set of control variables including individual-level demographic variables and country-level institutional variables and cultural values. $€_i$ and ν_i are the random error terms.

The constant term is subjected to random variation at the country level. To evaluate mediating influences, we observe the reduction in effect sizes and the statistical significance of predictors when mediators are introduced. This assessment method, proposed by Sobel (1982) and Preacher & Hayes (2008), is widely acknowledged as a formal test of mediation in multiple linear regression. We conducted separate tests for each form of well-being to investigate how civic engagement impacts entrepreneurial intention through each well-being dimension. Additionally, we examined the mediating effects of both well-being dimensions simultaneously.

[Insert Table 3 here]

3.4. Estimation results

Table 1 presents descriptions and summary statistics for variables. Notably, 18% of the sample respondents intends to initiate a new business. The sample comprises 53% females, with 6% being immigrants, 49% married, and an average age of 38. Table 2a and 2b present correlation matrices for individual-level and country-level variables, respectively. Additionally, variance inflation factors (VIFs) are included to assess multicollinearity, with no notable high correlations between variables and no evidence of multicollinearity, as the highest VIF is 3.96.

Table 3 showcases the primary results of the paper, structured into models 1 through 6. Models 1 and 2 illustrate the findings with hedonic well-being and eudaimonic well-being as dependent variables, respectively, using multilevel mixed-effects regression. Models 3 to 6 present the results where well-being variables serve as mediators and entrepreneurial intention acts as the dependent variable, using multilevel mixed-effects logistic regression. According to goodness-of-fit measures such as the Wald test, log likelihood, and LR test, all six models exhibit a satisfactory fit to the underlying structure of our variables.

In Models 1 and 2, it's observed that religious identity significantly and positively affects eudaimonic well-being ($\beta = 0.015$; $p < 0.01$), but it doesn't show a noticeable impact on hedonic well-being. As a result, Hypothesis 2b is rejected due to the lack of significant influence on hedonic well-being, while Hypothesis 2a is supported, suggesting that religious identity contributes positively to the subjective experiences associated with eudaimonia.

Moving from Models 3 through 6, where entrepreneurial intention is the dependent variable, the coefficient for religious identity is found to be positive and statistically significant at the 1% level. This result underscores the overall effects of religious identity on entrepreneurial intention.

Specifically, in Model 6, the coefficient of entrepreneurship (0.03) suggests that a 1% increase in religious identity correlates with a 3% increase in the odds of entrepreneurial intention.

Subsequent examination of the coefficients for hedonic well-being in Models 5 and 6 reveals their statistical insignificance. Conversely, the coefficients for eudaimonic well-being in Models 3 and 6 are positive at 0.70 and statistically significant at the 1% level, indicating a positive impact of eudaimonic well-being on entrepreneurial intent. Therefore, the findings lend support solely to Hypothesis 3a.

Mediation effects of eudaimonic well-being

According to Freedman & Schatzkin (1992), the mediation effect is evident if there is a reduction in the effect sizes of the coefficient for Entrepreneurship in Model 4 when both forms of well-being are incorporated into the model alongside civic engagement (Models 3, 5, and 6). The coefficient for *entrepreneurship* decreases from 0.04 ($p < 0.05$) in Model 4 to 0.03 ($p > 0.01$) Model 6, only when eudaimonic well-being is included in the regression. This finding suggests a significant total mediation effect of eudaimonic well-being on the relationship between religious identity and entrepreneurial intention. On the other hand, the coefficient on religious identity remains nearly unchanged from Model 4 to Model 5 when hedonic well-being is included, indicating that hedonic well-being does not mediate the influence of civic engagement on entrepreneurial intention.

Furthermore, our analysis highlights the importance of control variables. (i) Higher levels of education significantly enhance entrepreneurial intentions, aligning with findings from previous studies (Bates, 1995; Reynolds, 1997; Delmar and Davidsson, 2000). (ii) Consistent with recent evidence, being older is negatively associated with entrepreneurial intent. (iii) Females tend to have lower levels of hedonic well-being but higher levels of eudaimonic well-being, leading to a greater

likelihood of entrepreneurial intentions. (iv) Immigrants exhibit an above-average propensity for entrepreneurial behaviors, underscoring the importance of minority entrepreneurship (Simoes et al., 2015). At the country level, higher GDP per capita tends to dampen intentions to start new ventures, while countries with more developed institutional environments support higher levels of entrepreneurship but lower the population's well-being.

Boundary conditions of cultures

[Insert Table 4 here]

[Insert Table 5 here]

Section 2.5 discussed cultural factors as potential boundary conditions that could influence the results of the paper. To be more specific, the intensity of the links among religious identity, eudaimonic well-being, hedonic well-being, and entrepreneurial intent are expected to be higher in individualistic settings, including religions in the West such as Christianity, and lower in an environment that emphasize collectivism such as Buddhism. We re-run the main empirical analyses on specific sub-samples. Table 6 compared the results between individualistic and collectivistic countries by evaluating the interaction between *individualism* and *religion.* Models 1 to 6 in Table 6 showed that all interactions are statistically insignificant ($p > 0.1$) while the other key coefficients remain unchanged from Table 3. This demonstrated little influence of individualism vs collectivism on the hypotheses.

Our total samples are dominated by Christian with 17,530 respondents, followed by Islam with 4,555, and other groups with 3,487 respondents. Thus, the regressions were conducted on these three sub-samples of religious groups. The results were presented in Table 7. Models 1, 3, and 5 all showed that religious identity is a strong and positive predictor of eudaimonic well-being in

sub-samples, with coefficients for religious identity being around 0.02 and statistically significant at 1% in all three models. Similarly, the coefficients eudaimonic are 0.73, 0.58, and 0.75 in models 2, 4, and 6 and statistically significant at 1%, meaning that entrepreneurial intention can be reliably predicted by high level of eudaimonic well-being in all religious groups. Finally, the coefficients for variable religion in models 2 and 4 lost their significance, confirming the mediating role of eudaimonic well-being in the relationship between religious identity and entrepreneurial intention for Christians and Islams.

[Insert Table 6 here]

[Insert Table 7 here]

3.5. Supplementary analysis

In an additional analysis, we utilized a path analysis model to explore the direct impact of civic engagement on individual entrepreneurial intentions and the indirect effects mediated through two types of well-being. We opted for path analysis for several reasons. Firstly, it is suitable for testing multiple interconnected hypotheses simultaneously, aligning with our study's objective of examining the relationships among two mediating variables, one predictor, and one response variable (Schumacker & Lomax, 2004; Byrne, 2009). Secondly, path analysis can be applied without latent variables, which is pertinent to our model as all variables are directly observed or manually constructed. Finally, path analysis allows us to test the indirect effects using the bootstrapping method, which is advantageous as it does not rely on the assumption of normality in the sampling distribution (Preacher & Hayes, 2008) and enables us to determine the statistical significance of the indirect effect (Preacher & Hayes, 2004).

Table 4 displays the standardized path coefficients (β) along with their corresponding significance (t-values). Meanwhile, Table 5 provides the outcomes of the mediation test, with t-values computed using a bias-corrected bootstrap method involving 5000 samples. These results validate the conclusions drawn from the initial study. Hypothesis 1a proposed that religious identity would positively impact eudaimonic well-being, and the results support this assertion ($\beta = 0.012$, $t = 16.11$, $p < 0.01$). However, the results did not support a hypothesized direct association between religious identity and hedonic well-being ($\beta = -0.003$, $t = 0.002$, $p > 0.13$), rejecting Hypothesis 1b. Additionally, the results indicate that eudaimonic well-being has a positive and significant influence on entrepreneurial intent ($\beta = 0.147$, $t = 26.49$, $p < 0.01$), whereas hedonic well-being exerts a negative and marginally significant influence on entrepreneurial intentions ($\beta = -0.000$, $t = -5.02$, $p < 0.10$). Furthermore, the practical significance of the coefficient for eudaimonic well-being is notably larger than that of hedonic well-being. Therefore, only Hypothesis 2a is supported.

Table 5 indicates that the mediation path from religious identity to hedonic well-being, and subsequently to entrepreneurial intention, was statistically insignificant, with effect sizes close to 0. Conversely, the mediation path from religious identity to eudaimonic well-being, and then to entrepreneurial intention, demonstrates both economic and statistical significance ($\beta = 0.002$, $t = 1.79$, $p < 0.001$). The total effect of civic engagement on entrepreneurial intention, calculated as the sum of the direct and indirect effects, amounted to 0.004 ($t = 3.75$, $p < 0.001$). Therefore, the indirect effect through eudaimonic well-being accounts for 50% of the total effects of civic engagement on entrepreneurial intention, which is substantially larger than the figure for hedonic well-being.

3.6. Robustness checks

3.6.1. Rational choice of religion and the issue of endogeneity

[Insert Table 8 here]

Individuals approach religion much like other decision-making scenarios, carefully evaluating the cost and benefits of the options to optimize their choices (Iannaccone, 1992b). This perspective frames individuals as both "religious consumers" and "religious producers" who evaluate the offerings of various "religious markets" and "religious economies" to maximize their spiritual investment (Iannaccone, 1992b). By choosing a religion and determining their level of participation based on the perceived "religious commodities", such as trust-based transactions, informational advantages, and easier access to resources offered by religious institutions, individuals aim to maximize their utility. In return, they must also evaluate the potential costs of religious membership, such as sacrifices, social stigma, monetary investments, time commitments, dietary restrictions, and the impact on secular knowledge (Iannaccone, 1992a). In practice, this leads to a dynamic where religions that demand high membership fees, significant personal commitment, and strict adherence typically attract individuals who are fully committed to devoting their time and resources to religious activities, while deterring those who are unwilling to meet these stringent requirements.

This cost-benefit analysis underpins the concept of religion as a social choice involving two simultaneous decisions: the selection of a religion and the determination of the optimal level of religious investment. In this sense, the population of prospective entrepreneurs, like that of the general population, is made up of individuals making these dual decisions. To address the potential endogeneity issue resulting from sample selection bias, we employ Heckman's two-stage selection

model to treat religiosity as a rational choice being influenced by an array of economic and social factors.

[Insert Table 9 here]

3.6.2. Robustness tests

From both empirical and theoretical perspectives, it is unreasonable to assume that believers and non-believers are randomly sampled from the general population. There must be considerations to address potential sample selection issues. For example, it is plausible that individuals with a strong ambition to become entrepreneurs might self-select into religious belief, particularly if they perceive benefits in aligning with certain religious groups. An obvious solution is the Heckman two-stage estimator for sample selection. This procedure starts with a probit model that analyzes the determinants of religious affiliation, where the dependent variable is a dummy variable [0,1], indicating whether or not the individual is a religious believer or an atheist. In the second stage, an equation like Equation (1) is estimated, but using the predicted values of religiosity derived from the first-stage probit equation. In the two-stage modeling process, the selection of an appropriate instrumental variable, X, is crucial. This variable must influence the choice of religion but must not impact the dependent variable, $Entrepreneurship_i$. For this purpose, we utilize the dummy variable representing the importance of religion in one's life (1 = important, 0 = not important) as our choice of instrumental variable. The estimated results were presented in Table 8 and remain consistent with the main findings. Those believers who consider religion as an important thing in their lives achieve higher level of eudaimonic well-being ($\beta = 0.008$, $p < 0.01$) and lower level of hedonic well-being ($\beta = -0.226$, $p < 0.01$). In model 5, the coefficient eudaimonic well-being positive ($\beta = 0.252$, $p < 0.01$, signaling the positive impact of eudaimonic well-being on entrepreneurial intention. Table 3 still presented evidence (albeit less significant) of the mediating

role of eudaimonic well-being when the coefficients for importance of religion decreased its economic significance by 0.003 from model 4 to model 5.

The second robustness test uses binary variable "importance of religion in one's life" (1 = important, 0 = not important) as a proxy for religious identity. Similar to the question "how do you identify with your religion?", the variable gauges how important being part of a particular religion is to an individual's life. The test helps address the concern regarding the multi-dimensional nature of religious identity. The results using path analysis were shown in Table 9. The table shows that those who regard religion as being important to their lives achieve higher levels of eudaimonic well-being and lower levels of hedonic well-being. In addition, they also have a higher probability of becoming an entrepreneur. More importantly, the indirect relationship through the mediator "importance of religion" is significant as presented by the positive and significant coefficient ($\beta = 0.06$, $p < 0.01$).

3.7. Discussion and conclusion

Our study makes significant contributions to the academic discourse on entrepreneurship and religion, enhancing both theoretical and empirical understanding in several impactful ways. On the basis of religion's prevalence, centrality, and established base of scientific inquiry (Pew, 2010; Emmons, 1999; Smith et al., 2021), the paper offers both a novel solution to well-established problems and further extension to the extant literature. First, we have built on the social identity theory to advance our understanding of the increasing intertwining of religion and entrepreneurship. This article demonstrates how individuals' self-concepts, derived from their affiliation with religious groups influence well-being and shape entrepreneurial intent. Prior literature has acknowledged the centrality of faith identity to entrepreneur's identity and how it shapes venturing intention (Judget et al., 2013), but lacks a concrete conceptual framework. This

might be especially relevant in religions that value individual-choice norms since, in such contexts, their decision-making processes are more influenced by their own preferences, beliefs, and goals. However, we do not find any material empirical evidence for our predictions on the impacts of cultural factors. This finding may have brought us to our conjecture on the universal perceptions of eudaimonic well-being across contextual influences. Even though there have been marked variations in the self-evaluation of reported subjective well-being across nations (Diener et al., 2002), little research has been conducted on these differences in terms of eudaimonic well-being.

Second, we complement a recent call for a theological turn in entrepreneurship by providing a novel rationale to an existing question in entrepreneurship literature (Smith et al., 2021). By adopting a theological perspective, we have been able to offer an alternative explanation of this significant phenomenon regarding the non-economic motivations of entrepreneurial intention. While religion may offer important tangible benefits (i.e., access to closed social networks, enhanced social status), its intangible and psychological benefits deliver as much motivations for aspiring entrepreneurs. Specifically, the fulfillment of eudaimonic needs through religious identification provides substantial motivating force for aspiring entrepreneurs. Identification with religious groups brings not only benefits in terms of well-being but also subsequent behavioral effects. Religion could be seen as an informal institution that influences the prevalence of entrepreneurial activities within a community. The third contribution relates to the intrinsic motivations inspired by the fulfilment of psychological needs linked to self-determination (Deci & Ryan, 2000; 2008) the SDT needs that play a role in building a more fulfilling life and stimulating human endeavors are more related to eudaimonic well-being rather than hedonic well-being. This extension is critical as it emphasizes the mediating significance of eudaimonic well-being in the pursuit of entrepreneurship. Empirically, we differentiate between the roles of hedonic and

eudaimonic well-being in fostering entrepreneurial intent, addressing a gap in the current understanding of how different types of well-being contribute to entrepreneurial outcomes. Additionally, the results are consistent across sub-samples and models. This may suggest that, despite their fundamental differences in beliefs and moral concepts, all religions may share a common ground in their pursuit of improving human well-being.

As the paper enhances our understanding of entrepreneurship as the direct and indirect outcome of human functioning (Ryff, 2019), far-reaching practical implications ensue. It is important to encourage religious organizations to participate more actively in the entrepreneurial ecosystem to serve as incubators or supporters for start-ups and offer both financial and moral support. Companies should offer strategies to align their business practices with their religious beliefs, potentially increasing both personal and organizational satisfaction and well-being. This could include ethical business practices that are informed by religious values, which enhances brand integrity and customer trust. Participation in religious communities or organizations can provide individuals with valuable psychological resources, not only motivating but also propelling them toward engaging in both for-profit and social entrepreneurial ventures. In this sense, religious institutions, which aim to foster change, innovation, and entrepreneurial behaviours, are ideally positioned to encourage individuals to explore new ideas and engage in entrepreneurship outside of traditional religious settings. Thus, encouraging involvement in religious activities can instill a sense of eudaimonia, promoting both engagement in enterprise and the development of entrepreneurial skills. By doing so, these institutions can play a crucial role in driving societal progress and prosperity. Furthermore, governments could collaborate with religious organizations to provide business development support, particularly focused on maximizing the psychological

benefits derived from religious engagement. This support could steer individuals toward both social and traditional entrepreneurship.

By understanding this dynamic, policymakers can design inclusive policies and programs that leverage religious structures and norms to harness religious diversity to promote entrepreneurship for broader economic and social benefits. Additionally, the development of support systems that acknowledge religious dimensions, such as providing spaces for religiously-informed networking events or mentorship programs that respect and integrate religious values is necessary. Such programs may encourage participation in religious activities, not only enhancing the satisfaction of psychological needs for developing intrinsic motivation but also fostering a commitment to acquiring entrepreneurial skills over time. Additionally, collaborating with religious organizations to support students or youth projects could strengthen their entrepreneurial intentions, shaping their aspirations and readiness for entrepreneurial pursuits. Religious institutions should encourage young individuals to engage in religiously oriented entrepreneurial projects through volunteerism and community service initiatives. These activities can serve as valuable platforms for learning, seeking out novelty, and practical experience, ultimately helping to cultivate a generation well-equipped to innovate and lead diverse entrepreneurial endeavors (McIntyre et al., 2023).

Nevertheless, our study incurs inevitable limitations stemming from data availability. First, the main dataset is not up to date, with data on entrepreneurial intention only available up to the year 2012. This temporal limitation restricts our ability to assess current trends and dynamics of entrepreneurship, which may have evolved significantly in response to technological advancements and economic shifts since that time. As much as we acknowledged the limitation of this dataset, the proposed hypotheses are grounded on long-established theories. As part of the social identities, religious identity would bring benefits in terms of eudaimonia regardless of the potential variation

over time of religion and well-being. Second, the dataset comprises responses from individuals in 21 countries, with each participant contributing data at a single point in time. This cross-sectional design inhibits our ability to track changes over time or establish the directionality of relationships between variables. These limitations highlight the need for more current, longitudinal data to validate and expand upon our findings. Future research should aim to incorporate more recent data and, if possible, panel data that allow for the observation of changes over time. Furthermore, it is necessary to refrain from pooling various dimensions of well-being into one single measure of life satisfaction. In so doing, future research can build upon this paper by continuing the study of the role of eudaimonic well-being in other important sociocultural contexts.

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Appendix

Figure 3.1: Conceptual Framework

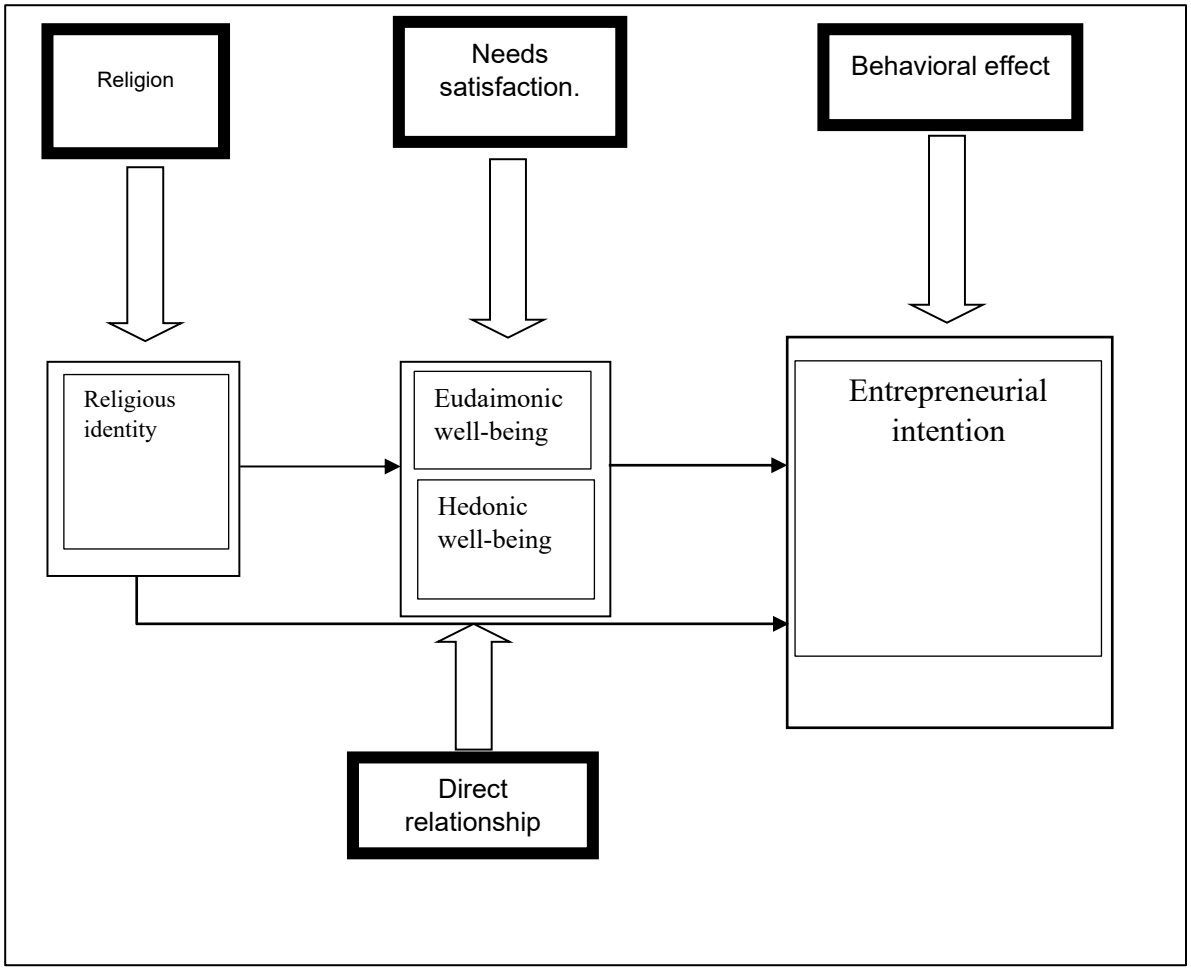

Table 3.1. Descriptive statistics

Variable	Description	Source	Observation	Mean	SD
Individual-level variables					
Entrepreneurship	Do you consider and plan to start a business (1 = Yes, 0 = No)		25,572	0.18	0.39
Eudaimonic	Integrated measure of eudaimonic well-being		25,572	0.56	0.23
Hedonic	Integrated measure of hedonic well-being		25,572	5.80	9.36
Religion	Index of religious identity in Likert scale (from 1 = Not at all to 7 = extremely strongly)		25,572	5.29	1.30
Education	Level of education (0 = Elementary, 1 = Secondary, 2 = Tertiary)	GWP	25,572	1.76	0.68
Age	Respondent's age measured in years		25,572	38.10	17.67
Immigrant	Whether the respondent is born in the country (1 = No and 0 = Yes)		25,572	0.96	0.20
Female	Whether the respondent is male or female (1 = Female, 0 = Male)		25,572	0.53	0.50
Married	Whether the respondent is married or not (1 = Yes, 0 = No)		25,572	0.49	0.50
Country-level variables					
Population	Number of inhabitants in a country	World Bank	25,572	1.13	1.27
GDP capita	country's GDP divided by its total population		25,572	7,174.53	6,568.57
PDI	Power distance index measures the extent to which the members of a country accept the hierarchy of power and authority	Hofstede	25,572	56.88	21.79
IDV	Individualism refers to the strength of the ties that people have to others within their community.		25,572	46.92	21.08

MAS	Masculinity refers to the degree to which the people in the country display attitudes and behaviours that signify and validate maleness	25,572	48.34	22.30
UAI	Uncertainty avoidance indicates whether societies display more ease in regard to uncertainty	25,572	66.81	19.58
LTOWVS	Long-term orientation shows whether people in the society focus on long-term orientation at the expense of short-term gratification.	25,572	47.49	18.45
IVR	Indulgent cultures prioritize individual happiness and well-being, placing emphasis on leisure time and granting greater personal freedom and control. In contrast, restrained cultures are characterized by less open expression of positive emotions and place less significance on happiness, freedom, and leisure activities.	25,572	39.82	23.50
Institution	Institutional quality is the sum of 6 dimensions of institutional system: Voice and accountability, Political stability and absence of violence, Government effectiveness, Regulatory quality, Rule of law, Control of corruption	25,572	2.21	4.92

Table 3.2a. Correlation matrix of individual-level variables

No	Variables	1	2	3	4	5	6	7	8	9	VIF
1	Entrepreneurship	1.00									1.11
2	Eudaimonic	0.12	1.00								1.05
3	Hedonic	-0.03	0.01	1.00							1.01
4	Religion	0.01	0.02	-0.00	1.00						1.02
5	Education	-0.01	0.19	0.06	-0.03	1.00					1.05
6	Age	-0.14	-0.09	0.04	0.08	-0.05	1.00				1.12
7	Immigrant	-0.00	-0.00	-0.03	-0.02	-0.05	-0.05	1.00			1.01
8	Female	-0.05	-0.03	0.01	0.05	-0.07	0.02	-0.01	1.00		1.01
9	Married	-0.02	-0.06	0.00	0.12	-0.07	0.31	-0.01	-0.00	1.00	1.12

Table 3.2b. Correlation matrix of country-level variables

	Variables	1	2	3	4	5	6	7	8	9	VIF
1	Population	1.00									1.81
2	GDP capita	-0.22	1.00								1.61
3	PDI	0.08	-0.10	1.00							1.78
4	IDV	-0.37	0.22	-0.49	1.00						2.96
5	MAS	-0.20	0.15	0.36	-0.12	1.00					1.70
6	UAI	0.48	-0.22	0.27	-0.36	-0.13	1.00				1.76
7	LTOWVS	-0.09	0.04	0.23	0.23	0.15	0.11	1.00			3.96
8	IVR	-0.23	0.09	-0.41	0.37	0.01	-0.24	-0.57	1.00		3.83
9	Institution	0.25	0.34	-0.22	0.03	-0.41	-0.18	-0.29	-0.11	1.00	2.88

Correlation matrix on a group of 21 countries

Table 3.3. Results on multilevel regression model

Models	Multilevel mixed effects		Mixed-effects logistic regression			
Dependent variables	Eudaimonic	Hedonic	Entrepreneurship	Entrepreneurship	Entrepreneurship	Entrepreneurship
	(1)	(2)	(3)	(4)	(5)	(6)
Hedonic					0.000258	-0.000338
					(0.00279)	(0.00290)
Eudaimonic			0.706***			0.706***
			(0.0867)			(0.0867)
Religion	0.0151***	-0.0443	0.0310*	0.0416**	0.0416**	0.0310
	(0.00113)	(0.0454)	(0.0176)	(0.0175)	(0.0175)	(0.0206)
Education	0.0477***	0.145*	0.0908***	0.123***	0.123***	0.0908***

	(0.00212)	(0.0860)	(0.0294)	(0.0289)	(0.0289)	(0.0294)
Age	-0.000752***	-8.06e-05	-0.0124***	-0.0128***	-0.0128***	-0.0124***
	(8.38e-05)	(0.00340)	(0.00135)	(0.00135)	(0.00135)	(0.00135)
Immigrant	0.00880	-0.357	-0.259***	-0.253***	-0.252***	-0.259***
	(0.00669)	(0.272)	(0.0941)	(0.0939)	(0.0939)	(0.0941)
Female	-0.0129***	0.0800	-0.212***	-0.222***	-0.222***	-0.212***
	(0.00263)	(0.107)	(0.0364)	(0.0363)	(0.0363)	(0.0364)
Married	0.00572**	-0.0984	0.259***	0.262***	0.262***	0.259***
	(0.00286)	(0.116)	(0.0417)	(0.0416)	(0.0416)	(0.0417)
Population	0.0315**	-0.167	-0.190	-0.168	-0.168	-0.190
	(0.0159)	(0.374)	(0.226)	(0.227)	(0.227)	(0.226)
GDP capita	3.68e-07	-1.28e-05	-5.56e-05**	-5.51e-05**	-5.51e-05**	-5.56e-05**
	(1.80e-06)	(3.81e-05)	(2.61e-05)	(2.62e-05)	(2.62e-05)	(2.61e-05)
PDI	0.000781	0.0180	-0.00840	-0.00781	-0.00782	-0.00839
	(0.000950)	(0.0184)	(0.0137)	(0.0137)	(0.0137)	(0.0137)
IDV	0.00245**	0.0338	-0.0128	-0.0109	-0.0109	-0.0128
	(0.00117)	(0.0236)	(0.0167)	(0.0167)	(0.0167)	(0.0167)
MAS	-0.000117	-0.0403***	0.0249**	0.0247**	0.0247**	0.0249**
	(0.000766)	(0.0152)	(0.0112)	(0.0112)	(0.0112)	(0.0112)
UAI	-0.00114	-0.00173	0.0237*	0.0229	0.0229	0.0237*
	(0.000980)	(0.0200)	(0.0141)	(0.0141)	(0.0141)	(0.0141)
LTOWVS	-0.00423***	-0.00789	0.00151	-0.00199	-0.00199	0.00151
	(0.00131)	(0.0280)	(0.0187)	(0.0187)	(0.0187)	(0.0187)
IVR	-0.00183*	-0.00825	0.0146	0.0129	0.0129	0.0146
	(0.00105)	(0.0219)	(0.0150)	(0.0150)	(0.0150)	(0.0150)
Institution	-0.00588**	-0.0154	0.127***	0.121***	0.121***	0.127***
	(0.00235)	(0.0739)	(0.0292)	(0.0291)	(0.0291)	(0.0292)
var(cons[country])			0.949***	0.951***	0.952***	0.948***
			(0.327)	(0.327)	(0.327)	(0.326)
Constant	0.590***	6.445**	-4.085**	-3.620*	-3.622*	-4.083**
	(0.134)	(2.730)	(1.912)	(1.913)	(1.913)	(1.911)
LR test	2142.45***	363.21***	1184.76***	1304.7***	1299.49***	1177.25***

Log likelihood	3951.06	-90768	-9984.35	-10017.84	-10017.83	-9984.34
Wald	872.81***	20.87	273.44***	209.76***	209.77***	273.46***
Observations	25,572	25,572	25,572	25,572	25,572	25,572
Number of groups	21	21	21	21	21	21

*** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses; Statistical significance of the LR test indicates that a multi-level regression model is preferred; Models 1 and 2 use multilevel mixed-effect regression while Model 3 to 6 use mixed-effect logistic regression models; Please refer to Table 1 for more details on variable description.

Table 3.4. Path analysis estimates

	Hypotheses	**β**	t-value	Results
1a	Religious identity -> Eudaimonic well-being	0.012	10.94***	Supported
1b	Religious identity -> Hedonic well-being	-0.030	-0.71	Not supported
2a	Eudaimonic well-being -> Entrepreneurial intention	0.147	14.14***	Supported
2b	Hedonic well-being -> Entrepreneurial intention	-0.000	-1.73*	Not supported

**** p< 0.01; LR test: 354.11***; Log likelihood: -131,279.18*

Table 3.5. Direct and indirect effects of religious identity on entrepreneurial intention.

Model A - Eudaimonic well-being as a mediator			
Path	**Estimate**	**t-value**	**95% CI**
Total effect			
Religious identity-> Entrepreneurial intention	0.004***	3.75	(0.001; 0.008)
Direct effect			
Religious identity-> Entrepreneurial intention	0.002*	1.79	(0.000; 0.006)
Indirect effect			
Religious identity-> Eudaimonic well-being-> Entrepreneurial intention	0.002***	8.65	(-0.001; 0.003)
Model B - Hedonic well-being as a mediator			
Path	**Estimate**	**t-value**	**95% CI**
Total effect			
Religious identity-> Entrepreneurial intention	0.003**	2.77	(0.001; 0.008)
Direct effect			
Religious identity-> Entrepreneurial intention	0.003***	2.21	(0.000; 0.006)
Indirect effect			
Religious identity-> Hedonic well-being-> EI	0.000	0.65	(-0.001; 0.002)

$p < 0.001$. 95% CI: Bias corrected bootstrap 95% confidence interval based on 5000 samples.

Table 3.6. Regression results on the interaction between religion and individualism

Models	Multilevel mixed effects			Mixed-effects logistic regression		
Dependent Variables	(1)	(2)	(3)	(4)	(5)	(6)
Eudaimonic					0.705***	0.705***
					(0.0867)	(0.0867)
Hedonic				0.000215		-0.000374
				(0.00280)		(0.00290)
Religion	0.0160***	-0.154	-0.0120	-0.0120	-0.0202	-0.0203
	(0.00315)	(0.126)	(0.0371)	(0.0371)	(0.0372)	(0.0372)
IDV	0.00255**	0.0225	-0.0168	-0.0168	-0.0185	-0.0185
	(0.00121)	(0.0266)	(0.0174)	(0.0174)	(0.0174)	(0.0174)
Religion x IDV	-1.81e-05	0.00215	0.00118	0.00118	0.00113	0.00113
	(5.75e-05)	(0.00232)	(0.000723)	(0.000723)	(0.000724)	(0.000725)
			0.991***	0.991***	0.987***	0.986***
			(0.346)	(0.346)	(0.344)	(0.344)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.587***	6.910**	-3.422*	-3.423*	-3.896**	-3.894**
	(0.134)	(2.775)	(1.955)	(1.955)	(1.952)	(1.951)
LR test	2124.62***	362.44***	1302.67***	1297.01***	1183.12***	1176.12***
Log likelihood	-3951.06	-90768.21	-10016.21	-10016.5	-9988.13	-9983.13
Wald	872.91***	21.74***	211.84***	211.85***	275.31***	275.99***
Observations	25,572	25,572	25,572	25,572	25,572	25,572
Number of groups	21	21	21	21	21	21

*** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses; Statistical significance of the LR test indicates that a multi-level regression model is preferred; Models 1 and 2 use multilevel mixed-effect regression while Model 3 to 6 use mixed-effect logistic regression models; Please refer to Table 1 for more details on variable description.

Table 3.7. Regression results on samples of selected subset of religions

Religion	Christian		Islam		Others	
Dependent variables	Eudaimonic	Intention	Eudaimonic	Intention	Eudaimonic	Intention
Models	(1)	(2)	(3)	(4)	(5)	(6)
Eudaimonic		0.733***		0.575***		0.752***
		(0.106)		(0.198)		(0.239)
Hedonic		-0.00349		0.000364		0.00621
		(0.00417)		(0.00606)		(0.00601)
Religion	0.0121***	0.0145	0.0246***	0.0764	0.0133***	0.145***
	(0.00141)	(0.0220)	(0.00332)	(0.0488)	(0.00258)	(0.0385)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
LR test	1503.91***	602.73***	99.70***	18.41***	155.62***	68.01***
Log likelihood	-33.35365854	-6668.46	-674.42***	-1915.68	-580.78***	-1396.49
Wald	584.86***	208.34***	217.41***	42.04***	120.18***	66.65***
var(cons[country])		0.995***		0.279*		0.537**
		(0.356)		(0.164)		(0.243)
Constant	0.612***	-3.921*	0.575***	-0.543	0.449***	-4.251**
	(0.148)	(2.050)	(0.132)	(1.449)	(0.159)	(1.813)
Observations	17,530	17,530	4,555	4,555	3,487	3,487
Number of groups	20	20	19	19	21	21

*** p<0.01, ** p<0.05, * p<0.1. Standard errors in parentheses; Statistical significance of the LR test indicates that a multi-level regression model is preferred. Models 1 and 2 re-run the regression models on a sample of Christian only. Models 3 and 4 re-run the regression models on a sample of Islam only. Models 5 and 6 re-run the regression models on a sample of other religions.

Table 3.8. Religiosity and entrepreneurial intention using Heckman two-stage selection model.

	First stage	Second stage			
Dependent variable	Importance of religion (1)	Eudaimonic (2)	Hedonic (3)	EI (4)	EI (5)
Importance of religion	-0.171***	0.008***	-0.226***	0.0240***	0.0212***
	(0.0035)	(0.001)	(0.035)	(0.002)	(0.002)
Eudaimonic well-being					0.2516***
					(0.0131)
Hedonic well-being					0.0004
					(0.004)
Individual-level controls		Yes	Yes	Yes	Yes
Country-level controls		Yes	Yes	Yes	Yes
Importance of religion	1.242***				
	(0.0152)				
lambda					
Constant	-0.599***	-0.619***	0.927***	0.381***	0.292***
	(0.0153)	(0.015)	(0.170)	(0.016)	(0.017)
Observations	25,572	25,572	25,572	25,572	25,572

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; EI represents Entrepreneurial intention; The results are estimated using Heckman two-stage selection model on a sample of 810,312 respondents who answered the question of whether they follow or not a particular religion.

Table 3.9. Path analysis estimates

Hypotheses	Relationship	**β**	t-value	Results
1a	Importance of religion -> Eudaimonic well-being	0.048	13.57***	Supported
1b	Importance of religion -> Hedonic well-being	-0.397	-2.71***	Not supported
3	Importance of religion -> Eudaimonic well-being -> Entrepreneurial intention	0.055	9.20***	Supported

**** p< 0.01; LR test: 124.12***; Log likelihood: -123,724.18*

Table A1. Mean differences between study sample and survey population

Variables	Mean		
	Study sample (21 countries)	Study population (134 countries)	Differences
Education level	1.76	1.83	0.07
	(0.68)	(0.69)	
Age	31.10	40.06	8.96*
	(17.67)	(17.79)	
Immigrant	0.04	0.06	0.02
	(0.20)	(0.23)	
Female	0.53	0.55	0.02
	(0.50)	(0.49)	
Married	0.49	0.52	0.03
	(0.50)	(0.49)	
GDP capita	7174.53	10393,86	3219.33*
	(6568.57)	(12583.12)	
Population	1.13	1.44	0.31*
	(1.27)	(1.53)	
Institution	2.21	1.38	0.25
	(4.92)	(5.55)	
PDI	56.88	61.26	4.38
	(21.78)	(22.11)	

Note: This table presents a comparison between the means of individual-level demographic variables and country-level controls within the study sample of 21 countries and the total survey population. Standard errors for the estimates are provided in parentheses for each variable.

**** p < 0.01, ** p < 0.05, * p < 0.1: indicate the significance level of the t-test assessing the equality of means between the study sample and the study population.*

Table A2. Income quintiles of respondents

Income quintiles	**Frequency**	**Percent**
Poorest 20%	4,601	17.99
Second 20%	4,690	18.34
Middle 20%	5,079	19.86
Fourth 20%	5,453	21.32
Richest 20%	5,749	22.40
Total	**25,572**	**100.00**

Note: This table displays the distribution of respondents across income quintiles. Respondents are categorized into five income brackets based on quintiles of annual household income in local currency. Ideally, if the study sample is representative across income quintiles, the proportion of respondents in each quintile should be approximately 20%.