

# The Impact of Economic Inequality on Entrepreneurship: Does a Society's Stage of Development Make a Difference?

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## Abstract

In recent studies linking inequality to the entrepreneurial process, some scholars claim that inequality creates entrepreneurial incentives, thereby increasing entrepreneurship, while others contend that inequality deters entrepreneurship by restricting market opportunities. Building on Kuznets's inverted-*U* hypothesis on the inequality–development relationship, I posit that the nature of the inequality–entrepreneurship relationship is contingent on a society's development level. Results from mixed-effects logistic regressions and 60 countries support this argument. Although inequality increases entrepreneurship overall, the results of this study show a curvilinear relationship between the inequality–entrepreneurship association and development. That is, the inequality–entrepreneurship association is weak at low levels of development, strengthens as development increases from low to intermediate levels, and lessens again at advanced development levels. I discuss the implications of these findings for future entrepreneurship research and policy initiatives aimed at mitigating adverse impacts of inequality on social welfare.

## Keywords

inequality, stratification, entrepreneurship, development, Kuznets's curve.

## Introduction

Although some sociologists have sought to understand the potential consequences of inequality for entrepreneurship (Lippmann, Davis, and Aldrich 2005), there has been little systematic empirical sociological analysis linking inequality to entrepreneurship. Much of the existing research on this topic has been produced by scholars from the economic and business research tradition. Some have advanced a supply-side argument suggesting a positive association between inequality and entrepreneurship, while others have asserted a demand-side approach depicting a negative relationship between inequality and entrepreneurship. The supply-side approach sees inequality as a precondition for entrepreneurship on the premise that income and wealth inequality creates a class of people wealthy enough to absorb the high risks associated with investing in new ventures and products (Atems and Shand 2018; Bylund 2016; Jones and Kim 2018; Packard

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and Bylund 2017). In contrast, the demand-side argument claims that by increasing the budget-constrained population and reducing social mobility, inequality reduces both the economy's purchasing power and the human and financial capital endowments necessary for business creation and success (Auguste 2020; Gutiérrez-Romero and Méndez-Errico 2017; Perry-Rivers 2016; Xavier-Oliveira, Laplume, and Pathak 2015).

Both views depict a linear relationship between inequality and entrepreneurship. The supply-side argument claims that entrepreneurship increases as inequality rises, whereas the demand-side approach suggests that inequality deters entrepreneurial activities. But is it possible that under varying conditions, inequality both enhances and deters entrepreneurship? For instance, it could be that the inequality–entrepreneurship relationship is nonmonotonic, and that the supply- and demand-side approaches each separately address only one aspect of the relationship. Furthermore, some scholars have noted that entrepreneurship rates vary greatly by development levels and inequality regimes (El Harbi and Ragoubi 2018; Lippmann et al. 2005).

Simon Kuznets (1955) and subsequent scholars (e.g., Milanovic 2016:50; Nielsen 1994) have highlighted the fact that structural forces associated with the industrialization process shape the evolution of inequality in a society. Thus, to the extent that economic modernization shapes both resource distribution (Kuznets 1955; Nielsen 1994) and the organization founding process (Meyer and Bromley 2013), development may be expected to be consequential for the nature of entrepreneurship in a society and how inequality affects the degree to which people are engaged in entrepreneurial activities. Therefore, this analysis will address the following key questions: (1) To what extent does income inequality affect an individual's likelihood of undertaking entrepreneurial activities? (2) To what extent does development influence the inequality–entrepreneurship association?

The empirical analysis addresses these questions using data on two measures of entrepreneurship that capture both individual overall entrepreneurial entry and necessity (or survivalist) entrepreneurship. In addition, the study utilizes an indicator of income inequality (represented by the Gini coefficient) and an indicator of economic development (captured by a country's gross domestic product [GDP]) from 60 countries spanning the period from 2001 to 2012.<sup>1</sup> The entrepreneurship data are drawn from the Global Entrepreneurship Monitor (GEM; Reynolds et al. 2005), the Gini coefficient from the Standard World Income Inequality Database (SWIID; Solt 2016), and GDP information from the Penn World Tables (Feenstra, Inklaar, and Timmer 2015). Findings from mixed-effects binomial logistic regressions show that income inequality and entrepreneurship are positively associated overall, which supports the supply-side argument. In addition, the results of this study show that development alters the inequality–entrepreneurship relationship to the extent that this relationship is weak at low levels of development, strengthens as development increases from low to intermediate levels, and lessens again as development increases from intermediate to advanced levels.

The theoretical framework and hypotheses of the study are developed in the following section. This is followed by a description of the data, methods, and presentation of the results. The final section discusses the implications of the results for future entrepreneurship research and policy initiatives aimed at mitigating adverse effects of inequality on social welfare.

## **The Theoretical Link between Development and Inequality**

One of the most influential accounts linking inequality and development is Kuznets's (1955) hypothesis that income inequality increases as a country transitions to modernization, peaks at an intermediate level of development, and then decreases at advanced levels of development. However, while cross-sectional analyses have shown income inequality to be, on average, higher in less developed and developing countries than in advanced countries (Clark 2019; Nielsen 1994), recent income inequality upswings observed in many advanced economies have problematized the Kuznets proposition (Auguste 2018; Kwon and Salcido 2019; Piketty 2014).

Still, research has found Kuznets's core argument (that inequality is produced by social differentiations that are related to distinct stages of development) relevant for understanding recent trends in inequality (Clark 2019; Kwon 2016a; Milanovic 2016:50). For instance, Branko Milanovic (2016:53) suggests, similar to Kuznets's (1955) hypothesis about the structural processes underlying the inequality–development association, that at the beginning of the Industrial Revolution, the rise of manufacturing production, combined with greater urbanization, increased income inequality in industrializing countries. Afterward, the decline of inequality by the end of the nineteenth century was characterized by an increase in the supply of educated workers combined with a decrease in return to capital. In a related argument, Thomas Piketty (2014) implicates the reversal of this process (i.e., an increase in return to capital and a decrease in return to labor) in recent income inequality upswings observed in advanced economies.

Studying income inequality in the United States, Roy Kwon (2016a) finds that the transitional process from service-based to knowledge-based production influences income inequality trends similar to Kuznets's proposition that the agricultural–industrial transition shapes income inequality. These findings suggest that although recent data provide weak evidence for the Kuznets hypothesis in advanced economies (Auguste 2018; Kwon and Salcido 2019; Piketty 2014), the dynamic dimension of Kuznets's argument is relevant for theorizing the structural mechanisms underlying recent income inequality trends. Following this research tradition, I build on the dynamic aspect of Kuznets's hypothesis to theorize about the potential nonlinear nature of the relationship between inequality and entrepreneurship, as well as the extent to which structural forces associated with the development process may alter this relationship. Indeed, previous research has shown that income inequality, shown in Figure 2, Panel (c), can be depicted in an inverted-U-shaped relationship with entrepreneurship (El Harbi and Ragoubi 2018), validating the idea of the dualism associated with the industrialization process as proposed by Kuznets.

## **The Moderating Effect of Development on the Inequality–Entrepreneurship Relationship**

The extent of an economy's human capital endowment, average wages, consumer demand, and the development of its financial market are among key indicators of a society's development status (World Bank 2019) and have been associated with the level and types of entrepreneurial activity and economic inequality in a society (Whitley 1999; Wood and Frynas 2006). In the early stages of development, economic efficiency tends to be low and associated with relatively low overall wages and dispersion of income (Huw and Bernhardt 2000; Nielsen 1994). Consequently, low average earnings are likely to be associated with low overall purchasing power and savings—a negative effect on entrepreneurship, since both purchasing power and savings are necessary for entrepreneurial development and success. In this regard, low inequality is likely to be associated with low entrepreneurship rates in the early stages of development. Similarly, low economic efficiency, low wages, and low purchasing power are likely to be associated with low social mobility, thereby pushing people into survivalist and temporary self-employment activities. Indeed, Garry D. Bruton, Duane Ireland, and David J. Ketchen (2012:1–2) document the fact that the economies of less developed societies are largely driven by a relatively large informal sector composed of unregistered, low-scale, low-growth, and survivalist self-employment activities.

Yet, as proposed by Kuznets's hypothesis, the inequality–entrepreneurship association is likely to strengthen and self-employment is likely to become, on average, less survivalist as a society transitions to economic modernization. As an economy adopts more efficient technology of production, average wages tend to increase (Boix 2009; Nielsen 1994), exerting upward pressure on consumer demand and savings (Huw and Bernhardt 2000; Packard and Bylund 2017). Similarly, income inequality is likely to increase as the earning rates of more efficient economic actors (both individuals and firms) increase relative to their less-efficient counterparts.

Thus, increased consumer demand combined with increased savings is likely to create new opportunities for entrepreneurial activities while simultaneously exerting downward pressure on survivalist entrepreneurial activities. In addition, increased entrepreneurship (stimulated by increased consumer demand and savings) would tend to stimulate even further entrepreneurial activities through its spillover and network effects. Increased entrepreneurial activities tend to increase knowledge sharing and entrepreneurship efficiency, which in turn exerts upward pressure on the rate of entrepreneurial activities (Roy Chowdhury 2013). However, an increased entrepreneurship rate can also be expected to increase income inequality further insofar as average returns to entrepreneurship remain above overall earnings from wage-and-salary employment. In this respect, income inequality is likely to signal prospects for high entrepreneurship returns, which would further incentivize entrepreneurial activities, while increases in overall earnings would gradually pull people from survivalist self-employment activities. Therefore, the inequality–entrepreneurship relationship can be expected to strengthen as development increases and peak at intermediate levels of development while the entrepreneurial activities themselves become less subsistence driven.

However, through structural transformations similar to those that Kuznets proposed, the relationship between inequality and entrepreneurship can be anticipated to level off eventually as further economic modernization augments the opportunity cost of undertaking entrepreneurial activities. As firms continue to adopt more efficient technology of production, increasing economy of scale, firm sizes, labor demand, and wages, the opportunity cost of forgoing wage-and-salary employment for self-employment would likely increase (Humphries 2018; Wennberg et al. 2010). People would tend to abandon less-efficient and subsistence entrepreneurial activities for wage-and-salary employment, which would exert downward pressure on overall entrepreneurial activities. In other words, as improved economic modernization increases workers' and organizations' efficiency and wages and widen income dispersion, the overall entrepreneurship rate is likely to level off beyond intermediate levels of development. Similarly, the overall entry rate into survivalist entrepreneurial activities is likely to further decrease at advanced levels of development.

As a result, as a society transitions from intermediate to advanced development, highly efficient technology of production (Powell and Snellman 2004) and consumer demand would tend to become particularly crucial for entrepreneurial development and success (Matsuyama 2002; Roy Chowdhury 2013). As a result, high human capital endowment and a strong middle class—able to sustain consumer demand—would become particularly important for entrepreneurial motivation and success in advanced economies. Cross-national research on the link between human capital and economic growth lends support to this argument by showing that secondary education has a stronger impact on economic growth in less developed and developing countries, whereas postsecondary education generates this stronger effect on growth in advanced economies (Keller 2008:27, 30). Moreover, the economies of advanced societies tend to be characterized by mass consumption (Jorgenson 2003; Matsuyama 2002), which can be attributed to the relatively high average earnings in these economies. Together, the importance of human capital and consumer demand for creating market opportunities problematizes, for advanced economies, the supply-side assertion that inequality is positively associated with entrepreneurship (Jones and Kim 2018; Packard and Bylund 2017).

More specifically, this claim may be problematic for advanced economies because research has shown inequality to be negatively associated with human capital development (van de Werfhorst and Salverda 2012), the size of the middle class, social mobility (Corak 2013), and many other entrepreneurship-enhancing factors, such as social trust and health outcomes (van de Werfhorst and Salverda 2012). Furthermore, many of the factors associated with increases in income inequality in advanced economies are related to entrepreneurial entry and intention. For instance, research has linked technological change, globalization, the rise of the low-wage

service sector, and the shrinking of the middle class to income inequality upswings (Kwon 2016a, 2016b; Piketty 2014; Sakamoto and Kim 2014) and changes in the rates and nature of self-employment (McManus 2000; Moulton and Scott 2016) observed in advanced economies. These findings are unsurprising because many of the structural forces affecting economic distribution tend to shape the entrepreneurship process and vary by levels of development (Lippmann et al. 2005). Therefore, it is not unreasonable to presume that the income inequality upswings observed in many advanced economies might be associated with the extent to which individuals are engaged in entrepreneurial activities.

Based on the above argument, I formulate the following hypotheses about the relationship between income inequality and entrepreneurship, and the extent to which development alters that relationship.

**Hypotheses 1 (H1):** Income inequality is, overall, positively associated with an individual's likelihood of undertaking entrepreneurial activities.

**Hypotheses 2 (H2):** The inequality–entrepreneurship association is curvilinearly related to development. That is, it is relatively small at low levels of development, strengthens as development increases from low to intermediate levels, and weakens with further development.

**Hypotheses 3 (H3):** Development is, overall, negatively associated with an individual's likelihood of entrepreneurial entry, including survivalist entrepreneurship.

## Data, Measurement, and Methods

### *Dependent Variables: Entrepreneurial Entry and Necessity Entrepreneurship*

The entrepreneurship data used for this analysis are from the GEM across 60 countries spanning 2001 to 2012. The GEM is a country-representative survey administered to adult populations (ages 18 or older; Reynolds et al. 2005) that surveys entrepreneurs from both the formal and informal sectors. The GEM was designed to measure the state and evolution of entrepreneurship and organization founding across the world. The data are collected via face-to-face interviews by survey teams from the country where the survey is conducted. For this analysis, I restrict the sample to the working-age population from 18 to 65 years old, totaling 176,424 individuals (see Table 1).

The GEM measures entrepreneurial entry by asking participants whether they were starting a new business (including any self-employment or selling goods or services to others) at the time of the interview. Possible answers to this question were coded “1” for “yes” and “0” for “no.” As shown in Table 1, 11 percent of the sample (20,176 individuals) reported that they were starting a business at the time of the interview. Those who reported that they were starting a new business were asked about their motivation for undertaking their entrepreneurial activities. Of this sub-sample (i.e., 20,176 individuals), those who said that they were starting their businesses because of a lack of jobs or better options for earning an income were classified as necessity or survivalist entrepreneurs (i.e., 27 percent of 20,176 individuals; Table 1) and were coded “1”; others were coded “0.” In this respect, the dependent variables represent individuals and not new ventures. Given that the theoretical argument of this paper is about the importance of individual- and country-level factors for entrepreneurship, this conceptualization of entrepreneurship is appropriate for evaluating the above hypotheses.

As shown in Figure 1, both overall entrepreneurial entry and necessity entrepreneurship vary significantly among the 60 countries, with, on average, higher entrepreneurial entry and necessity entrepreneurship in less developed and developing countries than in more developed countries. This is consistent with the theoretical argument advanced in this paper. For instance, in Brazil, Jordan, Morocco, Indonesia, Colombia, the Philippines, Venezuela, and Zambia, average

**Table 1.** Mean, Standard Deviation, and Range of the Key Variables Used in This Analysis.

Variables	N	M	SD	Minimum	Maximum
Individual-level variables					
Entrepreneurial entry	176,424	0.11	0.32	0	1
Necessity-entrepreneurial entry	20,176	0.27	0.44	0	1
Higher education	176,424	0.34	0.47	0	1
Upper income tier	176,424	0.30	0.46	0	1
Female	176,424	0.51	0.50	0	1
Age	176,424	39	13	18	65
Preference for uniform living standard	176,424	2.28	0.93	1	3
Starting a business is a good career	176,424	2.37	0.90	1	3
Successful business person has high status	176,424	2.40	0.89	1	3
Large media coverage for new businesses	176,424	2.22	0.96	1	3
Country-level variables					
Gini coefficient ( $\times 100$ )	60	38.89	8.49	22.89	62.20
Real GDP per capita (US dollar)	60	22,538	13,413	1,270	62,469
Log real GDP per capita	60	9.81	0.77	7.15	11.04
Preference for uniform living standard	60	2.28	0.26	1.42	2.91
Starting a business is a good career	60	2.37	0.27	1.62	2.89
Unemployment rate	60	8.31	4.85	0.58	25
Rule of law, corruption, political institutions index	60	0.61	0.18	0.22	1

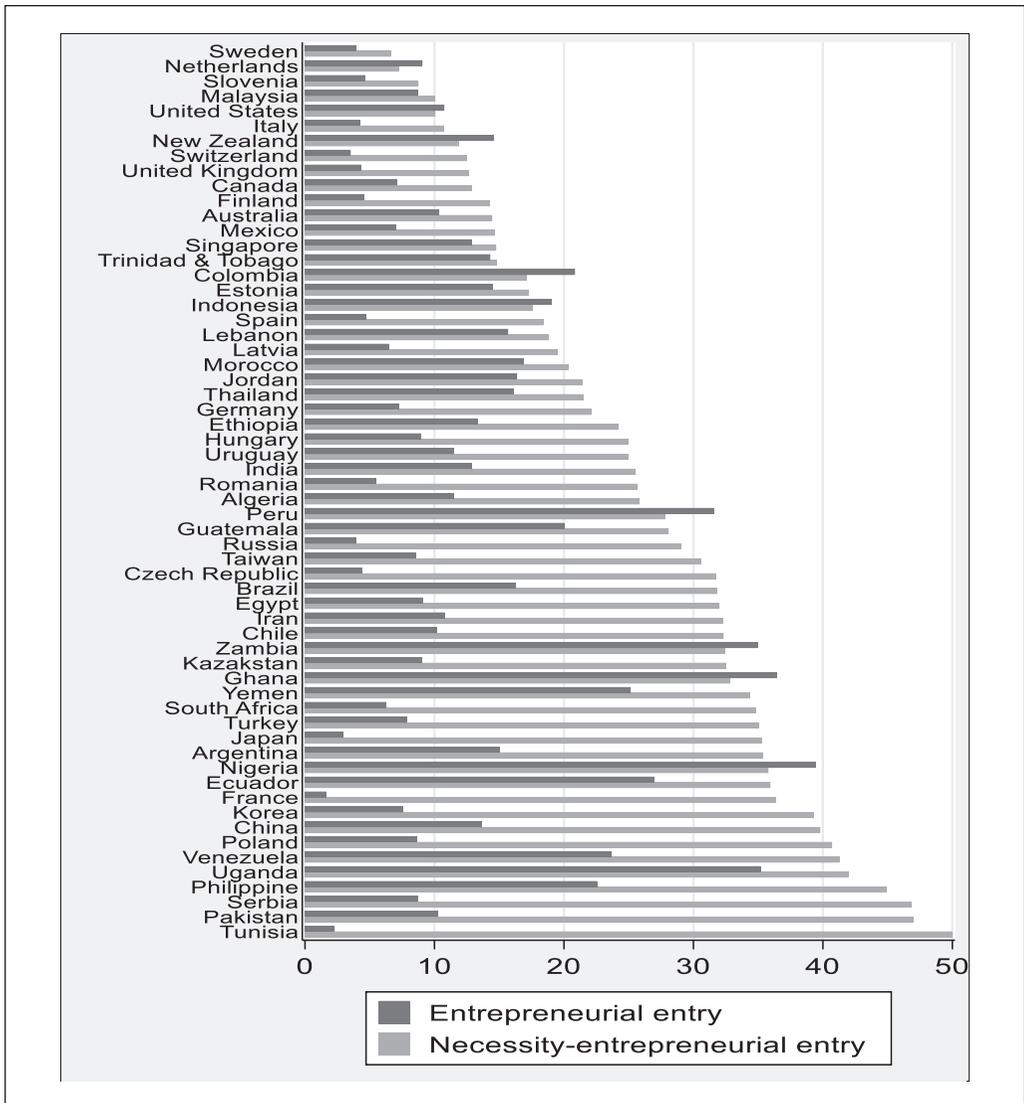
Note. GDP = gross domestic product.

entrepreneurial activity is between 16 and 35 percent and necessity entrepreneurship is between 18 and 42 percent. In contrast, the average entrepreneurship rate is between 1.5 and 10.5 percent in France, Japan, Spain, Canada, the Netherlands, Australia, and the United States, whereas necessity entrepreneurship in those countries is between 7 and 36 percent. However, it should be noted that not all more developed countries in the sample have a lower average entrepreneurship rate than their less developed and developing counterparts. For example, the average entrepreneurship rate is between 10 and 11 percent in Australia and the United States, whereas it is between 6 and 9 percent in South Africa, Mexico, Kazakhstan, and Egypt.

### *Independent Variables: Income Inequality and Economic Development*

Using the GEM as the base data set, I merged income inequality and economic development data with the entrepreneurship data where country-year inequality and development data matched the GEM data. *Income inequality* is measured by the Gini coefficient, which is expressed as a percentage ranging from 0 to 100. The closer a country's Gini coefficient is to zero, the less economically unequal the country; the closer the Gini coefficient is to 100, the more unequal the country. Income inequality indicators were drawn from the SWIID (Solt 2016). The SWIID builds on two other commonly used cross-national income inequality data sets: (1) the Luxembourg Income Study (LIS) and (2) the World Income Inequality Data (WIID), produced by the World Institute for Development Economics Research of the United Nations University (UNU-WIDER).<sup>2</sup>

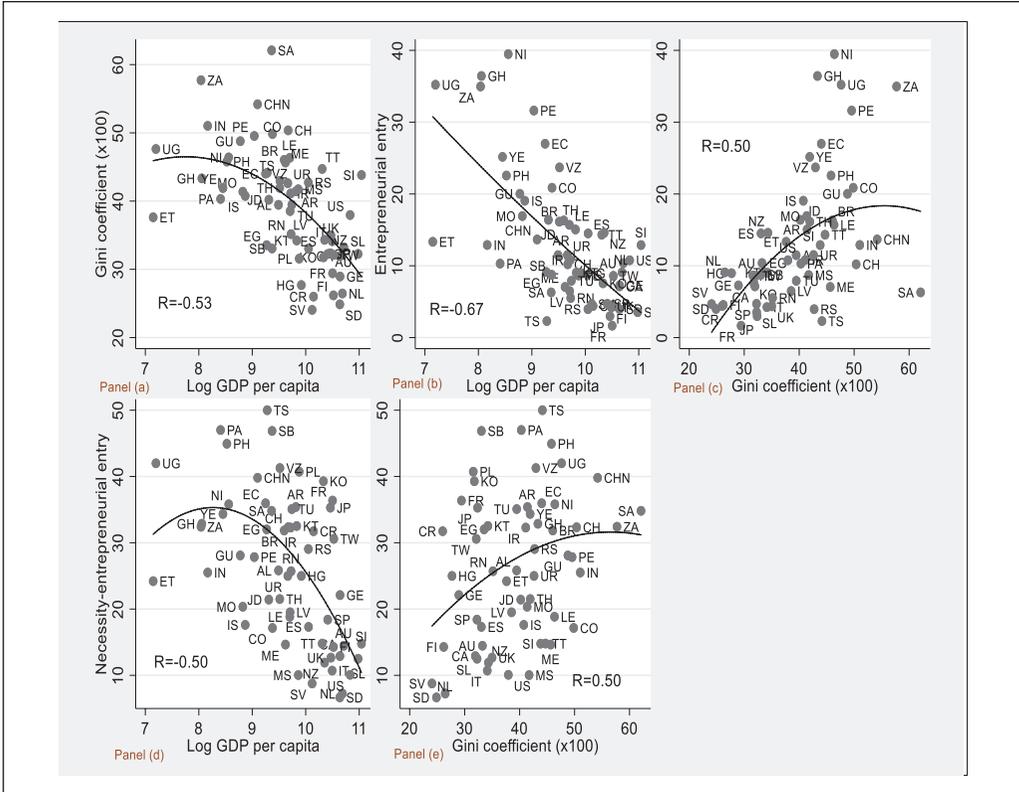
Average income inequality across the 60 countries is about 39, with 8.50 standard deviation, indicating that income inequality varies significantly across these countries (Table 1). Figure 2, Panel (a) shows that income inequality is, on average, higher in less developed and developing countries than in more developed countries. For example, the average Gini coefficient is between



**Figure 1.** Cross-country patterns in entrepreneurship entry and necessity-entrepreneurial entry rates. *Note.* *Entrepreneurial entry* is the proportion of the sample who reported that they were starting a new business (including any self-employment or selling goods or services to others) at the time of the interview. *Necessity-entrepreneurship* is the proportion of those who were starting a new business, and who said they undertook their activities because of lack of a job or better option to earn an income.

24 and 38 in Sweden, Finland, Germany, France, the United Kingdom, and the United States, whereas it is between 40 and 63 in Jordan, Argentina, Brazil, Nigeria, India, and South Africa.

*Economic development* is measured by real GDP per capita in US dollars (i.e., real GDP/population size), which was drawn from the Penn World Tables (Feenstra et al. 2015). Table 1 shows that the average real GDP per capita across the 60 countries in the sample is about \$22,538. The lowest value is about \$1,270 and the highest level is \$62,469, with \$13,413 standard deviation, meaning that real GDP per capita varies significantly across the 60 countries. Furthermore, Figure 2, Panel (a) shows that the Gini coefficient is negatively associated with real GDP per capita, indicated by a moderately strong correlation coefficient,  $R = -0.53$ .



**Figure 2.** Correlation between country-level entrepreneurial entry rates, income inequality, and development.

Note. Algeria = AL, Argentina = AR, Australia = AU, Brazil = BR, Canada = CA, Chile = CH, China = CHN, Colombia = CO, Czech Republic = CR, Ecuador = EC, Egypt = EG, Estonia = ES, Ethiopia = ET, Finland = FI, France = FR, Germany = GE, Ghana = GH, Guatemala = GU, Hungary = HG, India = IN, Indonesia = IS, Iran = IR, Italy = IT, Japan = JP, Jordan = JD, Kazakhstan = KT, Korea = KO, Latvia = LV, Lebanon = LE, Malaysia = MS, Mexico = ME, Morocco = MO, Netherlands = NL, New Zealand = NZ, Nigeria = NI, Pakistan = PA, Peru = PE, Philippine = PH, Poland = PL, Puerto Rico = PR, Romania = RN, Russia = RS, Serbia = SB, Singapore = SI, Slovenia = SV, South Africa = SA, Spain = SP, Sweden = SD, Switzerland = SL, Taiwan = TW, Thailand = TH, Trinidad & Tobago = TT, Tunisia = TS, Turkey = TU, Uganda = UG, United Kingdom = UK, United States = US, Uruguay = UR, Venezuela = VZ, Yemen = YE, Zambia = ZA.

### *Control Variables: Unemployment Rate, Egalitarian Attitudes, Entrepreneurship Culture, Rule of Law, Corruption, Political Institutions, Education, Income, Gender, and Age*

**Unemployment rate.** Natural economic cycles often cause fluctuations in the overall unemployment rate, which tends to push or pull people into or out of self-employment activities (Steinmetz and Wright 1989:983). To account for the extent to which entrepreneurial entry is a response to cyclical change in the unemployment rate, I control for the overall unemployment rate in a society. Unemployment rate is the percentage of the labor force that is without work but available for and seeking work. The unemployment data were drawn from the International Labour Organization (ILO).

**Egalitarian attitudes.** Research has argued that cultural attitudes about economic inequality tend to vary between entrepreneurs and nonentrepreneurs, which may influence differential likelihood

of undertaking entrepreneurial activities across individuals. For instance, Giedo Jansen (2016) contends in a study examining sources of variations in tolerance of inequalities that entrepreneurs tend to express greater tolerance for social inequalities than nonentrepreneurs. Thus, to account for the potential confounding effect of individual- and societal-level tolerance of economic inequality on entrepreneurship, I control for individual and country levels of economic egalitarian attitudes. The economic egalitarian belief is from the GEM and was measured by asking individuals whether they believed that the inhabitants of their countries prefer a uniform living standard. Individuals who responded “no” are coded “1,” those who were “neutral” are coded “2,” and those who answered “yes” are coded “3.” Societal-level economic egalitarian beliefs are measured by averaging the individual responses to the question (see Table 1 for description).

*Entrepreneurship culture.* Cultural variations in acceptance and promotion of entrepreneurship have been implicated in cross-national differences in rates of entrepreneurial activities (Thornton, Ribeiro-Soriano, and Urbano 2011). Indeed, Niels Bosma and Donna Kelley (2019:48–52) argue that individual perceptions about entrepreneurship and about how society evaluates the status of entrepreneurs tend to affect an individual’s decision to undertake entrepreneurial activities. To account for the potential confounding effect of cultural beliefs about entrepreneurship, I use three items from the GEM that capture attitudes toward entrepreneurship in a country. The GEM asks people whether they believe that in their society, (1) people growing a new successful business receive high social status, (2) starting a business is perceived as a good career choice, and (3) entrepreneurial development receives media coverage. Possible responses to these questions are “no” (coded 1), “neutral” (coded 2), and “yes” (coded 3). Societal-level cultural beliefs toward entrepreneurship were measured by averaging the individual responses to these questions (see Table 1 for description).<sup>3</sup>

*Rule of law, corruption, and political institutions.* The strength of the rule of law, political institutions, the quality of government bureaucracy, and the extent of property rights in a society have been linked to the degree of business development and growth (Kim and Li 2014). For instance, state laws that regulate contracts and their enforcement may facilitate links between producers and buyers that might not have happened otherwise. Property rights and financial laws may enable entrepreneurs to access capital for business development that may not have been available within their neighborhood and close network of family and friends.

In this respect, the degree of corruption in public administration may affect the ability of the state to facilitate economic exchange, thereby shaping market opportunity for entrepreneurial development. In contexts where institutional autonomy is weak, corruption is likely to be high, increasing the vulnerability of the legal system to the influence of power and resources. Thus, in societies characterized by weak rule of law, low bureaucratic quality, and high corruption, high-resource individuals may be able to influence the law and political process in their favor and artificially outperform low-resource individuals or groups. This is likely to cause economic inefficiency and constrain entrepreneurial development. To ensure the robustness of the inequality–entrepreneurship relationship and the moderating effect of economic development, my analysis accounts for the strength of a society’s rule of law, the quality of government institutions, and the extent of corruption. The data are drawn from the Quality of Government Institute and PRS Group (PRS Group 2018; Teorell et al. 2018).<sup>4</sup>

*Education, income, and gender.* To account for potential effect of an individual’s education and income on their entrepreneurial entry, I use the categorical individual education and household income variables provided by the GEM. Consistent with previous research (Xavier-Oliveira et al. 2015), I treat individual education and income levels as dummy variables to improve estimation of the main effects. Thus, educational endowment is measured as higher education or not, where

“1” indicates higher education and “0” means lower than higher education. The individual income dummy variable is captured as upper income tied or not, where “1” denotes upper income tier and “0” represents lower or middle-income tier. Furthermore, gender is measured as a dummy variable, where “1” denotes female and “0” stands for male (see Table 1), and age is ranged from 18 to 65.

## Methods

The key argument of this paper is that a society’s level of development may condition the extent to which economic inequality influences individuals’ likelihood of undertaking entrepreneurial activities in society. In addition, the data used in this study depict a hierarchical structure, where individual entrepreneurial activities are nested into countries. Given my own theoretical argument and the hierarchical structure of the data, this analysis uses multilevel logistic regressions, which permit simultaneous estimations of macro- and micro-level effects on the likelihood that people would undertake entrepreneurial activities. The theoretical argument is modeled in the following equations:

$$\text{Entrepreneurial entry}_{ij} = \beta_{0j} + \beta_1 (\text{Gini}) + \beta_2 X + \beta_3 Z + \varepsilon_{ijc} \quad (1)$$

$$\text{Entrepreneurial entry}_{ij} = \beta_{0j} + \beta_1 (\text{Gini}) + \beta_2 X + \beta_3 Z + \beta_4 (\text{GDP}) + \varepsilon_{ij} \quad (2)$$

Equation 1 is the base model testing cross-country variation in individual entrepreneurial entry ( $\beta_{0j}$ ) and the effect of societal-level economic inequality, controlling for both individual factors (represented by vector  $X$ ) and country-level factors (represented by vector  $Z$ ). Equation 2 accounts for the effect of development (GDP per capita). In both equations,  $i$  denotes individual-level effects and  $j$  represents county-level effects. It is assumed that the distribution  $\varepsilon_{ij}$  is random normal and has a mean of 0 and a variance  $\sigma^2$ .

To test the potential moderating effect of economic development on the impact of inequality on entrepreneurial entry, I explore the effect of the interaction between economic inequality and economic development on the intercept ( $\beta_{0j}$ ) from Equations 1 and 2. Equation 3 models the interaction between real development (GDP per capita) and the Gini coefficient. Equation 4 models the interaction between GDP per capita squared (GDP squared) and the Gini coefficient (Gini):

$$\beta_{0j} = \gamma_{00} + \gamma_{01} (\text{Gini}) + \gamma_{02} (\text{GDP}) + \gamma_{03} (\text{GDP} * \text{Gini}) + \mu_{0j} \quad (3)$$

$$\begin{aligned} \beta_{0j} = & \gamma_{00} + \gamma_{01} (\text{Gini}) + \gamma_{02} (\text{GDP}) + \gamma_{03} (\text{GDP squared}) + \gamma_{04} (\text{GDP} * \text{Gini}) \\ & + \gamma_{05} (\text{GDP squared} * \text{Gini}) + \mu_{0j} \end{aligned} \quad (4)$$

In Equations 3 and 4,  $j$  indicates the country-level effect.  $\beta_{0j}$  is the intercept of the base model (Equation 1) and measures an individual’s entrepreneurial entry, adjusting for individual characteristics, whereas  $\mu_{0j}$  represents country-level errors.

## Results

### *Modeling the Effect of Income Inequality and Development on Entrepreneurial Entry and Necessity Entrepreneurship*

Models 1, 2, 5, and 6 estimate the effect of income inequality and development on the log-odds of entrepreneurial entry and necessity-motivated entrepreneurship, controlling for the other

factors described in Table 1. Models 1 and 5 show that the coefficient for the Gini coefficient is positive and significant, indicating that income inequality increases both entrepreneurial entry (Model 1,  $b = 0.0314$ ,  $p < .001$ ) and survivalist entrepreneurship (Model 5,  $b = 0.0398$ ,  $p < .001$ ). In addition, the country standard deviations (Model 1,  $b = 0.530$ ,  $p < .01$ ; Model 5,  $b = 0.240$ ,  $p < .001$ ), representing the random intercepts in Models 1 and 5, indicate that the extent of entrepreneurial entry and survivalist entrepreneurship varies significantly across the 60 countries studied in this paper. These results are unsurprising as previous research and the descriptive results in Figure 1 show that entrepreneurial entry and survivalist entrepreneurship vary significantly across societies (Lippmann et al. 2005; Xavier-Oliveira et al. 2015). For instance, Bosma and Kelley (2019), using recent GEM data, found the entrepreneurship rate to be about 5 percent in Japan, compared with 10 percent in Taiwan and China and about 15 percent in Turkey and the United States.

Furthermore, Models 2 and 6 evaluate the effect of development on entrepreneurial entry and necessity entrepreneurship. The coefficient for log real GDP per capita is negative and significant (Model 2,  $b = -0.736$ ,  $p < .001$ ; Model 6,  $b = -0.199$ ,  $p < .05$ ), indicating that as development increases, people are less likely to undertake entrepreneurial activities, including survivalist entrepreneurship.<sup>5</sup> Thus, these results support my first and third hypotheses that income inequality is positively associated with entrepreneurship (H1), while development is negatively associated with entrepreneurship (H3). These results are, overall, consistent with the supply-side argument, which suggests that inequality is positively associated with entrepreneurship (Atems and Shand 2018; Huw and Bernhardt 2000; Jones and Kim 2018; Packard and Bylund 2017; Tables 2 and 3).

Models 3, 4, and 7 test my second hypothesis, that the inequality–entrepreneurship association is curvilinearly associated with development. To this end, I estimate two separate interaction terms: (1) Gini coefficient times real GDP per capita and (2) Gini coefficient times real GDP per capita squared. Models 3 and 7 estimate the interaction term between real GDP per capita and the Gini coefficient on the log-odds of entrepreneurial entry and necessity entrepreneurship, respectively. Models 3 and 7 do not account for the potential nonlinear relationship between development and the inequality–entrepreneurship association suggested in H2. Nonetheless, Model 3 shows that the coefficient for the interaction term between real GDP per capita and the Gini coefficient is negative and significant ( $b = -0.152$ ,  $p < .001$ ), suggesting that income inequality decreases an individual’s likelihood of entrepreneurial entry at high levels of development. Thus, while the demand-side argument suggests that inequality is adversely associated with entrepreneurship (Gutiérrez-Romero and Méndez-Errico 2017; Roy Chowdhury 2013), these results indicate that this adverse relationship is likely to occur at high levels of development. Furthermore, Model 7 shows that the coefficient for the interaction term between real GDP per capita and the Gini coefficient is nonsignificant, indicating that development does not have a statistically significant effect on the extent of the relationship between inequality and necessity entrepreneurship.

A key assumption made in this paper is that the relationship between the inequality–entrepreneurship association and development is likely to be nonlinear, implying that the relationship should be different at different levels of development. To evaluate this argument, Model 4 estimates the interaction term between real GDP per capita squared and the Gini coefficient on the log-odds of entrepreneurial entry. The coefficient for the interaction term between real GDP per capita squared and the Gini coefficient is positive and significant ( $b = 0.061$ ,  $p < .001$ ), suggesting a nonmonotonic relationship between development and the inequality–entrepreneurship association. Figure 3 provides a clearer representation of this nonlinear relationship by showing that the effect of income inequality on entrepreneurship is relatively small at low GDP levels, rises as GDP increases, and then weakens with further increase in GDP. Figure 4 further illustrates this nonlinear association by showing that at a log GDP as low as 7, the overall probability

**Table 2.** Mixed-Effects Regression Estimates of the Effect of Income Inequality and Moderating Effect of Development on the Log-odds of Entrepreneurial Entry.

	GDP × Gini coefficient			
	(1)	(2)	(3)	(4)
Intercept	-44.66*** (8.911)	-92.69*** (12.44)	-149.6*** (13.50)	-131.6*** (14.61)
Gini coefficient (×100)	0.0314*** (0.00731)	0.0181* (0.00822)	-0.0133 (0.00938)	-0.00167 (0.00998)
Log real GDP per capita		-0.736*** (0.130)	6.024*** (0.559)	6.280*** (0.662)
Log real GDP per capita × Gini coefficient (×100)			-0.152*** (0.0123)	-0.137*** (0.0160)
Log real GDP per capita squared				-0.173 (0.516)
Log real GDP per capita squared × Gini coefficient (×100)				0.0610*** (0.0137)
Individual-level controls				
Female	-0.399*** (0.0159)	-0.399*** (0.0159)	-0.397*** (0.0159)	-0.398*** (0.0159)
Higher education	0.174*** (0.0185)	0.174*** (0.0185)	0.178*** (0.0186)	0.179*** (0.0186)
Upper income tier	0.205*** (0.0177)	0.205*** (0.0178)	0.217*** (0.0178)	0.214*** (0.0178)
Age (in years)	0.112*** (0.00431)	0.112*** (0.00431)	0.112*** (0.00432)	0.112*** (0.00432)
Age squared	-0.00157*** (0.000055)	-0.00157*** (0.000055)	-0.00157*** (0.000055)	-0.00157*** (0.000055)
Preference for uniform living standard	0.00393 (0.00888)	0.00401 (0.00888)	0.00421 (0.00888)	0.00414 (0.00888)
Starting a business is considered as a good career	0.0571*** (0.0100)	0.0571*** (0.0100)	0.0572*** (0.0100)	0.0570*** (0.0100)
Successful business person has high status	0.00851 (0.00983)	0.00847 (0.00983)	0.0110 (0.00984)	0.0115 (0.00984)
Large media coverage for new businesses	0.0741*** (0.00923)	0.0738*** (0.00923)	0.0732*** (0.00923)	0.0736*** (0.00923)
Country-level controls				
All inhabitants prefer uniform living standard	0.155 (0.0882)	0.0425 (0.0895)	-0.203* (0.0926)	-0.243* (0.0984)
Starting a business is considered as a good career	-0.380** (0.116)	-0.395*** (0.117)	-0.0236 (0.121)	0.00458 (0.125)
Unemployment rate	0.0171*** (0.00452)	0.0111* (0.00478)	0.0384*** (0.00547)	0.0410*** (0.00584)
Rule of law, corruption, political institution index	-3.119*** (0.436)	-2.183*** (0.504)	-4.236*** (0.520)	-5.204*** (0.588)
Year of survey	0.0209*** (0.00440)	0.0449*** (0.00619)	0.0737*** (0.00670)	0.0647*** (0.00722)
Between-country intercept standard deviation	0.530** (0.109)	0.623 (0.172)	1.062 (0.229)	1.120 (0.246)
Number of individuals	176,424	176,424	176,424	176,424
Number of countries	60	60	60	60
Log likelihood	-55717	-55695	-55605	-55596
Chi-squared	2302	2285	2448	2467

Note. Log real GDP per capita is mean-centered to avoid multicollinearity. GDP = gross domestic product. Standard errors in parentheses.

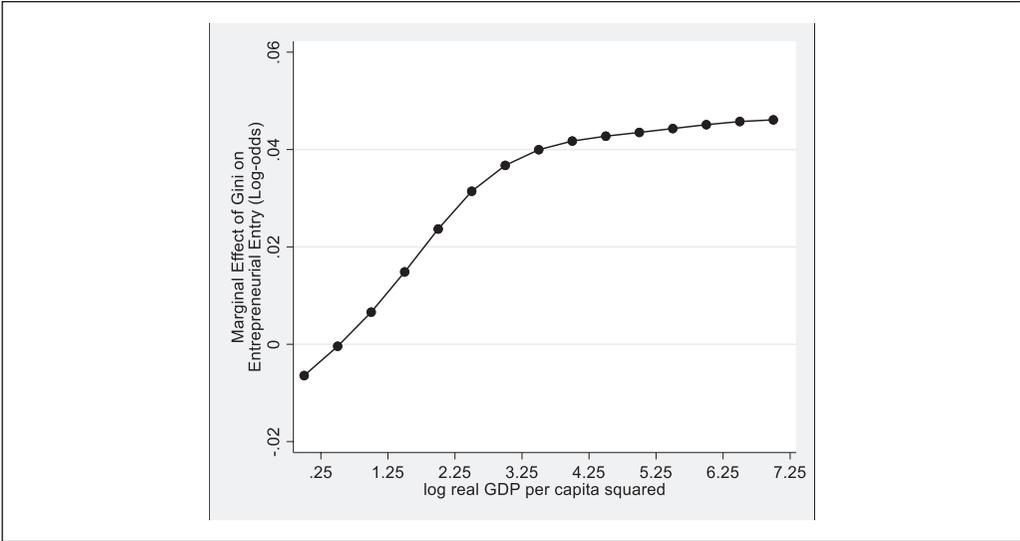
\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < 0.001$ .

**Table 3.** Mixed-Effects Regression Estimates of the Effect of Income Inequality and Moderating Effect of Development on the Log-odds of Necessity-entrepreneurial Entry.

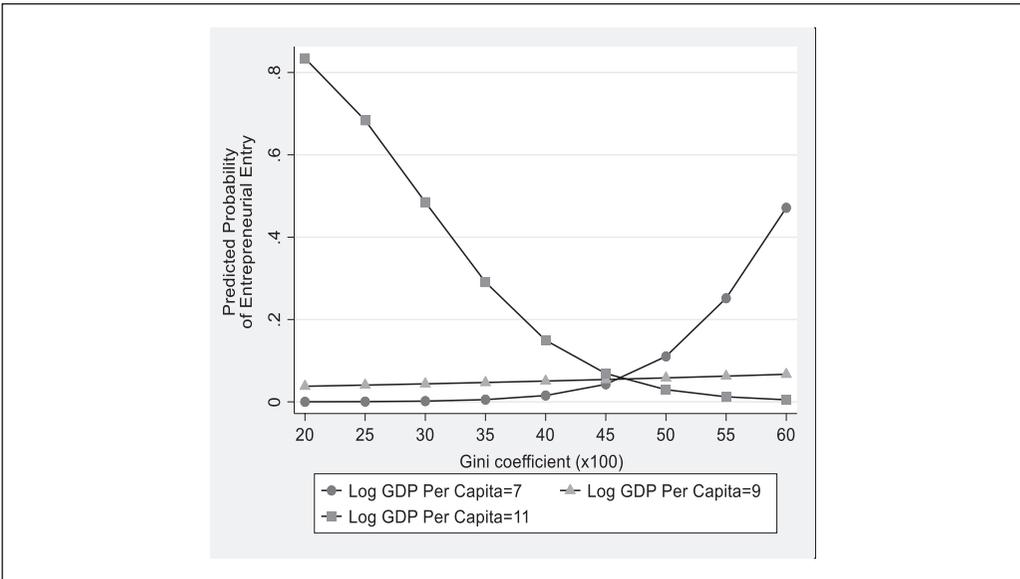
	(5)	(6)	GDP × Gini coefficient (7)
Intercept	18.65 (18.12)	4.714 (19.51)	5.313 (20.09)
Gini coefficient (× 100)	0.0398*** (0.00857)	0.0106 (0.00950)	0.0111 (0.0101)
Log real GDP per capita		-0.199* (0.0935)	-0.253 (0.508)
Log real GDP per capita × Gini coefficient (× 100)			0.00146 (0.0114)
Individual-level controls			
Female	0.257*** (0.0343)	0.257*** (0.0343)	0.257*** (0.0343)
Higher education	-0.629*** (0.0423)	-0.626*** (0.0424)	-0.626*** (0.0424)
Upper income tier	-0.582*** (0.0392)	-0.582*** (0.0392)	-0.582*** (0.0392)
Age	0.0111 (0.00940)	0.0112 (0.00940)	0.0112 (0.00940)
Age squared	-0.00000944 (0.000119)	-0.0000100 (0.000119)	-0.00000985 (0.000119)
Preference for uniform living standard	0.0281 (0.0189)	0.0284 (0.0189)	0.0283 (0.0189)
Starting a business is considered as a good career	-0.00376 (0.0217)	-0.00367 (0.0217)	-0.00367 (0.0217)
Successful business person has high status	-0.0191 (0.0210)	-0.0196 (0.0210)	-0.0197 (0.0210)
Large media coverage for new businesses	-0.0391 (0.0200)	-0.0396* (0.0200)	-0.0396* (0.0200)
Country-level controls			
Preference for uniform living standard	0.539*** (0.162)	0.534*** (0.161)	0.535*** (0.161)
Starting a business is considered as a good career	-0.126 (0.210)	-0.183 (0.211)	-0.186 (0.212)
Unemployment rate	0.0485*** (0.00831)	0.0482*** (0.00822)	0.0480*** (0.00836)
Rule of law, corruption, political institutions index	-1.075* (0.453)	-0.691 (0.490)	-0.665 (0.532)
Year of survey	-0.0105 (0.00903)	-0.00353 (0.00972)	-0.00384 (0.0100)
Between-country intercept standard deviation	0.240*** (0.0532)	0.222*** (0.0501)	0.222*** (0.0501)
Number of individuals	20,176	20,176	20,176
Number of countries	60	60	60
Log likelihood	-10878	-10876	-10876
Chi-squared	763	767	767

Note. Log real GDP per capita is mean-centered to avoid multicollinearity. GDP = gross domestic product. Standard errors in parentheses.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



**Figure 3.** The effect of Gini coefficient on entrepreneurial entry by development levels (Model 4, Table 2). Note. Effects are in log-odds to be consistent with the regression results. GDP = gross domestic product.



**Figure 4.** The effect of Gini coefficient on entrepreneurial entry by development levels (Model 3, Table 2, Log GDP per capita: Minimum = 7, Maximum = 11). Note. GDP = gross domestic product.

of entrepreneurial entry increases as economic inequality increases. But for a log GDP as high as 11, the overall probability of entrepreneurial entry decreases as economic inequality increases. These results support the second hypothesis that the inequality–entrepreneurship relationship is curvilinearly associated with development.

## Discussion and Conclusion

Income inequality upswings observed in many countries in recent decades have raised concerns among some scholars about the potential consequences of inequality for entrepreneurship (Lippmann et al. 2005; Perry-Rivers 2016; Riaz 2015; Xavier-Oliveira et al. 2015). Some have contended that inequality increases entrepreneurial activities (Packard and Bylund 2017), while others have claimed that inequality undermines entrepreneurship development (Riaz 2015; Xavier-Oliveira et al. 2015). There is an apparent research gap concerning the understanding of potential conditions under which income inequality may be either positively or negatively associated with entrepreneurship. Drawing on three unique data sets—GEM, SWIID, and Penn World Tables—I examined the extent to which development may alter the nature of the relationship between inequality and entrepreneurship. The results show that the inequality–entrepreneurship association is small at low levels of development but strengthens as development increases from low to intermediate levels. Thereafter, the inequality–entrepreneurship relationship weakens as development increases from intermediate to advanced levels.

These findings may have several implications for future research on entrepreneurship and policy initiatives aiming at mitigating adverse effects of inequality on social welfare. First, the findings suggest that when examining potential consequences of inequality for entrepreneurship, scholars should account for a society's position in the global stratification system. More specifically, similar to findings that income inequality varies by a country's level of development (Clark 2019; Nielsen 1994), the results of this analysis suggest that the effect of inequality on entrepreneurship can also vary by levels of development. The finding that development is also associated with a low level of entrepreneurial activities and survivalist entrepreneurship is partly due to the fact that economic efficiency tends to increase with economic modernization, increasing firm sizes and labor demand. Increased firm sizes and labor demand in turn exert downward pressure on overall self-employment activities. In the same vein, through its effect on economic productivity, increased economic modernization tends to increase overall wages, thereby increasing the living standard, all of which would decrease the extent of survivalist entrepreneurial activities in a society.

This conclusion echoes previous arguments demonstrating that entrepreneurship dynamics operate differently across societies, and that economic modernization constitutes a key factor in shaping the locus of entrepreneurship and the evolution of economic distribution across countries (Lippmann et al. 2005; Walder and Nguyen 2008). For example, Andrew G. Walder and Giang Hoang Nguyen (2008) found that during the early years of economic modernization in China and Vietnam, changes in income distribution were driven by small-scale family enterprises in Vietnam, whereas large-scale government-sponsored enterprises accounted for changes in income inequality in China. These findings are consistent with research showing that the informal sector, dominated by low-scale, low-growth, and subsistence self-employment activities, is significantly larger in less developed compared to developed economies (Bruton et al. 2012).

Second, there have been few empirical studies analyzing the relationship between inequality and entrepreneurship. These studies tend to focus on the extent to which inequality promotes (Packard and Bylund 2017) or hinders entrepreneurship (Perry-Rivers 2016; Xavier-Oliveira et al. 2015), overlooking the potential dynamic dimension of the relationship between inequality and entrepreneurship. The findings of this study suggest that to fully understand the multifaceted ways in which inequality relates to entrepreneurship, scholars should also consider the possibility that inequality may be associated with entrepreneurship differently under varying structural conditions. The results of this study advance the scholarly discussion concerning the link between inequality and entrepreneurship by showing that development shapes the nature of the relationship between inequality and entrepreneurship.

Third, the curvilinear relationship between the inequality–entrepreneurship association and development suggests that the locus of entrepreneurship may be different across varying levels of development, causing inequality to affect the extent and nature of entrepreneurial activities differently at different levels of development. The findings that the positive association between inequality and entrepreneurship weakens at high levels of development, whereas development has no significant effect on the extent to which inequality shapes survivalist entrepreneurship, further support this conclusion. These findings are consistent with sociological research showing large increases in precarious self-employment (Glavin, Filipovic, and van der Maas 2019; Moulton and Scott 2016; Vosko and Zukewich 2006) and high-income inequality upswings in many advanced economies in recent decades (Auguste 2018).

Fourth, the results of this study may also have implications for policy initiatives aiming at mitigating adverse consequences of inequality for social welfare and promoting entrepreneurship development. Specifically, the curvilinear relationship between development and the inequality–entrepreneurship association indicates that inequality may be less harmful for entrepreneurial activities in less developed and developing economies than in advanced economies. In other words, concerns about adverse consequences of rising inequality for entrepreneurial activities may be a more serious issue for advanced economies than for less developed and developing economies. Cross-national data on entrepreneurship and inequality support this conclusion by showing that entrepreneurship rates are significantly higher in less developed and emerging economies (where inequality is relatively high) compared to advanced economies (where inequality is relatively low; Lippmann et al. 2005). Higher entrepreneurship rates in less developed countries can be partly attributed to the high unemployment rates in those countries. People in less developed countries would tend to enter self-employment at a higher rate than those in more developed countries merely as an alternative to unemployment.

In conclusion, while this analysis shows that inequality can both enhance and deter entrepreneurship depending on a society's development stage, more research is required regarding the extent to which inequality may influence a new venture's survival. Given that resource access constitutes a key determining factor of organizational survival (Stinchcombe 1965; Yang and Aldrich 2017), and given the negative association between inequality and social mobility (Corak 2013), inequality can be expected to matter for venture failure rate. In addition, considering the link between the evolution of income inequality and development (Kwon 2016b; Milanovic 2016:50–53; Nielsen 1994), it is not unreasonable to presume that development would be consequential in terms of inequality influencing business failure rate. Thus, building on this study's findings, future research may further improve our understanding of the entrepreneurial process by examining the extent to which inequality influences the failure rate of entrepreneurial activities in a society, and the degree to which development may moderate this effect. Furthermore, research has established that individual personal characteristics, such as human and financial capital, shape people's potential for entrepreneurial entry and success (Aldrich and Yang 2014; Auguste 2020; Kim, Aldrich, and Keister 2006). Building on the finding of this paper, future research may improve our understanding of the conditions under which individual qualities may promote entrepreneurial development and success. For instance, research might examine how human and financial capital influence the survival chances of an individual's entrepreneurial activities under high economic inequality and the extent to which this effect varies by level of development.

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### Notes

1. Gross domestic product (GDP): GDP is the most widely used measure of economic development in the sociological research tradition. GDP is commonly used as an indicator of economic development because research has consistently found it to be strongly associated with all of the major indicators of a society’s level of economic prosperity and modernization, such as the spread of education, availability of healthcare, and the extent of mortality and fertility rate.
2. Economic inequality: Luxembourg Income Study (LIS) provides the most reliable income inequality data because it harmonizes concepts and measurements of income across countries to create income inequality measures (Solt 2016). However, LIS income inequality data are available for a very limited number of countries and the data points are collected only every five years for some countries (Solt 2016). The UNU-WIDER database contains income inequality measures for a wider range of countries, but it incorporates income data from countries with different concepts and measures of income, thus reducing cross-country comparability. Based on the country information (household per capita income, household adult equivalent income, household without adjustment income, employee, and person) from years where the LIS and UN-WIDER data sets overlap, SWIID synchronizes LIS data with the UNU-WIDER data using Gini ratios from the LIS data and information on income concepts from the UNU-WIDER data. As a result, SWIID replicates the cross-country comparability of the LIS income inequality data and the large coverage of the UNU-WIDER income inequality data.
3. I only included one of the three country-level entrepreneurship beliefs variables because they are strongly correlated ( $R = 0.66, p < 0.001$ ). Including them in the same model would create redundancy of information, causing multicollinearity.

Pairwise Correlation between Individual-level and Country-level Cultural Variables.

	1	2	3	4	5	6	7
<b>Individual-level</b>							
Preference for uniform living standard	1						
Starting a business is a good career	2	0.158***					
Successful business person has high status	3	0.122***	0.237***				
Large media coverage for new businesses	4	0.107***	0.196***	0.212***			
<b>Country-level</b>							
Preference for uniform living standard	5	0.282***	0.129***	0.105***	0.073***		
Starting a business is a good career	6	0.122***	0.299***	0.158***	0.167***	0.432***	
Successful business person has high status	7	0.118***	0.188***	0.251***	0.172***	0.418***	0.658***
Large media coverage for new businesses	8	0.070***	0.170***	0.147***	0.293***	0.250***	0.661***

4. Rule of law, political institutions, and property rights: Rule of law, political institutions, and corruption are represented by an index that captures the extent of corruption in the political system, the strength of law and order, and the quality of government bureaucracy (PRS Group 2018; Teorell et al. 2018).
5. GDP is measured in log to ensure reliability of the estimate of the effect of development on the inequality–entrepreneurship association. In other words, GDP is measured in log because the importance of GDP for the relationship between inequality and entrepreneurship can vary depending on where a country starts from in the development process. Log GDP ensures the nonlinearity of the relationship between inequality and entrepreneurship while preserving the linearity of the model.

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