Institutions, Entrepreneurship, and Economic Development

Christopher J. Boudreaux
Department of Economics
College of Business
Florida Atlantic University
777 Glades Road, KH 145
Boca Raton, FL 33431 USA
cboudreaux@fau.edu

Abstract: Does entrepreneurship always lead to economic development? Using an institutional approach, we examine entrepreneurship's contribution towards economic development for low, middle, and high-income countries. Using Global Entrepreneurship Monitor data for a panel of 99 countries from 2002 to 2018, we uncover several important findings. We find that entrepreneurship encourages economic development but not in low-income countries. We also find that the type of entrepreneurship matters: opportunity-motivated entrepreneurship encourages economic development in high- and middle-income countries, while necessity-motivated entrepreneurship discourages economic development especially in low- and middle-income countries. Lastly, we find that a country's institutional environment has a stronger effect on economic development in middle income countries than in high-income or low-income countries. These findings have important policy implications. Namely, our evidence counters policy proposals that contend entrepreneurship will encourage economic development in low-income countries. Our evidence suggests these policy proposals are unlikely to generate the results desired.

Keywords: Entrepreneurship, Institutions, Economic Development, Global Entrepreneurship Monitor
JEL Classifications: O00, L26, M13

1. Introduction

Entrepreneurship is considered valuable because of its ability to generate economic growth and development (Acs, 2006; Acs et al., 2018; Acs & Szerb, 2007; Audretsch et al., 2006; Baumol, 1986; Baumol & Strom, 2007; Bosma et al., 2018; Braunerhjelm et al., 2010; Schumpeter, 1934; Wennekers & Thurik, 1999). Endogenous growth theory (Lucas, 1988; Romer, 1986, 1990), for instance, posits that economic development depends on knowledge accumulation and its diffusion through both incumbents and entrepreneurial activities (Braunerhjelm et al., 2010). Investments in human capital and R&D create knowledge for incumbents but also create knowledge spillovers for new entrepreneurs (Acs et al., 2009; Audretsch & Keilbach, 2007; Braunerhjelm

et al, 2018) and allow imitative entrepreneurs to increase competition and product supply generating economic development (Minniti & Lévesque, 2010).

As a result, there is an abundance of claims like "entrepreneurship is the main vehicle of economic development" (Anokhin et al., 2008, p. 117), and "the engine of economic growth is the entrepreneur" (Holcombe, 1998, p. 60). Thus, it is often taken for granted that entrepreneurship encourages economic development. Despite these claims, however, there is evidence to suggest that the relationship between entrepreneurship and economic development does not hold for developing countries (Sautet, 2013) and might even be negative (Van Stel et al., 2005). This should be unsurprising since entrepreneurship activity results in widely varying outcomes across countries (Terjesen et al., 2016). The reality is, "We actually know very little about whether and how entrepreneurship either contributes or does not contribute to economic growth in developing countries" (Autio, 2008, p. 2).

The purpose of our study is to examine whether entrepreneurship universally encourages economic development. Acs, O'Gorman, Szerb, & Terjesen (2007) provide a precedent for this logic—entrepreneurship is unlikely to create a miracle when it is disconnected from the larger economy. Similarly, some evidence suggests that both too much and too little entrepreneurship detracts from long-run country growth rates (Carree et al., 2002). Finally, if entrepreneurship only facilitates economic development in high-income countries and has no effect in low-income countries, as suggested by some (Sautet, 2013; Van Stel et al., 2005), then scholars and policy makers might reconsider how entrepreneurship policy recommendations (Mason & Brown, 2013; Shane, 2009) fail to extend to other contexts. Using Global Entrepreneurship Monitor (GEM) data for a panel of 99 countries from 2002 to 2018, we examine entrepreneurship's contribution towards economic development, and examine whether entrepreneurship promotes economic development across low-, middle-, and high-income countries. We find entrepreneurship encourages economic development but not in low-income countries. Moreover, we find that the type of entrepreneurship matters. Specifically, opportunity entrepreneurship encourages economic development in middle- and high-income countries and necessity entrepreneurship discourages economic development in middle- and low-income countries.

Our findings contribute to the literature in several ways. First, our study updates the literature on entrepreneurship, institutions, and economic development (Z. Acs et al., 2008; Aparicio et al., 2016; Chowdhury

et al., 2019; Fuentelsaz et al., 2018; Naudé, 2009; Sautet, 2013; Urbano et al., 2019; Van Stel et al., 2005; Williams & Vorley, 2015). Our study most closely resembles Van Stel et al. (2005). In this study, Van Stel and colleagues find that total early-stage entrepreneurial activity (TEA) encourages economic development in high-income countries but discourages development in low-income countries. Their study, while undoubtedly important, does not distinguish between the *types* of entrepreneurship. Recent insights, for example, suggest that opportunity-motivated entrepreneurship (OME) is more likely to lead to economic development than necessity-motivated entrepreneurship (NME) (Hessels et al., 2008; Nikolaev et al., 2018). Moreover, much of entrepreneurship in developing countries is driven not by the pursuit of opportunity but instead by the ratio of necessity to opportunity entrepreneurship (Acs, 2006; Bosma, 2013). This suggests the reason entrepreneurship encourages economic development in high-income countries and discourages it in low-income countries is because of their different levels of OME and NME. Furthermore, Van Stel et al. (2005) examine the relationship between TEA and economic development using a cross-section of 36 countries. Thus, while a good start, it fails to account for differences between countries, it uses a small sample at only one point in time, and it does not include other relevant explanatory variables that might influence economic development. We therefore revisit their research questions. Our evidence supports their original findings and extends their analysis to the relative contributions of OME and NME. Our findings are also consistent with more recent theoretical contributions on the failure of entrepreneurship to encourage economic development in low-income countries (Sautet, 2013). Because we find that OME encourages economic development in high-and middle-income countries and NME discourages economic development in middle- and low-income countries, our findings suggest that policymakers might aim to reduce NME in low-income countries to increase economic development, which has been a previously overlooked aspect of the relationship.

Second, these findings have important policy implications. We find that entrepreneurship does not help spur economic development in low-income countries. Therefore, policies designed to encourage entrepreneurship (Acs et al., 2016; Mason & Brown, 2013; Shane, 2009) are unlikely to be successful in the developing world. Recent contributions, for example, argue that pro-market institutions encourage entrepreneurship, which in turn, contributes to economic development (Bjørnskov & Foss, 2016; Bosma et al., 2018; Bradley & Klein, 2016). Yet there has been little attention given to these relationships in the developing

world (Naudé, 2009; Sautet, 2013). We therefore believe that entrepreneurship policy in the developing world is largely overlooked and deserves additional attention, especially because entrepreneurship policies and activities are arguably more important for development in low-income countries where entrepreneurship alleviates poverty (Alvarez & Barney, 2014; Bruton et al., 2013; Court & Maxwell, 2005; McMullen, 2011; Sutter et al., 2019). Our study extends this literature by highlighting one potential conduit to increase economic development in low-income countries—by reducing the prevalence of necessity entrepreneurship.

Finally, we synthesize recent theoretical and empirical developments to explain the mechanisms behind entrepreneurship and economic development. We explore how institutional theorists use Coleman's (1990) bathtub model to explain the pathway from institutions to entrepreneurship to economic development (Bjørnskov & Foss, 2016; Bradley & Klein, 2016; Kim et al., 2016). We also explore the role that knowledge serves in the spillover theory of entrepreneurship of endogenous growth theory (Acs et al., 2009; Acs et al., 2012; Audretsch & Keilbach, 2007; Braunerhjelm et al., 2010), and we examine how this relates to the different effects of entrepreneurship on economic development across Porter's stages of competitiveness (Porter, 1990).

2. Theoretical development

There have been many contributions to the literature on entrepreneurship and economic development in recent years (see e.g., Urbano, Aparicio, & Audretsch, (2018) for a review). Although these contributions share much in common, we separate their contributions based on two different explanations for why entrepreneurship is a better predictor of development for some countries than others. This section reviews these strands of the literature to gain insights towards how entrepreneurship, institutions, and policy all affect economic development.

2.1. The nexus of institutions, entrepreneurship, and development

The first explanation focuses on the role that institutions serve in the relationship between entrepreneurship and development (Acs et al., 2008, 2017; Acs et al., 2018; Bjørnskov & Foss, 2013, 2016; Burns & Fuller, 2020; Enisan & Taiwo, 2024). This strand argues that pro-market institutions encourage productive entrepreneurship and discourage unproductive entrepreneurship (Baumol, 1990; Sobel, 2008). This

translates into greater economic development (Bosma et al., 2018). In a complete model, pro-market institutions lead to higher rates of entrepreneurial entry (Urbano & Alvarez, 2014) and higher rates of entrepreneurial entry lead to more economic development (Braunerhjelm et al., 2010). Pro-market institutions encourage the protection of property rights, which are important for capital accumulation and entrepreneurial investment (De Soto, 2000). They also reduce the adverse effects of regulation on entrepreneurial entry (Djankov et al., 2002; Ho & Wong, 2007; Klapper et al., 2006; Van Stel et al., 2007). Recent contributions modeled this mechanism using a multi-stage analysis where institutions affect entrepreneurship in the first stage, which subsequently affects economic development in the second stage (Bosma et al., 2018; Urbano et al., 2019). One conceptual way to model this relationship is through the Coleman bathtub model (Bjørnskov & Foss, 2016; Bradley & Klein, 2016; Kim et al., 2016), which is illustrated in Figure 1.

[Insert Figure 1]

In *Foundations of Social Theory,* Coleman (1990) uses the bathtub model to illustrate how macro-level structures affect micro-level behaviors and actions. Entrepreneurship scholars extended this model to examine how institutional conditions contribute to economic development through the operational channel of entrepreneurship (Bjørnskov & Foss, 2016; Bradley & Klein, 2016; Kim et al., 2016). First, institutions emerge at the macro-level. Institutions define the rules of the game (North, 1990)*,* can be regulative, normative, or cultural cognitive (Scott, 1995), and determine economic behavior. Institutional conditions, when applied to entrepreneurship, encourage productive entrepreneurship (Bjørnskov & Foss, 2008; Boudreaux, 2014; Boudreaux et al., 2018; Bowen & Clercq, 2008; McMullen et al., 2008; Nikolaev et al., 2018; Nyström, 2008) and discourage unproductive or destructive entrepreneurship (Baumol, 1990; Boudreaux et al., 2018; Sobel, 2008). GEM describes these pro-market institutions as the entrepreneurial framework conditions (EFCs) that encourage or hinder entrepreneurship activity. Institutional conditions determine the micro-level behavior of entrepreneurs by encouraging entrepreneurial traits and decision making (path B in Figure 1). These entrepreneurial traits and decisions such as opportunity recognition, entrepreneurial self-efficacy, a lack of fear of failure, and social capital, in turn, affect entrepreneurial entry and participation, which is a robust finding in the literature on the cognitive traits behind entrepreneurship (Boudreaux et al., 2022; Boudreaux & Nikolaev, 2018; De Clercq et al., 2013). This is illustrated by path C in Figure 1. Lastly, entrepreneurial entry and

participation affect economic development, which is reported at the macro-level and reported as path D in Figure 1. Thus, rather than positing that entrepreneurship affects economic development merely at the macro-level (i.e., path A in Figure 1) as earlier cross-country studies suggested (Bjørnskov & Foss, 2008; Nyström, 2008), the Coleman bathtub model provides the insight that micro-foundations help explain how institutions encourage economic development—through the channel of entrepreneurship (Bjørnskov & Foss, 2016; Bradley & Klein, 2016; Kim et al., 2016).

2.2. Levels of development and economic development

The second explanation argues that entrepreneurship encourages economic development, but it is the *entrepreneurship type* that matters (Ács & Varga, 2005). This explanation argues that the level of economic development determines the ability of entrepreneurship to contribute to economic development (Sautet, 2013; Van Stel et al., 2005). According to the World Economic Forum's Global Competitiveness Report (Schwab, 2008) and Acs et al. (2008)*,* competitiveness is defined according to three stages: (1) *factor-driven stage*, (2) *efficiency-driven stage,* and (3) *innovation-driven stage. Factor-driven* economies are dominated by the production of commodities and low value-added products. In this stage, high rates of non-agricultural self-employment are prevalent. Importantly, *factor-driven* economies do not create knowledge or innovation, which suggests limited effects on economic development (Acs et al., 2008). Countries begin in the *factor-driven stage* but transition into the *efficiency-driven stage.* In this second stage, countries focus predominately on efficiency in production and a highly educated workforce, which are necessary to adapt to technological developments and to exploit economies of scale (Acs et al., 2008). Importantly, during this second stage, there is a transition from self-employment to wage-employment because of the substitution between capital and labor. This substitution increases returns from working and lowers the returns from self-employment (Acs et al., 2008). Lastly, countries transition from the *efficiency-driven stage* to the *innovation-driven stage*. In this third stage, countries experience a decline in manufacturing and an increase in services, which provide more opportunities for entrepreneurship (Acs et al., 2008). In addition, improvements in information technology enhance the returns to entrepreneurship (Jorgenson, 2001).

Figures 2 and 3 illustrate these differences based on the levels of economic development. Figure 2 highlights a positive relationship between TEA and economic development for high-income countries. In contrast, Figure 3 highlights a negative relationship between TEA and economic development for low-income countries. More importantly, these scatterplots suggest entrepreneurship's effect on economic development depends on the level of economic development.

[Insert Figures 2 and 3]

Based on these insights, we expect that high-income countries, which mostly comprise the *innovation-driven stage* (Acs et al., 2008), possess higher rates of entrepreneurship (Bosma, 2013). This linkage and the finding that innovative start-up activity leads to more economic development than the typical entrepreneur (Mueller, 2007), suggest that entrepreneurship in high-income countries is more likely to encourage economic development (Sternberg & Wennekers, 2005). Low- and Middle-income countries, in contrast, are in the *efficiency-driven stage* or the *factor-driven stage* (Acs et al., 2008). These countries have higher rates of necessity-entrepreneurship, limiting the effects on economic development (Sternberg & Wennekers, 2005). Although some of these countries transitioned away from self-employment, they often experience a corresponding reduction in opportunity entrepreneurship (Acs et al., 2008), due to the substitution into wage-employment (Aquilina et al., 2006). Thus, we also expect the effects of opportunity entrepreneurship to be more limited in low- and middle-income countries. Based on this literature review, we derive the following hypotheses:

H1. *Entrepreneurship is positively associated with economic development, especially in (a) high-income countries and for (b) opportunity-motivated entrepreneurship.*

H2. *Entrepreneurship is negatively associated with economic development, especially in (a) low-income and middle-income countries and for (b) necessity-motivated entrepreneurship.*

3. Data and Analysis

3.1. Data

We explore how entrepreneurship and institutions affect economic development using data from Global Entrepreneurship Monitor (GEM) for 99 countries between the years 2002 to 2018. This involves GEM's (Reynolds et al., 2005) national level Adult Population Survey (APS) to examine the characteristics, motivations,

and ambitions of individuals starting businesses and the social attitudes towards entrepreneurship (Douglas & Shepherd, 2002; Wiklund et al., 2003). We use the national level data because of our interest in economic development. That is, economic development is measured at the aggregate level, and we use the aggregate national level entrepreneurship data for comparison. We then combine these data with GDP data from the world Bank (GDP per capita PPP ($thousands)), and economic freedom from the Fraser Institute's Economic Freedom of the World Index.

[Insert Table 1]

Table 1 reports the descriptive statistics for the sample. The average level of GDP per capita is $27,300. On average, 8.06% are OME and 2.89% are NME. In addition, 39.83% know other entrepreneurs, 40.71% are actively looking for opportunities in the next six months (i.e., opportunity recognition), 49.49% believe they have the skills and knowledge required to start a business (i.e., entrepreneurial self-efficacy), and 37.94% respond that the fear of failure might prevent them from starting a business. On average, entrepreneurs have a high percentage of status, attention, and positive perceptions in society. Specifically, 64.07% of individuals respond that entrepreneurship is a desirable career choice, 69.51% state that there is a high status for entrepreneurs, and 61.04% respond there is media attention for entrepreneurs.

Table 1 also reports the summary statistics for the low-, middle-, and high-income subsamples. We observe a decline in OME when going from low-income (11.47%) to middle-income (7%) or high-income (6.44%) subsamples. We also observe a similar trend for NME when going from low-income (5.54%) to middle-income (2.32%), to high-income (1.11%) countries. Except for fear of failure, we observe a general decline in the other variables when going from low-income to high-income subsamples.

[Insert Table 2]

Table 2 reports the correlation matrix. Both OME and NME are negatively correlated with GDP per capita. One explanation for the negative correlation between OME and GDP is that low-income countries have high rates of NME and OME (Acs et al., 2004; Nikolaev et al., 2018). We find support for this because there is a positive correlation (r = 0.71) between OME and NME. We also observe a positive correlation between economic freedom and GDP per capita but a negative correlation between most other variables and GDP per capita. We note that the correlation matrix reflects differences both *between* and *within* countries rather than

changes *within* countries over time. Thus, we expect positive correlations between these variables and GDP per capita to emerge in our longitudinal analysis because it examines changes both within a country and over time.

3.2. Measures
3.2.1. Dependent Variable: Ln GDP

We measure economic development, our dependent variable, as the natural logarithm of gross domestic product per capita (GDP). This variable is provided by the World Bank database and is measured as real GDP (i.e., adjusted for inflation) and adjusted for international comparisons (i.e., purchasing power parity (PPP)). We gather these data for all available years for our data, which is from 2002 to 2018. We transformed this measure using the natural logarithm, which is consistent with the literature on economic development (Islam, 1995) including entrepreneurship (Bosma et al., 2018).

3.2.2. Entrepreneurship: Opportunity and Necessity

Following Boudreaux, Nikolaev, & Klein, (2019), we define entrepreneurship as an "attempt at a new business or new venture creation, such as self-employment, a new business organization, or the expansion of an existing business" (GEM, 2016). We gather entrepreneurship data from Global Entrepreneurship Monitor (GEM)'s Adult Population Survey (APS). The APS measures the level and nature of entrepreneurial activity around the world, and it is administered by GEM national teams to survey a representative national sample of at least 2000 respondents from each country. GEM teams conduct these surveys at the micro-level (i.e., individual-level surveys), but because we are interested in the relationship between entrepreneurship and economic development, we use the national level measures of the APS data. These variables include opportunity-motivated entrepreneurship (OME), necessity-motivated entrepreneurship (NME), and a host of relevant control variables.

Both OME and NME come from total early-stage entrepreneurial activity (TEA), which is the percentage of the adult population (18-64 years old) that is either actively involved in starting a new venture or is the owner/manager of a business that is less than 42 months old (Reynolds et al., 2005). OME reports the percentage of individuals who are actively involved in TEA, and who become an entrepreneur in order to take advantage of a business opportunity. NME instead reports the percentage of individuals who are actively involved in TEA, and who become an entrepreneur due to "no better choices for work" (Reynolds et al., 2004,

p. 217). Because OME and NME have different effects on economic development for different levels of country development (Acs et al., 2008; Ács & Varga, 2005; Sautet, 2013; Van Stel et al., 2005), we include both measures of entrepreneurship in our regression models. Across countries, an average of 8.06% of individuals are OME and 2.89% of individuals are NME.

3.2.3. Economic Freedom

We use the Economic Freedom of the World (EFW) index published by the Fraser Institute (Gwartney et al., 2019). The EFW index has five components: (1) size of government (e.g., marginal tax rates, transfers and subsidies); (2) legal system and property rights (e.g., business cost of crime, judicial independence, impartial courts, integrity of the legal system,); (3) sound monetary policy (e.g., inflation, freedom to own foreign accounts); (4) international trade (e.g., trade barriers like tariffs and importing and exporting compliance costs); and (5) regulation (business, credit, and labor regulations). To receive a high EFW rating, a country must protect private property, protect the rule of law, provide a stable monetary environment, have low taxes and trade barriers, and rely on markets rather than government regulation to allocate goods and services (Gwartney et al., 2019). The EFW index is measured on a scale from 0 to 10 where 0 indicates low freedom and 10 indicates high freedom.

[Insert Table 2]

3.2.4. Controls

We also include several additional variables that either affect entrepreneurship or institutions. We include a measure that captures the extent of opportunity recognition within the country because opportunity recognition is considered an important antecedent of entrepreneurial behavior (Kirzner, 1973, 1985; Klein, 2008; Schultz, 1975; Shane, 2000). Likewise, risk and uncertainty are inherent to the entrepreneurial process (Knight, 1921; McMullen & Shepherd, 2006), but risk and uncertainty deter some individuals from ever becoming entrepreneurs due to a fear of failure. Because studies include fear of failure as a potential deterrent to entrepreneurship (Boudreaux et al., 2019; Goltz et al., 2015; Wennberg et al., 2013; Xavier-Oliveira et al., 2015), we include this variable as an additional control. We also include several additional measures that capture a society's perception of entrepreneurs—a variable that captures whether entrepreneurship is a desirable career choice, a variable that captures whether there is a high status for entrepreneurs, and a variable that captures

whether media attention is given to entrepreneurs. Recent studies using GEM data include these entrepreneurial perception measures for their potential to shape and influence entrepreneurship (Boudreaux et al., 2022; Hechavarría et al., 2017). Lastly, we include year and country dummies to control for geographical differences as well as differences over time (e.g., the great recession from 2007-2009). These country and year dummies also allow us to conduct a longitudinal analysis of the data, which changes the interpretation of our results to differences *within* countries over time rather than differences *across* countries, as is the case with cross-sectional data.

3.3. Model

We use OLS regressions to estimate the relationship between entrepreneurship and economic development:

$$Ln(GDP_{it}) = \beta_0 + \beta_1 OME_{it} + \beta_2 NME_{it} + \delta X_{it} + \lambda_t + \gamma_i + \varepsilon_{it} \qquad (1)$$

where $Ln(GDP_{it})$ is the natural logarithm of GDP per capita (PPP); OME_{it} is opportunity-motivated entrepreneurship; NME_{it} is necessity-motivated entrepreneurship; and X_{it} is a vector of control variables described above. λ_t and γ_i are year and country fixed effects, respectively; β_0 is the intercept and β_1, β_2, and δ are parameters that we will estimate; ε_{ijt} is the disturbance term. We use robust standard errors clustered at the country-level to mitigate heteroscedasticity concerns.

We begin our analysis by examining the full sample. We then split our sample into quartiles: low-income, middle-income/upper-income, and high-income countries. Because our dependent variable is the natural logarithm of GDP, our model is a log-linear model with coefficients reported as semi-elasticities. In addition, to ease interpretation, we report standardized coefficients in all regression models. The coefficients, therefore, reflect the percentage change in economic development corresponding to a one standard deviation change in the explanatory variable.

4. Results

In this section, we examine whether entrepreneurship's effect on economic development differs by the level of economic development. If our hypotheses are correct, then we should expect to find different results when separating our sample into low-, middle-, and high-income countries. That is, entrepreneurship has

heterogeneous effects on economic development and for different types of entrepreneurship (i.e., opportunity and necessity).

The results in column 1 of Table 3 suggest OME is positively associated (β=.029) with economic development and NME is negatively associated (β=-.040) with economic development. More specifically, a one standard deviation increase in OME corresponds to a 2.9% increase in GDP, and a one standard deviation increase in NME corresponds to a 4% decrease in GDP. These results suggests that the type of entrepreneurship matters. We also observe that pro-market institutions—as measured by economic freedom—are positively associated with economic development. On average, a one standard deviation increase in economic freedom corresponds to a 15.9% increase in GDP. Next, we examine the relationship between entrepreneurship and economic freedom for low-, middle-, and high-income countries.

Columns 2-4 of Table 3 report the results for three subcategories of economic development based on quartiles of countries' income distributions: (i) low income, (ii) middle, and (iii) high income.[1] A one standard deviation increase in NME is associated with 2.7% less economic development in low-income countries and 5.9% less economic development in middle-income countries. However, we find a one standard deviation increase in OME is associated with a 11.1% increase in economic development in middle-income countries and a 10.9% increase in economic development in high-income countries. In contrast, we observe no statistically significant effect of OME on economic development in low-income countries and no statistically significant effect of NME on economic development in high-income countries. We also observe that economic freedom is positively associated with economic development across all stages of development. Our findings therefore indicate that entrepreneurship's effect of economic development depends on both (a) the type of entrepreneurship and (b) development level.

[Insert Table 3]

5. **Discussion and Concluding Remarks**

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[1] Low income = quartile 1; middle income = quartiles 2 and 3; high income = quartile 4

Our study examined the relationship between entrepreneurship and economic development while hypothesizing that this relationship depends on the level of economic development. Specifically, we hypothesized that entrepreneurship encourages economic development in high-income countries and discourages economic development in low- and middle-income countries. We based this hypothesis upon a reading of the literature on entrepreneurship, economic development, and institutional theory. Theoretical insights such as those from institutional economics and development economics helped us to understand how entrepreneurship functions as an underlying mechanism towards economic development. In the Coleman bathtub model, for instance, pro-market institutions encourage entrepreneurial traits and characteristics, which in turn, contributes to higher rates of entrepreneurship. This has a positive effect on economic development. This linkage is based on the idea that pro-market institutions encourage productive entrepreneurship or inhibit unproductive entrepreneurship (Baumol, 1990; Sobel, 2008) and supports recent developments in the literature (Bosma, 2013; Bosma et al., 2018; Urbano et al., 2020).

Our study also has important policy implications. While entrepreneurship leads to economic development in some circumstances, we found that it has a limited effect on economic development in low-income countries. In fact, NME is associated with less economic development, especially in low- and middle-income countries. As a result, policy makers might look to reduce the reliance on NME in these countries. Based on our evidence, we would expect such policies to encourage higher rates of economic development. Of course, policies designed to reduce NME must consider many different features (e.g., why do these individuals have no better options than entrepreneurship and self-employment in the first place?). There is no universal answer but policy makers in the developing world might look into alternative policies that can discourage NME. Future studies could test the efficacy of such policies by incorporating natural experiments and other quasi-experimental methods into their research design.

Studies have suggested that both formal and informal institutions are important for entrepreneurship and the effect of one type of institution on entrepreneurship might critically depend on the existence of the other (Aparicio et al., 2021; Krasniqi & Desai, 2016; Williams & Vorley, 2015). Based on these insights, we speculate that both matter because a weak foundation of informal institutions might impede entrepreneurship due to barriers like corruption (Webb et al., 2009). Future research might consider the role of both types of institutions.

In sum, our study finds that entrepreneurship is important for economic development, but it has different effects depending on the level of economic development. In middle and high-income countries, OME encourages economic development. In low- and middle-income countries, however, NME discourages economic development. Therefore, the notion that entrepreneurship always encourages economic development should be considered only in the appropriate context.

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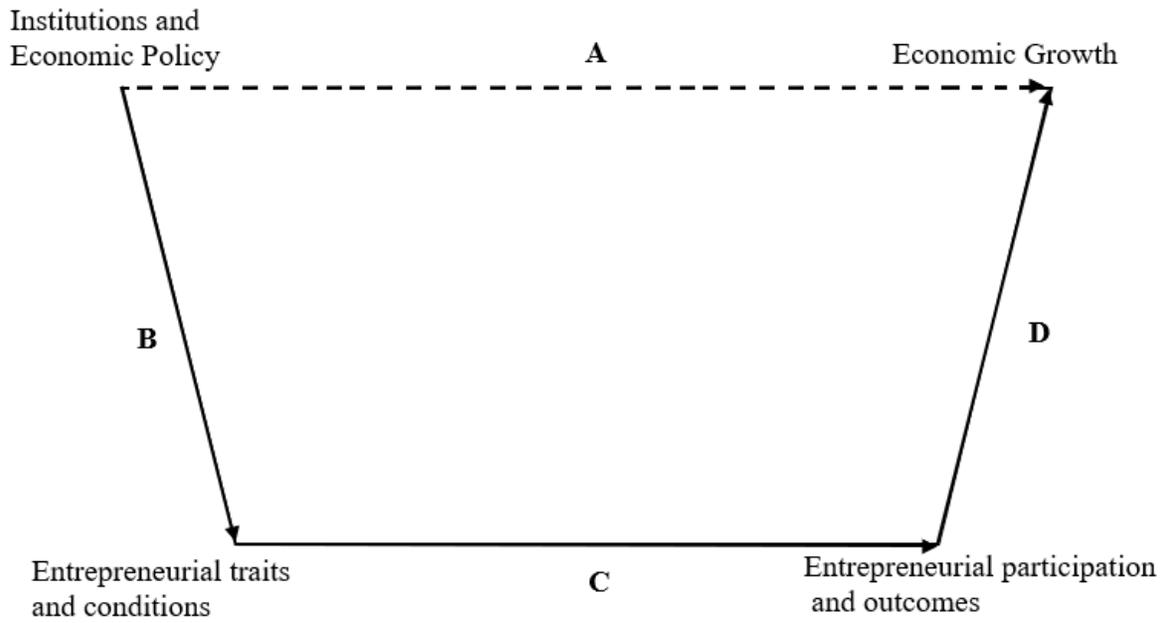
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Macro-level

Institutions and
Economic Policy   A   Economic Growth

B   D

Entrepreneurial traits   C   Entrepreneurial participation
and conditions   and outcomes

Micro-level

Figure 1. Coleman's Bathtub Model Explains How Entrepreneurship Affects Economic Growth
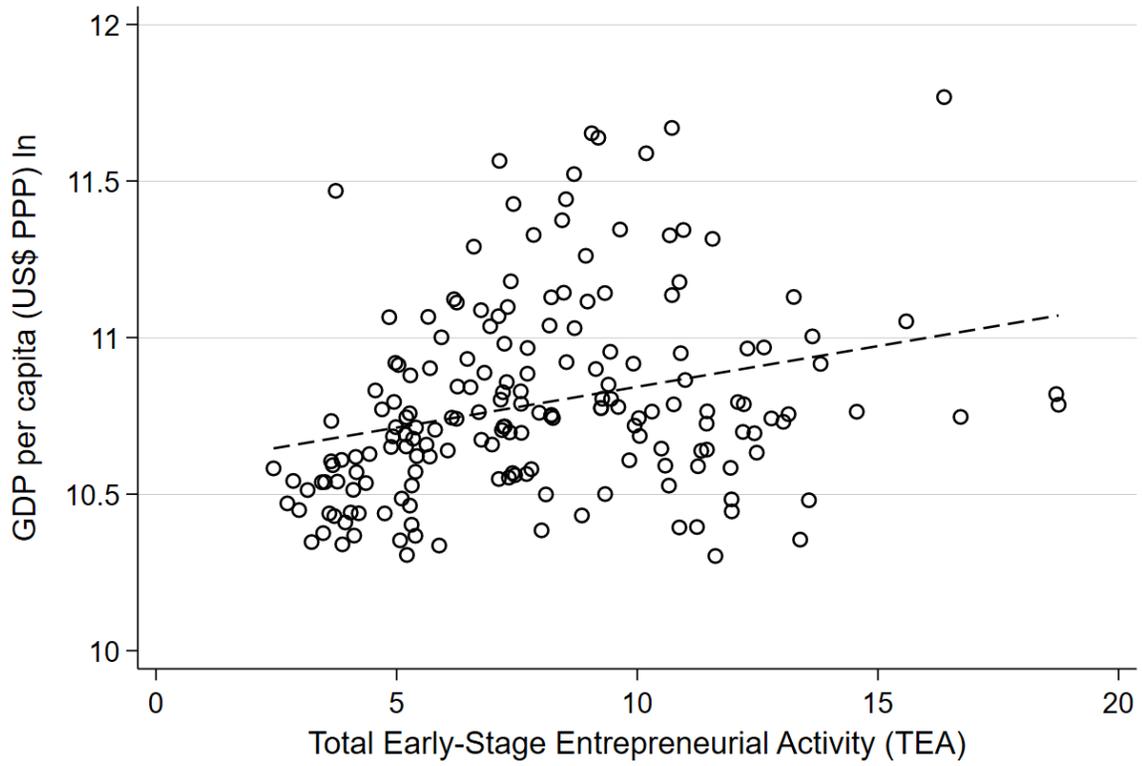
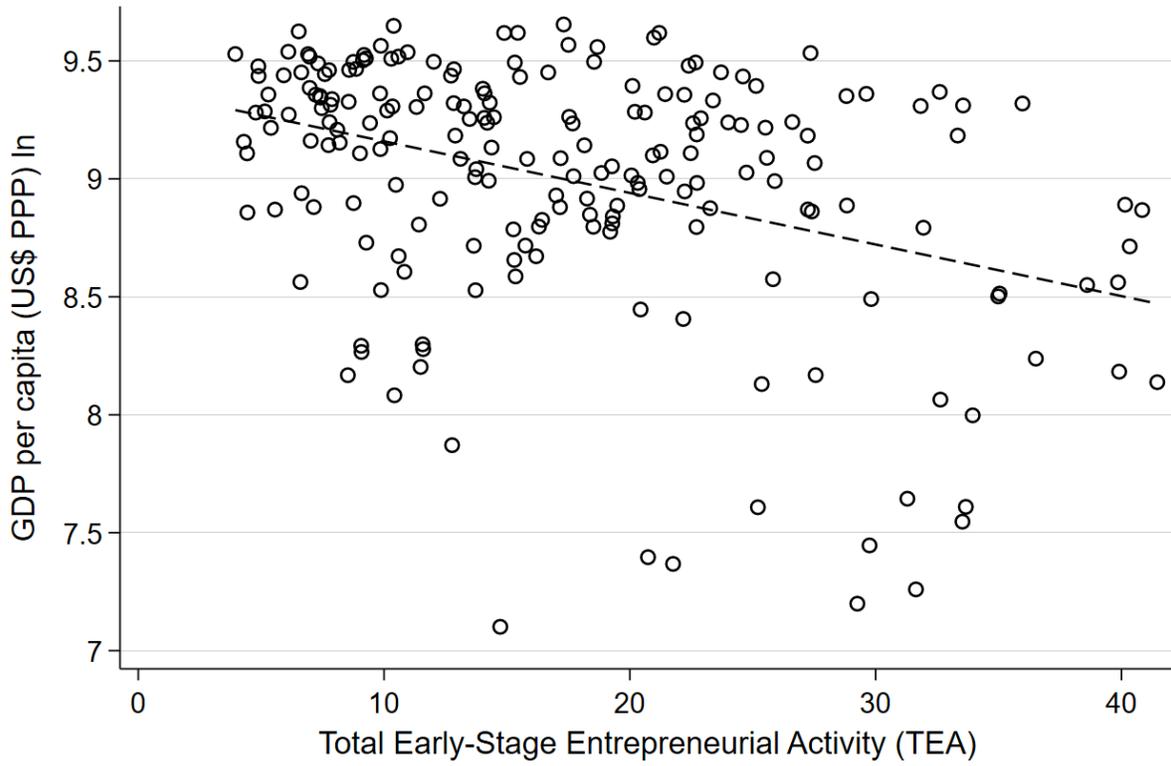**Figure 2.** Relationship between Entrepreneurship and Economic Development for High-Income Countries

Figure 3. Relationship between Entrepreneurship and Economic Development for Low-Income Countries

Table 1: Summary Statistics

Variable	Full Sample				Low Income				Middle Income				High Income			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
GDPpc (PPP) (thousands $)	27.3	18.7	1.2	129	9.02	3.5	1.2	15.6	25.7	8.6	10.2	47.6	51.1	18.5	29.8	129
Opportunity-motivated entrepreneurship	8.06	5.2	.81	31.62	11.47	6.72	2.3	31.62	7	4.26	.81	22.04	6.44	2.76	1.87	14.84
Necessity-motivated entrepreneur	2.89	2.7	.11	15.84	5.54	3.22	.93	15.84	2.32	1.8	.11	11.82	1.11	.7	.15	3.73
Economic Freedom	7.28	.83	3.72	9.1	6.66	.74	3.72	8.21	7.29	.75	3.78	8.57	7.97	.48	6.34	9.1
Know an entrepreneur (%)	39.83	11.82	11.72	88.1	46.71	13.92	11.72	85.1	37.56	9.23	13.97	63.08	36.77	10.96	16.62	88.1
Opportunity recognition (%)	40.71	16.25	2.85	85.54	49.42	14.64	13.42	85.54	34.49	14.58	2.85	69.11	43.7	15.93	13.22	81.56
Entrepreneurial self-efficacy (%)	49.49	14.79	8.65	87.93	59.85	15.13	23.63	87.93	46.55	13.86	8.65	82.76	43.95	9.79	18.87	83.42
Fear of failure (%)	37.94	9.61	11.82	72.35	34.01	7.81	11.82	63.05	40.31	10.44	13.15	72.35	37.49	8.06	17.08	58.61
Entrepreneurship is a desirable career (%)	64.07	13.28	22.81	95.62	74.73	10.05	39.33	95.62	60.83	12.47	22.81	88.03	58.8	11.35	34.87	86.77
High status for entrepreneurs (%)	69.51	10.47	31.47	100	74.17	9.73	46.65	100	66.75	10.79	31.47	89.55	69.95	8.58	46.26	92.26
Media attention for entrepreneurs (%)	61.04	27.7	19.22	717.7	71	47.43	26.39	717.72	55.41	13.2	19.22	88	61.44	12.61	25.5	84.57

Table 2: Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) GDPpc (PPP)	1										
(2) Opportunity-motivated entrepreneurship	-0.31*	1									
(3) Necessity-motivated entrepreneur	-0.54*	0.71*	1								
(4) Economic Freedom	0.55*	-0.22*	-0.45*	1							
(5) Know an entrepreneur (%)	-0.33*	0.45*	0.41*	-0.30*	1						
(6) Opportunity recognition (%)	-0.09*	0.61*	0.42*	-0.15*	0.53*	1					
(7) Entrepreneurial self-efficacy (%)	-0.40*	0.67*	0.63*	-0.32*	0.52*	0.61*	1				
(8) Fear of failure (%)	0.16*	-0.29*	-0.27*	0.10*	-0.24*	-0.34*	-0.34*	1			
(9) Entrepreneurship is a desirable career (%)	-0.43*	0.42*	0.50*	-0.37*	0.29*	0.41*	0.58*	-0.14*	1		
(10) High status for entrepreneurs (%)	-0.04	0.23*	0.23*	-0.15*	0.30*	0.40*	0.30*	-0.03	0.39*	1	
(11) Media attention for entrepreneurs (%)	-0.09*	0.24*	0.25*	-0.15*	0.27*	0.30*	0.17*	-0.12*	0.14*	0.20*	1

Notes. * $p < 0.05$

Table 3: Regression Results

Sample:	Full Sample	Low Income	Middle Income	High Income
Model:	(1)	(2)	(3)	(4)
Opportunity-motivated entrepreneurship (%)	0.029**	-0.001	0.111**	0.109***
	(0.002)	(0.002)	(0.003)	(0.004)
Necessity-motivated entrepreneurship (%)	-0.040**	-0.027	-0.059*	0.021
	(0.005)	(0.004)	(0.006)	(0.017)
Economic Freedom	0.159***	0.162**	0.299***	0.190**
	(0.041)	(0.052)	(0.046)	(0.052)
Know an entrepreneur (%)	-0.009	-0.026	0.038	-0.177***
	(0.001)	(0.002)	(0.001)	(0.001)
Opportunity recognition (%)	0.019	0.017	0.036	0.014
	(0.001)	(0.001)	(0.001)	(0.001)
Entrepreneurial self-efficacy (%)	-0.020	-0.019	-0.012	-0.050
	(0.001)	(0.002)	(0.001)	(0.002)
Fear of failure (%)	-0.035**	0.052	-0.086**	-0.128**
	(0.001)	(0.004)	(0.001)	(0.002)
Entrepreneurship is a desirable career choice (%)	0.003	-0.085**	0.073	-0.090
	(0.001)	(0.002)	(0.002)	(0.003)
High status for entrepreneurs (%)	-0.007	0.030	-0.117**	0.128
	(0.001)	(0.002)	(0.002)	(0.003)
Media attention for entrepreneurship (%)	0.005**	-0.000	0.025	0.079
	(0.000)	(0.000)	(0.001)	(0.001)
Observations	753	202	370	181
Number of Countries	99	38	41	20
R-squared	0.799	0.829	0.839	0.857

Note: * $p<0.10$; ** $p<0.05$; *** $p<0.01$ two tailed test. The dependent variable is GDP per capita (logged). Country and year fixed effects are included in all models. Robust standard errors reported in parentheses and clustered at the country level. Standardized coefficients reported.

APPENDIX

Table A1. Definitions of Measures

Variables	Measures
OME	Opportunity-motivated entrepreneurship (OME) is the percentage of all respondents (18-64) who are involved in total early-stage entrepreneurial activity (TEA) to take advantage of an opportunity.
NME	Necessity-motivated entrepreneurship (NME) is the percentage of all respondents (18-64) who are involved in total early-stage entrepreneurial activity (TEA) because there are no better opportunities.
Economic Freedom (EFW)	Economic freedom from the Fraser Institute (www.freetheworld.com). EFW is measured on a scale from the least free (0) to the most free (10).
Opportunity recognition	Percentage of all respondents (18-64) who think that in the next 6 months there will be good opportunities for starting a business in the area where they live.
Fear of failure	Percentage of all respondents (18-64) who said fear of failure would prevent them from starting a new business.
Entrepreneurial self-efficacy	Percentage of all respondents (18-64) who say they have the knowledge, skill, and experience required to start a new business.
Know other entrepreneurs	Percentage of all respondents (18-64) who know someone personally who started a business in the past 2 years.
Entrepreneurship is a desirable career choice	Percentage of all respondents (18-64) who believe that in their country, most people consider starting a new business a desirable career choice.
High status for entrepreneurs	Percentage of all respondents (18-64) who believe that in their country, those successful at starting a new business have a high level of status and respect.
Media attention for entrepreneurship	Percentage of all respondents (18-64) who believe that in their country, you will often see stories in the public media about successful new businesses.
Gross domestic product (GDP)	GDP per capita measured in inflation-adjusted US dollars (PPP international conversion). We transform this measure using the natural logarithm.