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# THE IMPACT OF PUBLIC POLICY AND INFRASTRUCTURE ON ENTREPRENEURSHIP: A PANEL DATA APPROACH

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## Abstract

Various economic models are considering the importance of entrepreneurship development in terms of both physical and human capital. The development of entrepreneurship varies across countries due to the divergence of entrepreneurial framework conditions (EFCs). EFCs determine how easy (or difficult) it is to start up a venture. The key objective of this paper is to observe the effect of EFCs, specifically public policy and infrastructure, on various entrepreneurship activities in Asia. This paper investigates the impact of EFCs (public policy and infrastructure development) on various entrepreneurial activities, including nascent entrepreneurship, new business ownership rate, total early-stage entrepreneurial activity, and established business ownership rate. Ten Asian countries were selected as a sample from 2014 to 2019. Correlation and regression analyses were employed to explore the extent to which EFCs influence different entrepreneurial activities in GEM-participating Asian countries. The overall findings have revealed that commercial and professional infrastructure promote entrepreneurial activities. Conversely, the decline in physical and services infrastructure is associated with a decrease in total early-stage entrepreneurial activity. Meanwhile, these factors have no significant impact on the remaining entrepreneurial activities. Taxes and bureaucracy exhibit a negatively significant relationship with all entrepreneurial activities. On the other hand, governmental support and policies show a positively significant relationship with the nascent entrepreneurship rate and established business ownership rate, while having an insignificant relationship with the other entrepreneurial activities.

This study contributes to the evolution of various policies for fostering entrepreneurship growth. It recommends that well-established infrastructure and favorable institutions are essential for nurturing entrepreneurship in developing countries in Asia.

**Keywords**: Public policy, Infrastructure, Entrepreneurship, Asia

## Introduction

Drucker (2014) defined entrepreneurship as follows: "An entrepreneur always searches for change, responds to it, and exploits it as an opportunity." Entrepreneurial activities are encouraged through improvement, diversity, and competition, which are closely connected with economic development (Wennekers, 2006; Lobo et al., 2023). Development is a vital political objective, and to elucidate the differences among countries (and regions) in the stages of economic activity, entrepreneurship is used (Casson & Wadeson, 2007). Primarily, entrepreneurial activity is at the core of a country's economic development (Sautet, 2005).

Entrepreneurship is crucial due to its impact on social and economic development. Economists have increasingly focused on the conceptual relationship between entrepreneurship and economic growth. As argued by Minniti (1999), entrepreneurs serve as catalysts for economic progression by generating innovative ideas and inspiring new markets. Thus, entrepreneurship is extensively associated with being a dynamic force behind economic development (Kreft & Sobel, 2005; Zhakupov et al., 2023).

The skills, characteristics, experience, and inspirations of individuals play an important role in new venture creation (Manning, Birley, & Norburn, 1989). However, in entrepreneurship literature, infrastructure and public policies arguably assume the most crucial roles. Public policy can be defined as "the relationship of a government unit to its environment" (Eyestone, 1971). It can also be defined as "whatever governments choose to do or not to do" (Dye, 2010), indicating that public policy encompasses both actions and inactions of governments on any given matter of public concern.

Meanwhile, Anderson (2011) defines public policy as "a purposive course of action followed by an actor or a set of actors in dealing with a problem or matters of concern." Thus, the comprehensive definition of public policy includes patterns of actions established and executed by public representatives to attain specific goals. The public policy community recognizes the significant requirement for innovation and entrepreneurship in the age of globalization (Audretsch & Link, 2012).

Moreover, Acs et al. (2016) found varying results regarding public policy and entrepreneurship. Most policies in the Western world do not effectively address market failures; instead, they lead to the creation of one-employee businesses with limited developmental aims and less focus on innovation. These policies end up wasting taxpayers' money and only inspire those who have already decided to become entrepreneurs.

Good institutions in a country improve entrepreneurial activities, because of their direct impact. Both formal and informal entrepreneurship have substantially influenced the quality of institutions (Autio & Fu, 2015). recently, public policy is moving from small and medium enterprises (SME) policy to entrepreneurship policy. It encourages entrepreneurship without

guiding responsiveness to quantitative objectives and particular firms. Both productive entrepreneurship and so-called high-impact entrepreneurship are influenced by the institutional context set by public policy (Henrekson, 2007). The same is supported by (Dubini, 1989; Papamichail et. al, 2023) and who explained that good governmental intervention plays an important role in new venture creation.

To establish a connection between the interplay of infrastructure, public policy, and entrepreneurship, developing countries in Asia must exert significant effort. Seizing this opportunity would empower the Asian bloc to maintain a strategic position and a solid foundation of robust infrastructure, effective public policy, and a conducive environment for business startup and operations. Consequently, in recent years, a significant area of policy research and debate has focused on unraveling the complexities of the infrastructure, public policy, and entrepreneurship nexus (Lambelet, 2023). This is particularly relevant for Asian countries, predominantly characterized as developing nations. The study explores the impact of infrastructure (commercial and professional infrastructure, physical and services infrastructure) and public policy (governmental support and policies, taxes, and bureaucracy) on entrepreneurship activities (nascent entrepreneurship rate, new business ownership rate, total early-stage entrepreneurial activity, established business ownership rate).

The objectives of the study are as follows:

1. To check how public policy encourages various entrepreneurship activities across Asian developing countries.
2. To determine how infrastructure promotes different entrepreneurship activities across Asian developing countries.
3. To explore which entrepreneurship stage is more responsive to public policy and infrastructure in Asian developing countries.

## Literature Review

Entrepreneurship plays a crucial role in the development of an economy. As explored by Khan & Khalique (2014) in Malaysia and Pakistan, Small and Medium Enterprises (SMEs) play a significant role in economic development. Although each country's government has taken important steps to boost the development of SMEs, their impact on domestic economies is comparatively less. This is primarily due to differences in the economic activities of each country. The level of entrepreneurial activity is lower in developing countries compared to developed ones. Developing countries often partially implement policies and face internal instability due to a lack of sufficient resources. Consequently, developing countries are less efficient in implementing actual activities (Schott & Jensen, 2008).

Van De Ven (1993) has explored that the development of entrepreneurship is not restricted to the "for-profit sector"; many entrepreneurs in the public and "not-for-profit sectors" are contributing vital roles. Different entrepreneurial activities across countries determine the level of economic development. Entrepreneurial framework conditions play an important role and help in enhancing entrepreneurial activities within a country. Entrepreneurial Framework Conditions (EFCs), identified by GEM improve or obstruct new venture creation in a particular country (Gomes et. al, 2023). Infrastructure and public policy are important dimensions of EFCs. Both have an enduring impact on different activities of entrepreneurship. Audretsch, Heger, & Veith (2015) explored that infrastructure boosts connectivity and creates links; which in turn expedite recognition of the opportunities. Collectively, cultural services, transportation, and infrastructure assist the formation of the new venture, facilitates business communications, and innovative technological industries in a country (Belitski & Desai, 2016). The growth of resource endowments of basic information, funding mechanisms, and capable workers, along with official governance arrangement that regulates the actions of industry members jointly made the favorable infrastructure for entrepreneurship (Van De Ven, 1993)**.** Infrastructure policies influence local startup activities and foster startup activities in the desired business (Audretsch et al., 2015; Fang et. al, 2023).

Previous studies have explored the effect of infrastructure on entrepreneurship in general, and startup activity in particular (such as, Aschauer, 1989; Morrison & Schwartz, 1992; Canning & Pedroni, 2008) empirically explored the link between infrastructure and economic growth. Infrastructure has many types. Not all types of infrastructure have the same impact on the entrepreneurial decision, certain types of infrastructure which facilitate connectivity and linkages among people are more conducive to startup activity. In general, startup activity is positively connected with infrastructure, but more conductively connected with certain types of infrastructure, such as broadband are to infrastructure than are public roads and railways. Certain infrastructure policies facilitate local startup activities and increased startup activities in various industries. Abetti (1992) is of the view that those societies, regions and countries who are designing to improve the infrastructure for entrepreneurship should prepare a comprehensive feasibility study to regulate whether all the key components for success are actually or potentially accessible or not? A complete strategic plan is also important along with established criteria for segmenting and pursuing the anticipated new venture. Favorable infrastructure is always a good facilitation to an entrepreneur. However, many forms of social isolation (geographic, social and information-based) is the main obstacle to entrepreneurial success, not only by avoiding access to physical

resources and marketplaces, but also about products and service's ideas and information (Uparna & Weber, 2016; Audretsch et. al, 2024).

Previous literature has explored that public policy positively impacts the type and level of entrepreneurship (Storey, 1994; Verheul, Wennekers, Audretsch, & Thurik, 2001; Henrekson & Stenkula, 2009). Meanwhile, Edoho (2016) is of the view that to foster productive entrepreneurial activities, public policy is essential. Public policy businesses profoundly affect new, small, and entrepreneurial businesses (Dennis Jr, 2011). On the other side of the picture, Holtz-Eakin, (2000) has explored that generally, public policy has "zero" impact on "firms" Because in the end, the impacts are transferred to people - labors, directors, investors, and proprietors. Moreover, various other researchers (for example, Saxenian, 1994; Audretsch et al., 2015; Woolley, 2014) have explored that the physical infrastructure and facilities affect entrepreneurship activities but, it lacks insight into commercial and professional infrastructure. The study contributes to the literature by demonstrating the impact of infrastructure [commercial & professional infrastructure (CPI) and physical & services infrastructure (PSI)] and public policy [governmental Support & policies (GSP) and taxes & bureaucracy (TB)] on different levels of entrepreneurial activities in ten countries of Asia.

## Hypothesis

The hypothesis of the study is as follow:

**$H_1$:** Public policy and infrastructure development have a positive impact on nascent entrepreneurship (NER).

**$H_2$:** Public policy and infrastructure development have a positive impact on the new business ownership rate (NBER).

**$H_3$:** Public policy and infrastructure development have a positive impact on the total early-stage entrepreneurial activity (TEA).

**$H_4$:** Public policy and infrastructure development have a positive impact on the established business ownership rate (EBO).

## Research Methodology

The study employed panel data (a combination of time series and cross-section) for empirical analysis with a sample of ten Asian countries (China, Malaysia, Turkey, India, Indonesia, Philippines, Pakistan, Thailand, Singapore, Iran) from 2014-2019. The data has been collected from the Global Entrepreneurship Monitor (GEM) that provides the data in the form of the National Expert Survey (NES) and Adult Population Survey (APS). NES contains the entrepreneurial framework conditions [public policy (governmental support and policies, taxes and bureaucracy) and infrastructure (commercial and professional

infrastructure, physical and services infrastructure)] and APS provides the various stages of entrepreneurial activities.

**Model Specification**

$$NER_{it} = \alpha + \beta_1 GSP_{it} + \beta_2 TB_{it} + \beta_3 CPI_{it} + \beta_4 PSI_{it} + \varepsilon_{it} \ldots (1)$$

$$NEBR_{it} = \alpha + \beta_1 GSP_{it} + \beta_2 TB_{it} + \beta_3 CPI_{it} + \beta_4 PSI_{it} + \varepsilon_{it} \ldots (2)$$

$$TEA_{it} = \alpha + \beta_1 GSP_{it} + \beta_2 TB_{it} + \beta_3 CPI_{it} + \beta_4 PSI_{it} + \varepsilon_{it} \ldots (3)$$

$$EBO_{it} = \alpha + \beta_1 GSP_{it} + \beta_2 TB_{it} + \beta_3 CPI_{it} + \beta_4 PSI_{it} + \varepsilon_{it} \ldots (4)$$

**Abbreviations used in the Model**

NER= Nascent Entrepreneurship Rate
NEBR=New Business Ownership Rate
TEA=Total early-stage Entrepreneurial Activity
EBO =Established Business Ownership Rate
GSP =Governmental support and policies
TB =Taxes and bureaucracy
CPI =Commercial and professional infrastructure
PSI=Physical and services infrastructure
e=error-term

## Results and Discussions

### a. Descriptive Statistics

**Table 2 Descriptive Statistics**

| | CPI | EBO | GSP | NBER | NER | PSI | TB | TEA |
|---|---|---|---|---|---|---|---|---|
| Mean | 3.22 | 10.82 | 2.99 | 6.88 | 5.88 | 4.18 | 2.71 | 12.50 |
| Median | 3.10 | 8.57 | 2.83 | 5.66 | 6.20 | 3.98 | 2.48 | 12.27 |
| Maximum | 5.63 | 33.06 | 5.78 | 20.41 | 12.00 | 7.17 | 5.18 | 25.52 |
| Minimum | 2.11 | 2.88 | 1.72 | 1.70 | 0.76 | 3.11 | 1.57 | 2.93 |
| Std. Dev. | 0.73 | 7.94 | 0.94 | 3.99 | 2.45 | 0.95 | 0.85 | 4.96 |
| Skewness | 1.70 | 1.45 | 1.37 | 1.27 | -0.08 | 1.84 | 1.17 | 0.40 |
| Kurtosis | 5.86 | 4.25 | 4.76 | 4.82 | 3.08 | 5.76 | 3.61 | 3.02 |

Source: Author's calculation

The description of data in terms of mean, median, standard deviation, skewness, and kurtosis reveals that for CPI the mean value is 3.22, minimum (2.11) and the maximum value is (5.63). the EBO shows the mean (10.82), minimum (2.88) and a maximum value (33.06) of TEA and the lowest mean value is 2.71 for TB. Similarly, for the median, the highest value is 12.27 for TEA and the lowermost value is 2.48 for TB. The findings of standard deviation explore that the values of EBO is widely varied from its mean (7.94), whereas TB shows less variation (0.85).

**Table 3 Correlation Analysis**

| | GSP | PSI | TB | CPI |
|---|---|---|---|---|
| GSP | 1.00 | | | |
| PSI | 0.76 | 1.00 | | |
| TB | 0.78 | 0.74 | 1.00 | |
| CPI | 0.60 | 0.59 | 0.46 | 1.00 |

Source: Author's calculations

Table (3) reveals that there is no issue of multicollinearity among the explanatory variables. The governmental support & policies, physical & services infrastructure, commercial & professional infrastructure and taxes & bureaucracy are not correlated with each other. The relationship between the governmental support & policies, and the Physical & services infrastructure is positive as its r-value is (.76). Similarly, the governmental support & policies, and Taxes & bureaucracy are not correlated as the value is (.78). The governmental support & policies and the commercial & professional infrastructure are also not correlated with each other (r-value is 0.60).

## b. Empirical Analysis for Panel Data

The study employed the four stages of entrepreneurship *i.e.* nascent entrepreneurship rate, new business ownership rate, total early-stage entrepreneurial activity, and established business ownership rate as dependent variables. Independent variables are public policy and infrastructure taken from the entrepreneurial framework conditions. The Hausman specification test has selected random effects for all models except model 2. The results are given in Table 4 below.

**Table 4 Regression Results of Public Policies, Infrastructure and Entrepreneurial activities**

| | Model 1 NER (Random effect) | | Model 2 NEBR (Fixed effect) | | Model 3 TEA (Random effect) | | Model 4 EBO (Random effect) | |
|---|---|---|---|---|---|---|---|---|
| | Coeff | Prob. | Coeff | Prob. | Coeff | Prob. | Coeff | Prob. |
| PSI | 0.162 | 0.818 | 0.377 | 0.894 | -2.71** | 0.09 | -3.68 | 0.22 |
| TB | 2.95*** | 0.009 | -5.34*** | 0.005 | -5.46*** | 0.004 | -5.55*** | 0 |
| CPI | 1.704** | 0.02 | 4.4** | 0.03 | 6.92** | 0.06 | 4.82** | 0.02 |
| GSP | 1.486** | 0.09 | -1.66 | 0.377 | 0.522 | 0.6 | 2.46** | 0.04 |
| C | 3.803 | 0.154 | 11.17*** | 0.003 | 15.83 | 0 | 18.73*** | 0.0006 |
| R-square | 0.207 | | 0.74 | | 0.316 | | 0.2 | |
| F-stat | 3.6 | | 6.55 | | 6.37 | | 3.43 | |

Source: Author's calculation

Significance level *p < 0.10, **p <0.05 and ***p < 0.01

The results of model 1 explored that the public policies both in form of the taxes and governmental support & policies have a positive significant impact on the nascent entrepreneurship rate. Whereas the infrastructure (commercial & professional) has a positive significant impact but for physical & services infrastructure, it has a positive and insignificant impact. Nascent entrepreneurship activities are encouraged by government support, commercial infrastructure and taxes &bureaucracy. The role of physical and services infrastructure is negligible for nascent entrepreneurial activities.

Model 2 has explored similar results as described in model 1; for the commercial & professional and physical & services infrastructure with the next stage of entrepreneurship (New Business Ownership Rate). Moreover, excluding the public policies *i.e.* governmental support & policies and taxes & bureaucracy explicates that the environment for the survival of entrepreneurs is challenging in the sampled Asian countries. For that purpose, this is essential to formulate the policy and procedures, which can have a substantial effect on the growth of entrepreneurship.

As demonstrated in table 4, model 3 has explained that the commercial & professional infrastructure has a positive and significant impact on total early-stage entrepreneurial activity (TEA). Physical & services infrastructure has a significant negative impact on total early-stage entrepreneurial activity. The governmental support & policies show a positive

insignificant impact. Taxes & bureaucracy has a negative significant impact on TEA. As the business grows, entrepreneurs have to pay more taxes. Thus, in this stage of entrepreneurship, taxes & bureaucracy are discouraging entrepreneurial activity.

To further examine the impact of public policy and infrastructure on established business ownership rate (EBO), model 4 shows that commercial & physical infrastructure and government support & programs are significant and positive. Taxes & bureaucracy and physical & services infrastructure have a negative impact on EBO.

In all the study models, entrepreneurial activities are bolstered by commercial and physical infrastructure, as well as governmental support and programs. However, taxes and bureaucracy primarily support nascent entrepreneurial activities. The reason behind this phenomenon is that in all countries, industrial policy focuses on providing tax rebates to new entrants in the business sector.

## Conclusion and Recommendations

The results of the study provide insights into understanding the impact of public policy and infrastructure on various stages of entrepreneurial activity, including nascent entrepreneurship rate, new business ownership rate, total early-stage entrepreneurial activity, and established business ownership rate. However, the consequences of entrepreneurial activities have been examined using four specific models across developing countries in Asia from 2014 to 2019.

The findings are summarized as, irrespective of the level of entrepreneurial activity, commercial & professional infrastructure affirms entrepreneurship for the sampled economies. This depicts that commercial & professional infrastructure would help to flourish the nascent entrepreneurship rate, new business ownership rate, total early-stage entrepreneurial activity, and established business ownership rate across Asian developing countries. In addition to that, taxes and a bureaucratic environment deter entrepreneurship. Thus, if Asian economies have liberalized markets, then they might be able to enhance each level of their entrepreneurial activities. The policies of the government for entrepreneurial development accelerates the growth of entrepreneurial activities and assures the fact that the developing countries protect their infant industries. The physical and services infrastructure is also not supported for entrepreneurial activities in our case because all the economies are developing with common characteristics and that is underdevelopment.

Public policy (governmental support and policies, taxes, and bureaucracy) and institutions have a lasting impact on entrepreneurial activities. Institutions make entrepreneurial activity more productive and contribute to its development. Many Asian countries are still in the development phase, and there is a pressing need to invest in both public policy and infrastructure to enhance entrepreneurial activities. A significant weakness in Asian countries

lies in their weak institutions and inadequate infrastructure. The presence of good infrastructure can attract entrepreneurs to initiate new ventures and drive further progress. Likewise, quality institutions can garner public support, creating positive and lasting effects for entrepreneurship development. This, in turn, enhances the efficiency of other factors of production such as labor and capital.

The contribution of entrepreneurial development to economic growth lies in providing employment opportunities, which can reduce income inequality and poverty levels in developing countries. The respective governments of these countries must focus on improving infrastructure and institutions to create a more favorable environment for entrepreneurs, whether starting or conducting business. Furthermore, factors such as the availability of funds, expansive urban areas, and the establishment of academies for training and research are imperative to increase the proportion of new venture formation.

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