Intelligence xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Intelligence

journal homepage: www.elsevier.com/locate/intell

The higher intelligence of the 'creative minority' provides the infrastructure for entrepreneurial innovation

Nik Ahmad Sufian Burhan[a,b,*], Razli Che Razak[c], Fauzilah Salleh[d], María Elena Labastida Tovar[e]

[a] Department of Social and Development Sciences, Faculty of Human Ecology, Universiti Putra Malaysia, Serdang, Malaysia
[b] Federation of Malay Students' Union/Gabungan Pelajar Melayu Semenanjung, Kuala Lumpur, Malaysia
[c] UMK Entrepreneurship Institute, Universiti Malaysia Kelantan, Kota Bharu, Malaysia
[d] Faculty of Economics and Management Sciences, Universiti Sultan Zainal Abidin, Kuala Terengganu, Malaysia
[e] Business and Economics School, Universidad Anáhuac México, Mexico

ARTICLE INFO

Keywords:
Entrepreneurship
Intelligence
Intellectual class
Leadership
ROBUSTREG

ABSTRACT

Does the intelligence quotient (IQ) in a nation regulate the ease of doing business? Based on the normal distribution of IQ scores within a nation, the population was classified into three groups, specifically intellectual class, average ability, and non-intellectual class, which were represented by the 95th, 50th, and the 5th percentiles of IQ level respectively. Using a robust regression method, the impact of each IQ class on the ease of doing business (EDB) index was examined. The sub-indicators of the ten business regulatory environment across 71 countries were studied. In this study, the effect of IQ was controlled for the levels of economic freedom, GDP per capita, freedom of corruption, and tertiary education. Results revealed strong evidence that the IQ of the intellectual class had contributed most to the enhancement of the regulatory environment, which is supportive for entrepreneurship. This result was consistent with the term 'creative minority' coined by the prominent historian Arnold Toynbee. It was concluded that the IQ of the people from the intellectual class is the most significant factor for creating a business regulatory environment that eases the entrepreneurs. This occurs through their competent and virtuous leadership that enhances the quality and efficiency of institutions across countries.

1. Background of the study

Societal progress is the doctrine that societies perform for their improvement in various fields such as social, political and economic structures. Such a societal progress has been said to be determined by a 'creative minority' of the population. This creative minority is the intellectual class who discovered the methods for solving problems in various sectors of the society. Their cultural practices and ideas were followed by the rest of the world through imitation or emulation. The growth of civilizations arose as social challenges were conquered by these creative individuals, who resided as a small fraction from the upper class of the society (Toynbee, 1987). Toynbee's concept of societal progress happens to be similar to the term 'creative evolution' proposed by Henri Bergson. According to Henri Bergson, social transformation was usually hailed from creative individuals inspired with *élan vital*, who brought novelty in thoughts, designs, philosophies, ethics and values. The novelty created permitted the civilization to revise its social practices by fine-tuning themselves to emulate the new code of belief. Contrarily, if such revisions did not happen to civilizations, the majority would have become stagnant and declined in the course of time (Hall, 2014, p. 29). Toynbee and Bergson were similar in their lines of thought, where it is believed that the solutions and practices for encountering the societal challenges arose from the people of creative minority in the society. The majority then follows this creative minority in the process of civilization changes. If this process stopped functioning then the civilization might collapse. Prior to the breakdown of any civilization, what happened could be the creative minority ceased to be creative and hence, neglected to gain the admiration of the majority through the brilliance and virtuousness of their elucidations to the societal problems and challenges. This change in behavior destroyed their political creativity, thereby deteriorating the minority and turned them into an arrogant 'dominant minority' who neglected to effectively tackle the societal challenges. Yet, they coerced the majority to give them respect and praise that they did not actually deserve, as they never contributed to the society with their change of behavior.

The purpose of this paper is to examine the role that the creative minority plays on the ease of doing business at a global level. The

* Corresponding author.
E-mail address: nikahmadsufian@upm.edu.my (N.A.S. Burhan).

http://dx.doi.org/10.1016/j.intell.2017.09.007
Received 24 May 2017; Received in revised form 1 September 2017; Accepted 28 September 2017

Table 1
Definitions of ease of doing business, *EDB* sub-indicators.
Reproduced from the World Bank (2016a).

Indicator	Definition
Starting a business, *start*	The paid-in minimum capital requirement, number of procedures, time and cost for a small- to medium-sized limited liability company to start up and formally operate.
Dealing with construction permits, *permit*	The procedures, time and cost to build a warehouse—including obtaining necessary licenses and permits, submitting all required notifications, requesting and receiving all necessary inspections and obtaining utility connections. This includes the building quality control index, evaluating the quality of building regulations, the strength of quality control and safety mechanisms, liability and insurance regimes, and professional certification requirements.
Getting electricity, *electricity*	The procedures, time and cost required for a business to obtain a permanent electricity connection for a newly constructed warehouse. In addition to assessing efficiency of connection process, new indicators were added to measure reliability of power supply and transparency of tariffs and the price of electricity.
Registering property, *register*	The steps, time and cost involved in registering property, assuming a standardized case of an entrepreneur who wants to purchase land and a building that is already registered and free of title dispute. This includes an index of the quality of the land administration system in each economy, which has four dimensions: reliability of infrastructure, transparency of information, geographic coverage and land dispute resolution.
Getting credit, *credit*	The strength of credit reporting systems and the effectiveness of collateral and bankruptcy laws in facilitating lending.
Protecting minority investors, *investors*	The strength of minority shareholder protections against misuse of corporate assets by directors for their personal gain as well as shareholder rights, governance safeguards and corporate transparency requirements that reduce the risk of abuse.
Paying taxes, *taxes*	The taxes and mandatory contributions that a medium-size company must pay or withhold in a given year, as well as measures the administrative burden in paying taxes.
Trading across borders, *trading*	The time and cost associated with the logistical process of exporting and importing goods. This includes the time and cost (excluding tariffs) associated with three sets of procedures—documentary compliance, border compliance and domestic transport—within the overall process of exporting or importing a shipment of goods.
Enforcing contracts, *contracts*	The time and cost for resolving a commercial dispute through a local first-instance court. In addition, this year it introduces a new measure, the quality of judicial processes index, evaluating whether each economy has adopted a series of good practices that promote quality and efficiency in the commercial court system.
Resolving insolvency, *insolvency*	Weaknesses in existing insolvency law and the main procedural and administrative bottlenecks in the insolvency process.

proposition of this study is that intellectual class is an elite group of the society, and thus, people who belong to this class are more creative and influential to enhance the quality and efficiency of business-related institutions and entrepreneurs. The ease of doing business (EDB) index is intended to measure regulations that affect businesses directly. EDB is defined by the World Bank (2016a) as "a ranking of high ease of doing business which means that the regulatory environment is more conducive to the starting as well as operation of a local firm." A country's EDB ranking can be established by averaging the values of 10 sub-indices, as listed and defined in Table 1. In simple terms, it can be comprehended that if the regulations were onerous, it turned the entrepreneurs' energies away from developing their businesses. In contrast, a more simple, transparent and efficient regulation eased the entrepreneurs to innovate and expand their businesses and firms. Transparent regulations and modest bureaucratic procedures lighten risks for both new and experienced entrepreneurs alike. Thus, reforms intended to instigate new business entry might also serve to facilitate the growth of existing businesses in the same field. These reforms allowed the entrepreneurs to save time and cost of regulatory compliance. Time and cost savings could be translated directly into higher profitability of private businesses and higher fiscal productivity of governments due to the savings made from bureaucratic procedures and policies (World Bank, 2016a).

In the present study, the dominant characteristic of the creative minority is represented by intelligence quotient (IQ) or cognitive ability of the topmost 5% upbeat people in a country, which is based on the normal distribution of IQ scores described as a bell-shaped curve. Based on the scores of international scholastic assessment tests, Rindermann, Sailer, and Thompson (2009) calculated the IQ for the 95th, 50th and the 5th percentiles, which were termed as intellectual class, average ability and non-intellectual class respectively. Tables 2 and 3 show the list of countries ranked by selected variables employed in our study. Several studies in the psychological and sociological literature have employed Rindermann et al.'s (2009) IQ dataset in their studies of socioeconomic development (e.g., Burhan, Kurniawan, Sidek, & Mohamad, 2014; Burhan, Mohamad, Kurniawan, & Sidek, 2014; Coyle, Rindermann, & Hancock, 2016; Rindermann, 2012; Rindermann & Thompson, 2011). The various studies confirmed that the IQ of the intellectual class was strongly associated with the national level of socioeconomic achievement which was measured by the national income, technological progress, institutional quality and even the reduction of crime rates in the area. These researchers advocated that the intellectual class consisted of the top leaders and creative elites, who led the country towards socioeconomic changes along with the passage of time. Therefore, the IQ of the intellectual class has been more significant than the other classes in determining the socioeconomic development. This notion also aligns with several economic studies on productivity growth and cognitive skills. Economic studies determined that the countries with greater percentage of intellectually gifted students experienced a higher economic growth rate over the previous five decades (Hanushek, 2016; Hanushek & Woessmann, 2008; Hanushek & Woessmann, 2012). Surprisingly, all these studies did not focus on the role of the non-intellectual class in economic development. Thus, the relative impact of the intellectual class, average ability group and non-intellectual class in the socioeconomic development has been unheeded in the economic works.

In addition to higher achievements of economic growth and technology, entrepreneurship has been an imperative source of societal progress for the reason that it boosts economic development especially by triggering agglomeration, innovation and technological development as well as increasing employment rates and welfare of the society (Acs & Audretsch, 1988; Acs & Varga, 2005; Baumol, 2002; Schumpeter, 1934; Wennekers, Van Stel, Thurik, & Reynolds, 2005). In addition, the positive impacts of IQ upon entrepreneurship abilities and level of entrepreneurial activities have been proved statistically, which further confirms the theory that societal changes are primarily due to the intellectual class. Labastida Tovar, Almazán Anaya, and Burhan (2017) in a cross-country analysis of 64 countries exemplified that the percentage of those with high cognitive ability (IQ ≥ 115 points) contributed significantly larger to entrepreneurship abilities and economic wealth, in comparison to those basic performers (IQ ≥ 85 points). Entrepreneurship abilities are as important as innovation in science and technology because they provide a missing link for economic growth by commercializing investments in knowledge and ideas that might otherwise have remained uncommercialized (Acs, Audretsch, & Strom, 2009, p. 8). In another cross-national study of 60 countries, Hafer and Jones (2015)