

Chapter 2

Entrepreneurship and the Future of Global Prosperity

2.1 Introduction

While a focus on the entrepreneurial ecosystem may seem a novel approach to development, it is consistent with and even complementary to older, more traditional development strategies. As developing economies move from centralized to market economies, enterprise and entrepreneurship become increasingly important. “The emerging world, long a source of cheap labor, now rivals developed countries for business innovation. Developing countries are becoming hotbeds of business innovation in much the same way as Japan did from the 1950s onwards.”¹

Entrepreneurship is considered an important mechanism that promotes economic development through employment, innovation, and welfare, but it does not appear like manna from heaven as a country moves through the stages of development. Rather, it plays a role in all development stages and is a process that continues over many years. Economists have come to recognize the “input-competing” and “gap-filling” capacities of entrepreneurial activity in development.² In other words, someone has to create the technology for new products and create the markets where people will buy them.

Two points are important when thinking about entrepreneurship and development. **First, contrary to popular belief, the most entrepreneurial countries in the world are not those that have the most entrepreneurs.** This notion is in fact misleading. In fact, the highest self-employment rates are in low-income countries such as Zambia and Nigeria. This is because low-income economies lack the human capital and infrastructure needed to create high-quality jobs. The result is that many people sell soft drinks and fruit on street corners, but there are few innovative, high-growth startups. Nor do these street vendors represent business ownership as defined in many developed countries.

¹Woolridge, 2009.

²Leibenstein, 1968.

In entrepreneurship, quality matters more than quantity. To be entrepreneurial, a country needs to have the best entrepreneurs, not necessarily the most. What the “best and the brightest” do is important, and to support their efforts, a country needs a well-functioning entrepreneurial ecosystem (watch the video).³ The path to development is to create efficient organizations able to harness technology to increase output and improve the lives of millions.

Second, entrepreneurship comes in productive, unproductive, and destructive forms. While productive entrepreneurship makes both entrepreneurs and society better off, unproductive and destructive entrepreneurship make entrepreneurs better off but leave society in worse condition. The GEI strives to measure only productive entrepreneurship that both creates wealth and is scalable.

Entrepreneurial ecosystems support innovative, productive, and rapidly growing new ventures. They consist of multiple interactive elements, all of which need to be in sync in order for innovative and high-growth firms to prosper. Such firms also need skilled employees. They need access to technology. They need a well-functioning infrastructure. They need specialized advice and support. They need access to finance. They need business premises. They need a supportive regulatory framework.

2.2 The Global State of Entrepreneurship

The GEI measures both the quality of entrepreneurship in a country and the extent and depth of the supporting entrepreneurial ecosystem. The map below presents a snapshot of the global entrepreneurial ecosystem (Fig. 2.1).

The top ten countries for 2017 show a pattern similar to last year’s—high-income, mostly European nations. The top countries are the United States, Switzerland, Canada, Sweden, Denmark, Iceland, Australia, United Kingdom, Ireland and the Netherlands. The major surprise this year is the movement of Switzerland from eighth place to second; the United States that remains first for the third year in a row. Because the scores in the highest range are so close, small changes in score from one year to the next can produce a relatively large shift in ranks among the top ten. For this reason, we present confidence intervals for the top ten.

2.2.1 Top Ten Countries

The results show that the No. 1 rank could have gone to any of the top eight nations with the exception of the United Kingdom and the Netherlands (Table 2.1, Fig. 2.2). We see that Switzerland has a confidence interval almost similar to the United States.

³https://www.youtube.com/watch?v=hjNc_BSsn-s.

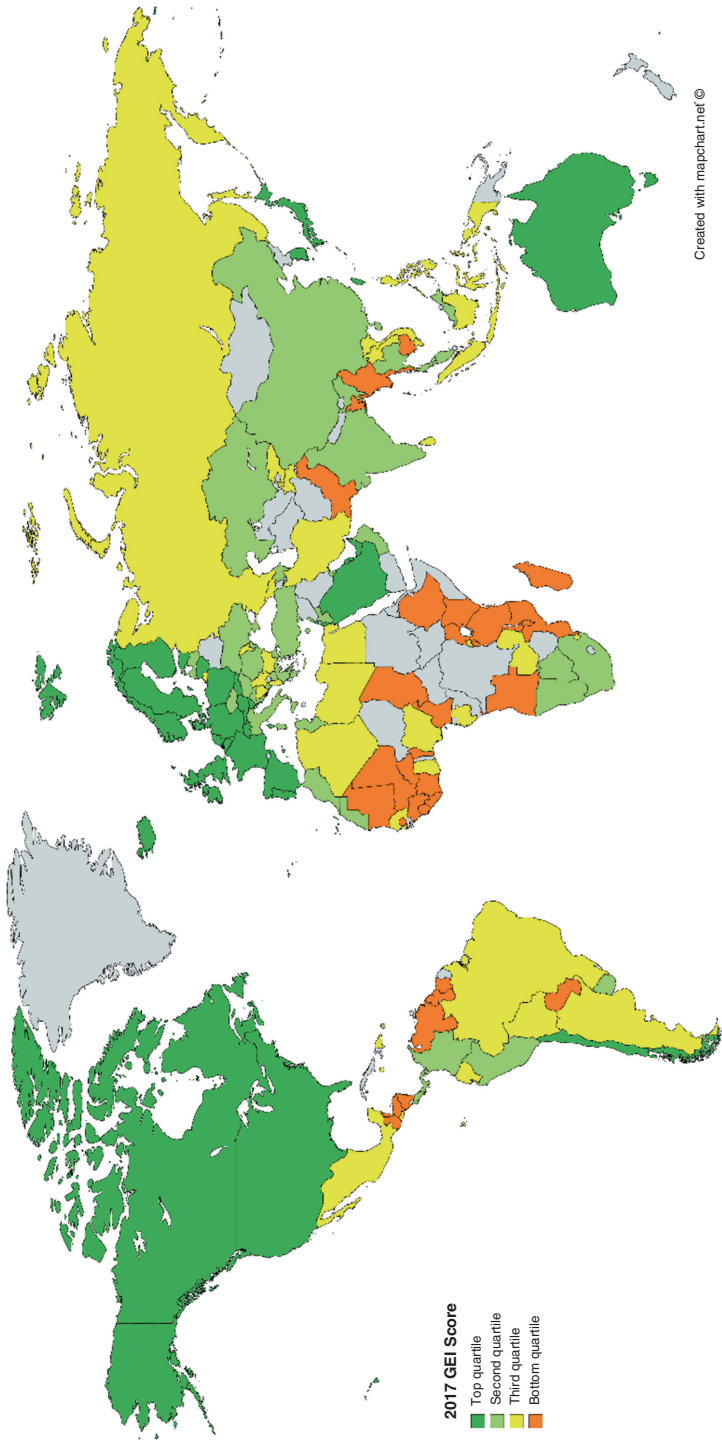


Fig. 2.1 Global entrepreneurship and development index map

Table 2.1 Top ten countries in the GEI

Country	GEI 2017 lower limit	GEI 2017 upper limit	GEI 2017	Rank 2017	GEI 2016	Rank 2016
United States	77.6	89.1	83.4	1	1	United States
Switzerland	68.9	87.0	78.0	2	8	Switzerland
Canada	70.3	80.9	75.6	3	2	Canada
Sweden	68.2	82.8	75.5	4	5	Sweden
Denmark	64.6	83.6	74.1	5	4	Denmark
Iceland	63.1	83.9	73.5	6	7	Iceland
Australia	66.3	78.7	72.5	7	3	Australia
United Kingdom	66.2	76.4	71.3	8	9	United Kingdom
Ireland	63.4	78.6	71.0	9	12	Ireland
Netherlands	60.3	75.2	67.8	10	13	Netherlands

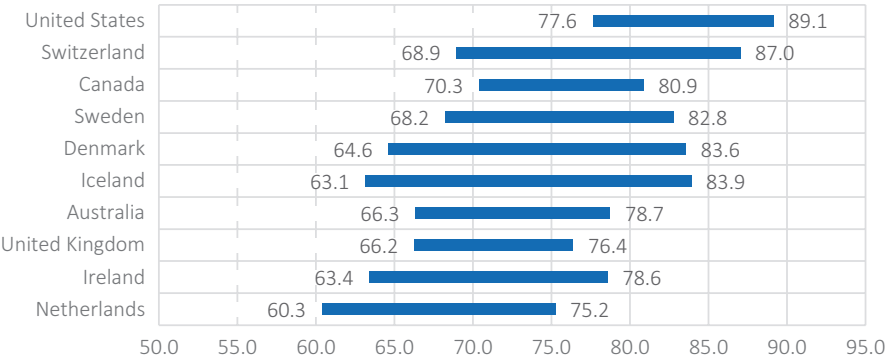


Fig. 2.2 Confidence intervals for top ten scores

2.3 Regional Performance

For many countries, a regional benchmark is more relevant for identifying best practices for fostering entrepreneurship. This year we have several important changes in Europe, Sub-Saharan Africa and the MENA countries. Below we present the top performer in each region along with individual and institutional score summaries (Table 2.2).

The United States leads the world in entrepreneurship, and is first in the North American region, just ahead of peer Canada. Australia ranks first in the Asia-Pacific region, ahead of economic powerhouses China, Singapore, Hong Kong, and Japan. Switzerland, which ranked fourth in the European region and eighth overall last year, now comes in first in Europe. Chile ranks first in South and Central America and the Caribbean (16th overall), 19 places ahead of the next highest scorer in the

Table 2.2 Top scores by region

World rank	Country	Region	GDP per capita PPP	Individual variables	Institutional variables	GEI
1	United States	North America	\$52,676	78.4	93.9	83.4
2	Switzerland	Europe	\$54,933	67.5	93.3	78.0
7	Australia	Asia-Pacific	\$42,149	72.4	81.7	72.5
17	Israel	Middle East/North Africa	\$31,092	72.1	78.5	59.1
18	Chile	South and Central America/Caribbean	\$21,302	77.3	66.9	58.8
52	Botswana	Sub-Saharan Africa	\$15,286	66.1	46.2	34.4

region—Puerto Rico, at 35th. Israel is 17th overall and tops the MENA region, just ahead of UAE at 21st. In Sub-Saharan Africa, Botswana is the leader at 52nd, ranking ahead of nine European nations.

2.4 Biggest Gains

Here we show the biggest losers. Note, again, that for the comparison we had to recalculate the 2016 edition scores to fit to the changes we have done in the 2017 edition. Table 2.4 shows the biggest losers in the 2016 version of GEDI relative to the 2017 edition. The losers took about the same hits as compared to the gainers with Belize and Puerto Rico—both are from the South and Central America/Caribbean region—looking over 6.5 and 5.2 points in their scores, respectively. There are three European countries, Hungary, Norway and Greece amongst the largest losers. Since six out of the ten biggest gainers are also from Europe, it is an indication of an increased polarization of Europe's entrepreneurial development. The two leading African countries, Botswana and South Africa are also losing ground together with three Asian countries Taiwan, Thailand and Malaysia

What countries are gaining the most in the global ecosystem? This time the answer is not based on a straightforward comparison of the 2016 edition results, because of the change in the institutional pillar components from the 2016 to the 2017 edition. So we had to recalculate the 2016 edition scores to fit to the new 2017 version, and report these result here. Table 2.3 shows the countries that made the greatest gains on the GEDI scores from 2016 to 2017. The ten countries that made the greatest gains changed rankings from a high of 6 places to a low of -1(!). Switzerland and the United Kingdom increased 5.5 points followed by China with 4.0 points. Despite Ireland improved by 3.4 it dropped one place in ranking because the United Kingdom improved even more. United States's GEI score also increased by 1.7 but the gap between the EU and the US have lessened because of the notable progress of several EU countries. In fact, six out of the ten gainers are found in Europe, one in Asia (China), and two in North America (Mexico, US).

Table 2.3 Biggest gains in GEI score from 2016 to 2017

Country	Score 2017	Score 2016	Difference in scores	Differences in rank
Switzerland	78.0	72.4	5.5	3
United Kingdom	71.3	65.8	5.5	2
China	36.3	32.2	4.0	6
Ireland	71.3	67.6	3.4	−1
Finland	66.9	63.8	3.2	0
Belgium	63.0	60.3	2.7	1
Mexico	25.7	23.0	2.6	6
Germany	64.9	62.5	2.4	3
Slovakia	44.1	41.9	2.2	1
United States	83.4	81.7	1.7	0

Legend: Included only those countries that have participated in the GEM survey and have not estimated individual data

Table 2.4 Biggest declines in GEI score from 2016 to 2017

Country	Score 2017	Score 2016	Difference in scores	Differences in rank
Belize	16.6	23.1	−6.5	−12
Puerto Rico	40.6	45.8	−5.2	−3
Hungary	36.3	40.4	−4.1	−3
Norway	55.9	59.2	−3.4	−3
Taiwan	60.7	63.5	−2.9	−3
Greece	34.6	36.3	−1.7	−3
Thailand	27.1	28.5	−1.4	0
Botswana	34.4	35.6	−1.2	−3
South Africa	32.6	33.9	−1.2	−1
Malaysia	33.4	34.6	−1.2	−3

Legend: Included only those countries that have participated in the GEM survey and have not estimated individual data

2.5 Biggest Declines

Here we show the biggest losers. Note, again, that for the comparison we had to recalculate the 2016 edition scores to fit to the changes we have done in the 2017 edition. Table 2.4 shows the biggest losers in the 2016 version of GEDI relative to the 2017 edition. The losers took about the same hits as compared to the gainers with Belize and Puerto Rico - both are from the South and Central America/Caribbean region - looking over 6.5 and 5.2 points in their scores, respectively. There are three European countries, Hungary, Norway and Greece amongst the largest losers. Since six out of the ten biggest gainers are also from Europe, it is an indication of an increased polarization of Europe's entrepreneurial development. The two leading African countries, Botswana and South Africa are also losing ground together with three Asian countries Taiwan, Thailand and Malaysia.

2.5.1 *The Role of Entrepreneurship in Global Prosperity*

Last year we explored how entrepreneurship correlates with global prosperity. That is, do the things that most of the world is striving for—a better environment, economic growth, and world peace—coincide with individual initiative? Entrepreneurship is widely understood as a means of “growing the pie”—that is, increasing economic activity to create more jobs and produce more income for more people, rather than merely transferring wealth from one group to another.

We explored the relationship between the GEI and each of our comparator variables: GDP per capita (PPP); income equality (GINI); digital evolution (The Digital Evolution Index, Tufts); environmental performance (Yale Environmental Performance Index); economic freedom (Heritage Foundation Index of Economic Freedom); and peace (Institute for Economics and Peace Global Peace Index).

We found that the most common economic measure, GDP, correlates relatively highly with the Global Entrepreneurship and Development Index. However, with an R-squared of (0.58), there is clearly more to entrepreneurship than income levels alone. We also found that entrepreneurship correlates weakly positively with income equality, another common measure of concern.

As we moved into narrower indicators of specific aspects of prosperity, we found the highest correlations between entrepreneurship and digital evolution and environmental performance (both 0.72). Less closely correlated are economic freedom (0.51) and peace (0.34).

One of the strongest relationships was between entrepreneurship and the digital revolution. While this at first brush might seem surprising if we think a little harder it makes sense. We are in a digital revolution that is transforming every industry around the world and entrepreneurs are creating new companies that are carrying this out. Trying to understand the leading forces of development in the twenty-first century without digital technologies would be the same as explaining the nineteenth century industrial revolution without talking about the steam engines.⁴

A new entrepreneurial company type is at the heart of a growing debate on how to understand the digital economy. Ever since the launch of Uber, Snapchat and AirBnB and the earlier success of Google, Amazon, and Facebook, a new breed of company has emerged that uses digital technology, entrepreneurship and innovation to upend industries on a global scale.⁵ The core competencies of these companies are that they depend on the Internet for both factor market inputs and product market outcomes and would not exist without the Internet. While Walmart would not be as efficient without the Internet it would survive because it has a physical location. Amazon on the other hand could not function since it has no physical outlet. These new companies are startups in many ways. They are young, only a few years old in some cases, but they grow very quickly especially in terms of users.

⁴For a more in depth understanding of the digital economy visit our website: thegedi.org.

⁵This trend is reflected in the continuing decline in the cost of computing, the rise of open-source software, the move to the ‘cloud’ and the emergence of huge datacenters where companies such as Amazon, Google, and Facebook are designing their own approaches.

Table 2.5 GEI correlated variables with R-squared coefficients

Correlated variables	R-squared
GEI vs. GDP per capita	0.62
GEI vs. DEI	0.79
GDP vs. digital citizenship	0.45
GDP vs. digital governance	0.43
GDP vs. digital marketplace	0.40
GDP vs. digital business	0.20

So it is no surprise that entrepreneurship and digitalization correlate. This year we decided to probe this question further on the importance of the digital entrepreneurial ecosystem. Table 2.5 shows the correlates first for entrepreneurship vs digitalization and for GDP vs digital citizenship, digital governance, digital marketplace and digital business. We find very strong results for the emergence of a digital entrepreneurial ecosystem. It appears that a digital ecosystem is being created rapidly around the world and that a digital business model is following not far behind.

2.5.2 Does Entrepreneurship Make a Country Rich?

The first question we explore is, “**Does productive high-impact entrepreneurship make countries rich?**” The data show that high-income countries tend to have better entrepreneurship ecosystems, and vice versa with a correlation of 0.62. The sign is also positive. There is no rich country with very low or no entrepreneurship. However, many other factors are also at play in the GDP game. Namely, countries with high mineral wealth (the Gulf States and Norway) have very high GDP compared to their entrepreneurship scores. Singapore and Hong Kong also have very high income levels compared to their (still high) entrepreneurship scores, a reflection of their high urbanization and concentrated economic activity (Fig. 2.3).

This suggests that entrepreneurship doesn’t necessarily make a country rich but, rather, that there is more than one path to wealth. It is also true that high incomes are not enough to foster entrepreneurship; economic structure and cultural qualities are also important factors of a healthy entrepreneurship ecosystem. However, the relationship observed does indicate that improvements to GDP could be brought about by changes that improve GEI scores. Based on the above relationship, if every country in the GEI raised its score by 10%, it could add \$22 trillion to global GDP.⁶ The country by country breakdown of this total is shown in Table 2.6 below.

⁶We agree that correlation is not the same as causation, which is why we say that a 10% global increase in GEI *could* add \$22 trillion. However, it does stand to reason that such changes, and the changes to institutions that they represent, could add such a large amount to global productivity, since the institutions that support entrepreneurship also support a variety of other economic and non-economic activities.

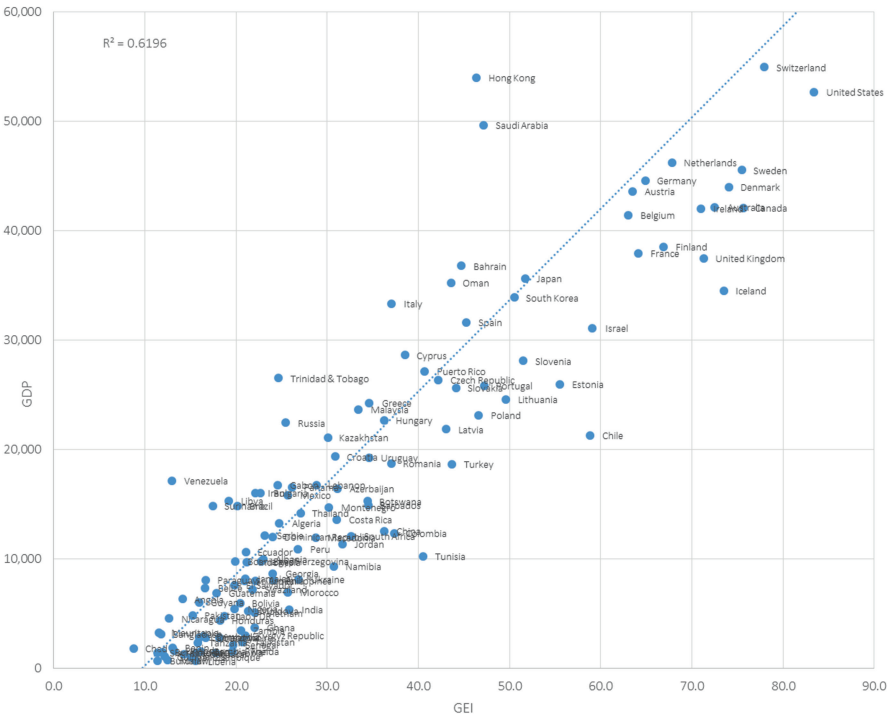


Fig. 2.3 GEI vs. GDP

2.5.3 Is Entrepreneurship Related to the Digital Ecosystem?

The second question is, “**What is the relationship between entrepreneurship and the digital ecosystem?**” The answer seems to be that there is a strong relationship between entrepreneurship and digital technology. The correlation is 0.79 and the sign is positive. In other words entrepreneurship and digital technology seem to move in the same direction. If we think about it, it is almost impossible to start a productive business without digital tools! You can’t even buy an airline ticket without a computer! China while low on digital ecosystem does better at entrepreneurship. Malaysia does poorly at entrepreneurship, great at digital innovation. Latvia and Lithuania are better at digital. France, Germany, Austria—better at entrepreneurship. In general they’re very closely related—innovation breeds innovation—policies that allow for innovation in one area allow for innovation in other areas—e.g. a good digital environment empowers entrepreneurs too (Fig. 2.4).

To better understand the digital ecosystem we further explore four areas of the digital entrepreneurship ecosystem: Digital Infrastructure Governance; Digital Users Citizenship; Digital Entrepreneurship; and Digital Marketplace.

Table 2.6 Predicted increase in GDP with 10% improvement in GEI

Countries	2017 GEI	Additional GDP in billions with 10% GEI increase
Albania	23.0	\$6.65
Algeria	24.7	\$98.75
Angola	14.1	\$31.27
Argentina	22.2	\$92.83
Armenia	22.1	\$6.61
Australia	72.5	\$170.33
Austria	63.5	\$54.16
Azerbaijan	31.1	\$29.65
Bahrain	44.7	\$6.01
Bangladesh	11.8	\$186.57
Barbados	34.5	\$0.99
Belgium	63.0	\$70.70
Belize	16.6	\$0.56
Benin	13.0	\$13.82
Bolivia	20.4	\$22.17
Bosnia and Herzegovina	19.9	\$7.63
Botswana	34.4	\$7.01
Brazil	20.1	\$406.54
Brunei Darussalam	33.9	\$1.43
Bulgaria	22.7	\$16.40
Burkina Faso	11.9	\$20.79
Burundi	11.4	\$11.93
Cambodia	16.5	\$25.38
Cameroon	16.0	\$36.42
Canada	75.6	\$268.69
Chad	8.8	\$11.58
Chile	58.8	\$104.59
China	36.3	\$4945.98
Colombia	37.3	\$182.70
Costa Rica	31.0	\$15.31
Côte d'Ivoire	16.6	\$34.62
Croatia	30.8	\$13.07
Cyprus	38.5	\$4.44
Czech Republic	42.2	\$44.35
Denmark	74.1	\$41.77
Dominican Republic	24.0	\$25.25
Ecuador	21.1	\$33.67
Egypt	22.7	\$189.63
El Salvador	19.8	\$12.66
Estonia	55.5	\$7.30
Ethiopia	17.8	\$171.60
Finland	66.9	\$36.56

(continued)

Table 2.6 (continued)

Countries	2017 GEI	Additional GDP in billions with 10% GEI increase
France	64.1	\$424.30
Gabon	24.6	\$4.21
Gambia	16.1	\$3.07
Georgia	24.0	\$10.83
Germany	64.9	\$524.71
Ghana	22.0	\$58.30
Greece	34.6	\$37.94
Guatemala	17.9	\$28.37
Guinea	12.1	\$14.63
Guyana	15.9	\$1.28
Honduras	18.2	\$15.06
Hong Kong	46.4	\$33.59
Hungary	36.3	\$35.75
Iceland	73.5	\$2.41
India	25.8	\$3273.44
Indonesia	21.2	\$534.70
Iran	22.1	\$173.43
Ireland	71.0	\$32.73
Israel	59.1	\$48.54
Italy	37.0	\$227.11
Jamaica	21.0	\$5.71
Japan	51.7	\$657.54
Jordan	31.7	\$20.95
Kazakhstan	30.1	\$52.00
Kenya	18.2	\$82.87
Korea	50.5	\$254.79
Kuwait	42.5	\$11.66
Kyrgyz Republic	21.0	\$12.26
Lao PDR	18.7	\$12.91
Latvia	43.0	\$8.56
Lebanon	28.8	\$12.99
Liberia	15.6	\$6.85
Libya	19.2	\$12.01
Lithuania	49.6	\$14.53
Luxembourg	58.1	\$3.27
Macedonia	28.7	\$6.06
Madagascar	14.3	\$33.67
Malawi	12.5	\$21.02
Malaysia	33.4	\$100.96
Mali	15.6	\$24.68
Mauritania	11.6	\$4.61
Mexico	25.7	\$317.91

(continued)

Table 2.6 (continued)

Countries	2017 GEI	Additional GDP in billions with 10% GEI increase
Moldova	21.3	\$7.58
Montenegro	30.2	\$1.88
Morocco	25.7	\$86.01
Mozambique	15.1	\$40.00
Myanmar	15.6	\$84.06
Namibia	30.7	\$7.20
Netherlands	67.8	\$114.25
Nicaragua	12.7	\$7.82
Nigeria	19.9	\$354.44
Norway	55.9	\$28.70
Oman	43.6	\$17.12
Pakistan	15.2	\$281.79
Panama	26.2	\$10.27
Paraguay	16.7	\$11.53
Peru	26.8	\$82.35
Philippines	24.1	\$241.09
Poland	46.6	\$177.13
Portugal	47.2	\$49.09
Puerto Rico	40.6	\$14.42
Qatar	58.0	\$12.57
Romania	37.1	\$73.78
Russia	25.4	\$365.71
Rwanda	19.6	\$23.74
Saudi Arabia	47.2	\$138.50
Senegal	19.7	\$28.59
Serbia	23.1	\$16.49
Singapore	52.2	\$28.55
Sierra Leone	11.4	\$7.08
Slovakia	44.1	\$23.90
Slovenia	51.5	\$10.62
South Africa	32.6	\$176.29
Spain	45.3	\$210.00
Sri Lanka	20.9	\$43.20
Suriname	17.5	\$0.95
Swaziland	21.8	\$2.77
Sweden	75.5	\$73.12
Switzerland	78.0	\$63.86
Taiwan	60.7	\$142.19
Tajikistan	20.7	\$17.19
Tanzania	15.8	\$80.06
Thailand	27.1	\$181.86
Trinidad and Tobago	24.6	\$3.31

(continued)

Table 2.6 (continued)

Countries	2017 GEI	Additional GDP in billions with 10% GEI increase
Tunisia	40.5	\$44.57
Turkey	43.7	\$331.30
Uganda	13.2	\$51.29
Ukraine	26.9	\$121.90
United Arab Emirates	58.8	\$55.54
United Kingdom	71.3	\$459.91
United States	83.4	\$2658.22
Uruguay	34.6	\$11.82
Venezuela	13.0	\$40.02
Vietnam	22.0	\$200.00
Zambia	20.5	\$30.87
Total		\$21,977.09

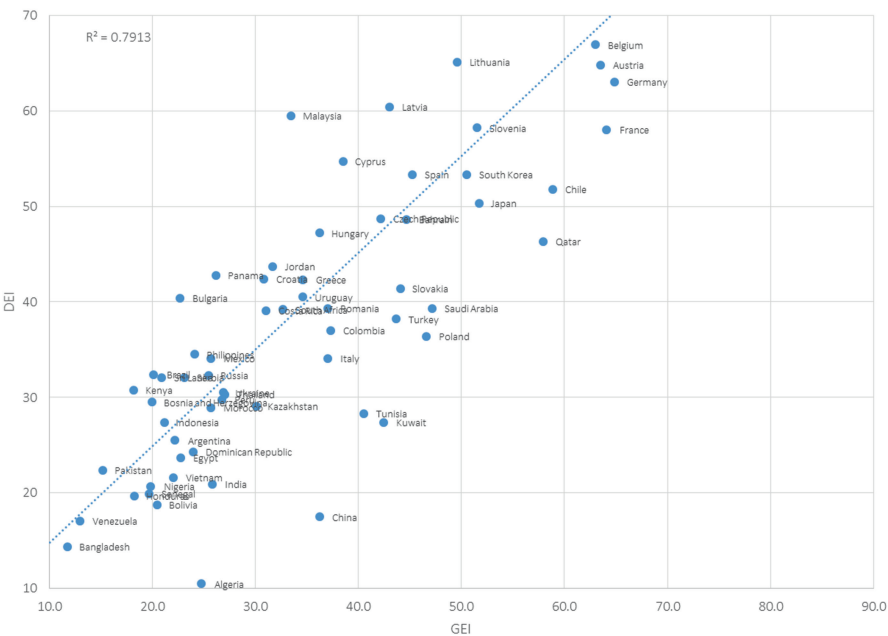


Fig. 2.4 GEI vs. DEI

- Four qualifications:
- First, digital entrepreneurship includes any agent that is engaged in any sort of venture be it commercial, social, government, or corporate that uses digital technologies. In others words, the focus is on digital venturing across all social, economic and political activities.

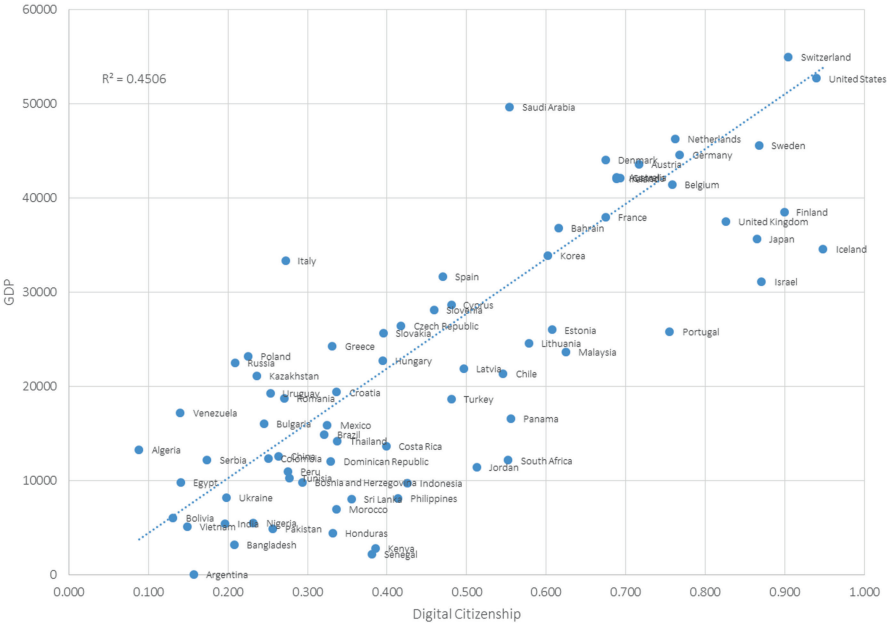


Fig. 2.5 Digital Citizenship vs. GDP

- Second, the digital marketplace includes all aspects of user and agent outcomes: e-social network-based businesses, e-commerce, e-health, e-education and e-government.
- Third, the existence of agents (entrepreneurs) and users (people using the Internet) creates a dynamic whereby companies need to develop business models that integrates millions of users. It is only through this integration that digital business comes to life. The integration of users who do not buy anything but provide data to companies that in turn sell advertising space (e.g., Facebook) is one aspect of this interaction that takes place in the digital marketplace.
- Fourth, the outcome of the digital entrepreneurial ecosystem is a sustainable ecosystem.

2.5.4 Does This Relationship Vary Among the Sub-components of the Digital Entrepreneurship Ecosystem?

2.5.4.1 Measures: Technology Availability and Absorption

Figure 2.5 shows the relationship between digital citizenship and GDP. The correlation is 0.45 and the sign is positive. In other words both the level of GDP and digital citizenship move in the same direction. Saudi Arabia and Italy are way behind in

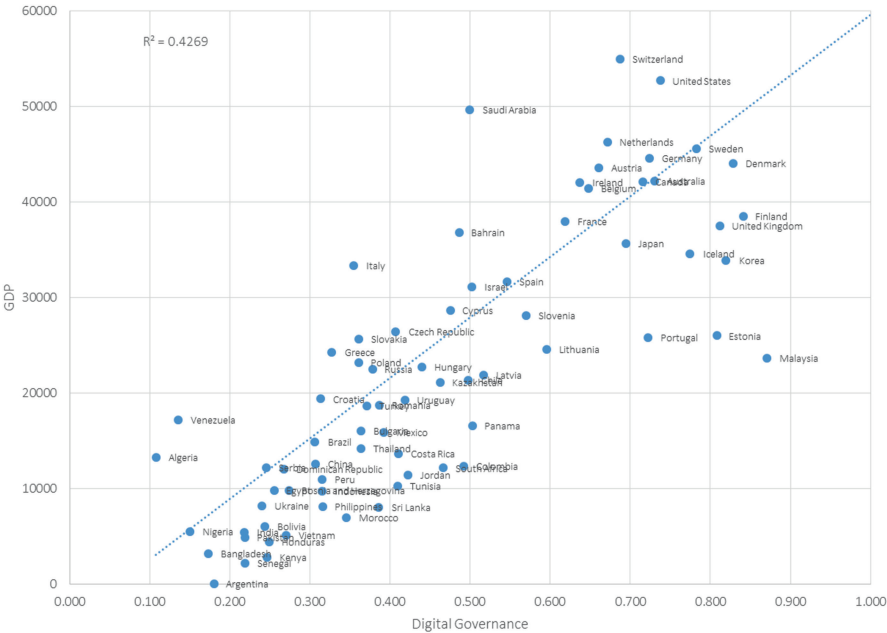


Fig. 2.6 Digital Governance vs. GDP

their digital citizenship scores. Portugal, South Africa, Israel, Iceland are way ahead. We see that countries that are rich such as the United States and Switzerland have good digital citizens. Egypt, Ukraine and Argentina score very low on both.

2.5.4.2 Measures: Business Freedom and ICT Laws

Figure 2.6 shows the relationship between digital governance and GDP. Countries with good governance seem to be richer with a correlation of 0.42 and the sign is again positive. Switzerland, the U.S., Saudi Arabia, Italy, Venezuela, Algeria have relatively lower digital governance but GDP is higher—likely a legacy of prior wealth that will be difficult to maintain without better digital governance. Malaysia and Estonia stand out, reasonable considering both are trying to attract more of the tech industry, meaning it makes sense to establish a good policy environment.

2.5.4.3 Measures: e-Education

Figure 2.7 shows the relationship between digital marketplace and GDP. While it only measures one aspect of the digital marketplace, it is an important one. The correlation is 0.40 and positive. This is a strong relationship. How well are people using digital technologies? Japan does not do very well in the digital marketplace. Why is

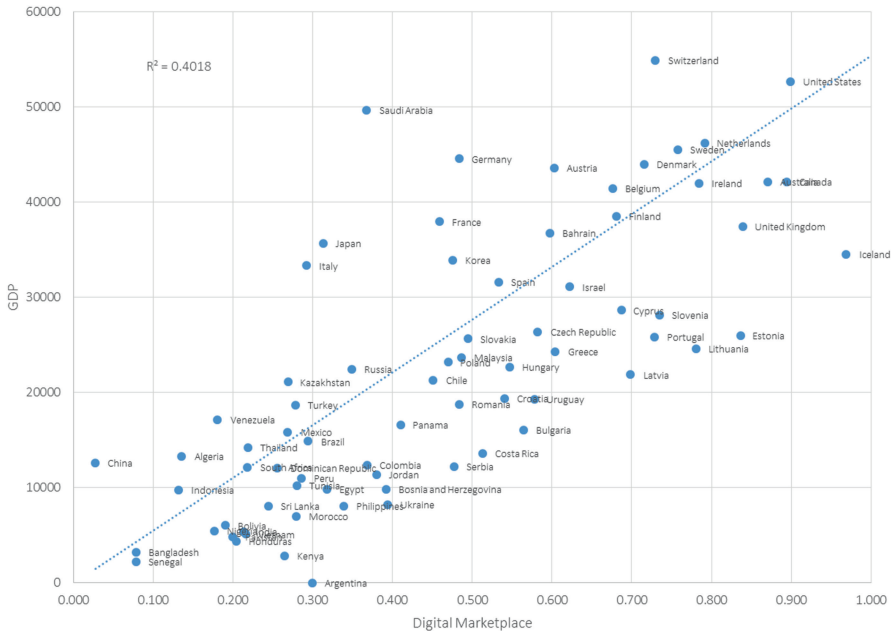


Fig. 2.7 Digital Marketplace vs. GDP

the United Kingdom so much better at the digital marketplace than Japan? It does better on other indicators. Iceland, Estonia and Lithuania do well. These countries have fully embraced digital technologies.

2.5.4.4 Measures: Digital Startups and the Impact of ICT

Finally, we look at the relationship between digital business and GDP. The question is what is the role of digital startups in GDP? The correlation between GDP and digital business is rather weak at 0.19 but positive. Digital business measures how well countries do at starting digital businesses. We see that the United States, Canada, Israel, Estonia and the United Kingdom do very well. They are all very focused on innovation. Most of MENA do badly (except Jordan). Sweden, Denmark, and the Netherlands do poorly vis a vis GDP—interesting because they do well in GEI. They may not be keeping pace with the evolution of the economy, thus we would expect their GEI scores to decline over time because they’re not innovating in new (digital) areas (Fig. 2.8).

A few observations: GDP is correlated with all aspects of the digital entrepreneurial ecosystem, though some aspects are stronger than others.

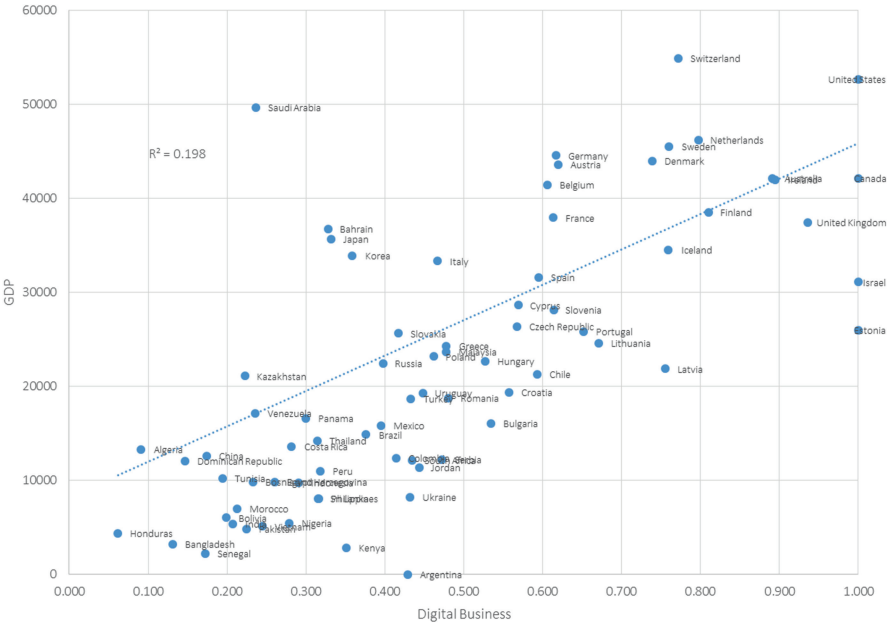


Fig. 2.8 Digital Business vs. GDP

Global Entrepreneurship and Development Index 2017

Acs, Z.J.; Szerb, L.; Lloyd, A.

2017, XVIII, 119 p. 39 illus. in color., Softcover

ISBN: 978-3-319-65902-2