

# Global Innovation Index 2014 — Top performers are not the most efficient ones

#### High income economies rank higher

The 2014 GII - global innovation index ranking (Fig.1 and Table 1), published by INSEAD and WIPO, brings comfort to the idea that HI (high economies income) are more adept to rank higher in innovation than lower income ones. In the top 50 ranked countries, 43 86% are or HI economies, only 6 or 12% are UM (uppermiddle income), and 1 or 2% is LM (lowermiddle income) — as

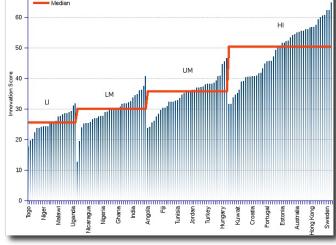


Fig.1: GII scores for 143 countries grouped by income level.

the popular saying goes, "money buys money".

### Switzerland at the top

Eight small countries appear among the top ranked ten nations, with Switzerland at the topmost rank. The two heavyweights that manage to sneak among them are the United Kingdom, number 2, and the United States, number 6. In short, the 2014 ranking offers more of the same: a shining performance by a bunch of smaller, developed economies.

The chart is structured by income group affiliation, showing by a red line the median GII for each of the four income groups. It becomes obvious that innovation is more likely to be higher in wealthy economies (HI group) than in

poor ones (LI group). The median value for each group goes up by increasingly large

discrete steps, as the set transitions from one given income group to the next higher income group.

The innovation index seems to corroborate other data pertaining to science and technology prestigious awards and to worlduniversities, class suggesting that small developed economies such as Switzerland, Finland or Singapore can outrun the biggies in terms of innovation

and efficiency.

### Bigger does not mean smarter

Innovation, along with other social factors such as public health, education or quality of life, is ruled not by distributive justice, but by positive feedback — the higher the development level, the more likely to be highly innovative. Poorer countries will have a hard time to catch up with the already wealthier ones, and, other things remaining the same, the gaps are more likely to widen than the contrary.

The much emphasized "economies of scale", allegedly capable of providing large economies with intrinsic efficiency and cost advantages, are nothing but a mirage, distracting from the true drivers of prosperity

# insight

and quality of life. Being big and heavy may be useful if the goal is to cause harm, as in a fist fight — a graphic illustration is provided by the current state of African, Middle Eastern or Central Asian affairs, where the western powers have poured their military might to try and crush mushrooming rebellions.

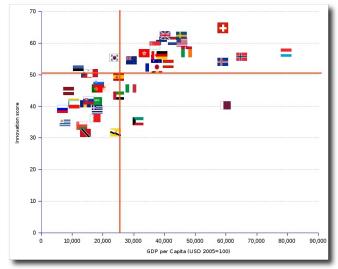
The case is altogether distinct if the goal is to build progress, well-being and quality of life for the people. As the GII suggests, elephantine size does not make anyone smarter. It is ludicrous that the EU (European Union), self-satisfied with its own plumpness, could ever

dream of becoming "the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion" by 2010. This so-called 2000 Lisbon Strategy, highly publicized before the 2008 world crisis, has been kept strictly hush-hush thereafter. EU leaders have good reasons to feel discomfited. In 2015, while EU keeps struggling for survival, the neighboring and small Switzerland achieves a much enviable performance for its people, its economy and its innovativeness.

#### Twenty one high performers

The scatter chart (Fig.2, see also Table 2) of the innovation score for HI (high income)

economies as function of the GDP (gross domestic product) per capita, in (constant, USD 2005=100) reveals at glance the innovation high performers and the The laggards. red lines show the median **GDP** per capita **USD** (vertical) 25,150 —, and the median innovation score (horizontal) 50.44.



— Fig.2: High income level countries innovation performance as a function of GDP per capita.

The top right quadrant includes countries that have both GDP per capita and innovation score above median. They are the high performers. This 21-strong group is mainly populated by small or very small countries such as Luxembourg, Iceland, Finland or Switzerland, most of which are not

endowed with a plethora of natural resources. Six big countries manage to sneak in the group: Canada, France, Germany, Japan,

United Kingdom, and the United States.

Even amongst high income and high countries. innovative smaller the ones seem to outperform the heavyweights. The likes of Czech Republic, Estonia. Malta, South and Korea are the top performers to be found in the low GDP per capita-high innovation top left quadrant, thus corroborating the idea that you do not have to

be super rich to shine as innovation is concerned.

The laggards appear in the lower-right quadrant, and they include such oil-rich biggies as Kuwait, Qatar or the United Arab



Emirates, Indeed, their innovation scores are disappointingly below the median. Living on a rent does not appear to be a strong enough stimulus to induce high performance. In the

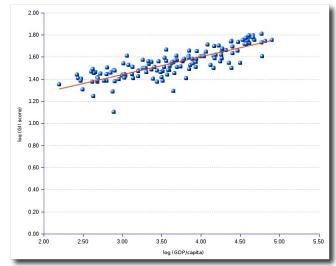
realm of innovation — being penniless is hindrance; but surely owning resources may not help a lot either.

#### Strong association between GII scores and GDP

The logarithmic chart (Fig.3, see also Table shows 3) the relationship between the GII (global innovation index, blue dots, Y-axis) and the GDP per capita (Xaxis) for the reporting 143 countries. Logarithms are used instead of the raw values for the sake of clarity, better showing

around the line of fit

(straight red line).



the scatter of the data Fig.3: Strong correlation between GII and GDP.

The association between the scores and the capita is strong (correlation coefficient r = 0.82 for the raw values, 0.83 for their log values). The variation of the innovation index is largely explained by the variation of the GDP per capita (determination coefficient  $R^2 = 0.67$  for the raw data, and 0.70 for the log values). In this respect, the year 2014 is guite in line with the preceding years. The GII ranking chart, also shows how median innovation indexes are higher in countries that enjoy higher GDP. However, this does not tell the full story, as shown by the scatter of the data points around the straight line in the log chart.

#### Poor countries may perform well

The analysis of residuals (the difference between the line of fit and the score) shows both the good and the less good exceptions to the rule. A set of countries score higher innovation than what their GDP per capita would entitle them to. In descending order the top ten are Moldova. China. Uganda, Viet Nam. Estonia, Kenya, United Kingdom, Malawi. Mongolia and Rwanda.

With the exception of China, Estonia and the United Kingdom, all these countries have GDP per capita below 50% of the median. It is thus established that comparatively poor succeed achieving economies may in relatively high innovation scores.

At the opposite end, residuals expose the poor innovation performance of countries whose GDP entitlement should justify higher scores. The ten worst performers are in descending order: Sudan, Myanmar, Brunei, Venezuela, Algeria, Kuwait, Angola, Togo, Trinidad and Tobago and Yemen. Half of these countries enjoy GDP per capita above the median.

## insight

#### As you sow, so shall you reap

As regards innovation, the more countries sow, the more they are likely to reap. The chart (Fig.4, see also Table 4) shows the scatter of the innovation output of 143 countries as a function of their innovation input. The two factors are closely associated:

the correlation coefficient r = 0.87, and the determination coefficient  $R^2 = 0.76$ , meaning that the variation of output is explained up to 76% by the variation of the input.

#### **Comparative** performances

To better illustrate the relative efficiency of the reporting countries, the chart is divided into four quadrants by the innovation output over innovation input. input median (40.29,

red vertical line), and the output median (29.27, red horizontal line).

- Top left quadrant: those countries that extract a superior output (above median ) from their below median input — they are the efficiency champions, and they include in descending efficiency order Moldova, Turkey, Ukraine, Viet Nam, Armenia, Jordan, Serbia, Indonesia, Argentina, Kuwait, India, Dominican Republic and Uruguay.
- Top right quadrant: we find here the rich and efficient countries, capable of obtaining above median outputs by using above median inputs. The ten top countries, by descending efficiency

order are China, Malta, Switzerland, Luxembourg. Netherlands. Iceland. Hungary, Czech Republic, Germany and Sweden.

Lower left quadrant: the have-nots. These countries can only apply below median inputs, thus achieving below

> median outputs. Destitute economies of Africa, Asia. and Latin America prevail in this quadrant, the top ten by efficiency descending order being Venezuela, Nigeria, Côte d'Ivoire, Pakistan. Sri Lanka, Senegal, Kenya, Mali, Angola and Ghana.

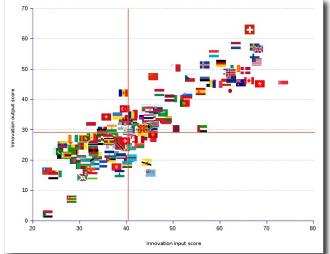


Fig.4: Innovation efficiency is given by the ratio

Lower right quadrant: the laggards. These countries, although using above median inputs, achieve only a low innovation output, suggesting a waste of opportunities. They are, ranked by efficiency descending order, Georgia, Colombia, Montenegro, Peru, Bahrain, Lebanon, Kazakhstan, Oman, Botswana, Albania, Brunei Darussalam, Fiji.



	Global Innovatio		Income Group	
Country	Overall Score 2 30,47	Ranking 94	Income Group	Region
Alperia	24,20	133	UM	NAWA
Angola Argentina	23.82 35.13	135 70	UM UM	SSF LCN
Armenia. Austra <b>li</b> a	36.06 55.01	65 17	LM HI	NAWA SEAO
Austria Azerbaijan	53.41 29.60	135 70 65 17 20 101 62	HI	EUR NAWA
Bahrain	36.26	101 62	UM HI LI	NAWA
Bangladesh Barbados	24.35 40.78			CSA LCN
Belarus	37.10	58		EUR
Belgium Benin	51.69 24.21	23 132	ii U	EUR SSF
Bhutan Bolivia, Plurinational State of	31.83 27.76			CSA LCN
Bosnia and Herzegovina	32.43	81	EM UM UM UM HI UM	EUR
Botswana Brazil	30.87 36.29	92 61	UM UM	SSF LCN
Brunei Darussalam Bulgaria	31.67 40.74	88	HI UM	SEAO FUR
Burkina Faso	28.18 22.43			SSF
Burundi Cabo Verde	30.09	138 97	LI LM	SSF
Cambodia Cameroon	28.66 27.52	106	LI LM	SEA0 SSF
Canada Chile	56.13 40.64	114 12 46 29	H	NAC LON
China	46,57	29	UM	SEAO
Colombia Costa Rica	35.50 37.30	68 57	UM UM	LCN LCN
Costa Rica CA'te d'Iuoire Croatia	27.02 40.79	116 42 30	LM	SSF EUR
Cyprus	45.82	30	H	NAWA
Czech Republic Denmark	50.22 57.52	26	н	EUR EUR
Dominican Republic Ecuador	32.29 27.50	83 115	HI UM UM	LON
Egypt	30,03	90	M	NAWA
El Salvedor Estonia	29.08 51.54	103 24	LM HI	LCN EUR
Ethiopia	25.36 30.39	126	ű.	SSF SEAD
Fiji Finland	60.67	24 126 95 4 22 104 74 13 96 50	H	EUR
France Gambia	52.18 29.03	22	HI U	EUR SSF
Georgia	34,53 56.00	74	LM	NAWA ELID
Germany Ghana	30.26	13 96	LM	SSF
Greece Guatemala	38.95 30.75	50 92	HI LM	EUR LCN
Guinea	20.25 32.48			SSF LCN
Guyana Honduras	26,73	90 118	EM EM HI UM HI	LCN
Hong Kong (China) Hungary	56.82 44.61	10	HI UM	SEAO EUR
iceland India	54.06 33.70	19 76	HI LM	EUR CSA
Indonesia	31.81	/6 87	LM LM	SEAO
ran, Islamic Republic of Ireland	26.14 56.67	120 11	UM HI HI	CSA EUR
Israel taly	55.46 45.65	15	н	NAWA EUR
Jameica.	32.41	31 B2	HI UM HI UM UM UI	LCN
Japan Jordan	52.41 36.21	21 64	HI UM	SEAO NAWA
Kazakhstan	32.75 31.85	79	UM	CSA SSF
Kenya Korea, Republic of	55.27	85 16	HI HI	SEAD
Kuwait Kymyzstan	35.19 27.75	69 112	HI U	NAWA CSA
Latvia	44.81	112 34 77 117 39	H	EUR
Lebanon Lesotho	33.60 27.01	117	LM LM	NAWA SSF
Lithuania Luxembourg	41.00 56.86	39 9	HI HI	EUR EUR
Madagascar	25,50	124	u	SSF
Malani Malaysia	27.61 45.60	113 33	LI UM	SSF SEAO
Mali Malta	26.18 50.44	119 25 40 66 43	u u	SSF EUR
Mauritius	40,94	40	UM	SSF
Mexico Moldova, Republic of	36.02 40.74	43	LM LM	LCN EUR
Mongolia Montenegro	37,52 37,01			SEAO EUR
Morocco	32.24	84	UM LM LI	NAWA
Mozambique Myanmar	28.52 19.64	140	U	SSF SEAO
Namibia Nepal	28.47 23.79	108 136	UM LI HI	SSF CSA
Netherlands New Zealand	60.59 54.52	5 18	H	EUR SEAO
Nicaragua	25.47	125	HI LM	LCN
Niger Nigeria	24.27 27.79	131 110 14 75	U IM	SSF SSF
Norway	55.59 33.87	14	HI	EUR
Pakistan	24.00	134	HI LM	NAWA CSA
Panama Paraguay	38.30 31.59			LCN LCN
Peru	34.73	73	UM LM UM	LCN
Philippines Poland	29.87 40.64	100 45	HI.	SEAO EUR
Portugal Qatar	45.63 40.31	32	H	EUR NAWA
Romania	38.08	55	UM	EUR
Russian Federation Rwanda	39.14 29.31	49 102		EUR SSF
Saudi Arabia Senegal	41.61 30.06	38	HI LM	NAWA SSF
Serbia	35,89	67	UM	EUR
Seychelles Singapore	38.56 59.24	51 7	uM HI	SSF SEAO
Slovekia Slovenia	41.89 47.23	37 28	UM HI HI HI	EUR EUR
South Africa	38.29	53	UM	SSF
Spein Sri Lanka	49.27 28.98	27 105	UM HI LM	EUR CSA
Sudan Swaziland	12.66 25.33		LM LM	SSF
Sweden	62.29			EUR
Switzerland Tajikistan	64.78 23.73	137	E E O O O	EUR CSA
Tanzania, United Reputitic of TFYR of Macedonia	25.60 36.93	123	LI UM	SSF EUR
Thailand	39.28	60	UM	SEAO
Togo Trinidad and Tobago	17.65 31.58	48 142 90 78 54 91	H H	SSF LCN
Tunisia Turkey	32.94 38.20	78	UM	NAWA NAWA
Ucenda	31.14	91	LI	SSF
Ukraine United Arab Emirates	36.26 43.25	63	LM HI HI	EUR NAWA
United Kingdom	62.37	2	ei L	EUR
United States of America Uruguay	60.09 34.76	6 72	HI	NAC LCN
Uzbekistan Venezuela, Bolharian Republic of	25.20 25.66	128	LM	CSA
	34.89	71	LM	SEAO
Viet Nam	19-53 25.76	141 121	EM EM EM	NAWA SSF
Viet Nam Yemen Zambia		130	ļu	SSF
Viet Nam Yemen Zambia Zimbalowe	24.31	y grouping:		
Viet Nam riemen Zambia Zimbabwe Media H = high income	n scores by cour 50.44			
Viet Nam riemen Zambia Zimbolowe Media. HI = high income UM = upper-middle income UM = lower-middle income	50,44 35,70 30,03			
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Viet Nam rémen Zambia Zambia Zambia Media H = high income LM = uppse-middle income LM = pues-middle income LM = to les income LM = to les income RAGC = Northern America EUR = Europe SEAO = South East Asia and Cocernia	50,44 35,70 30,03 25,50 59,11			
Viet Nam rémen Zambia Zambia Zambia Media H = high income LM = uppse-middle income LM = pues-middle income LM = to les income LM = to les income RAGC = Northern America EUR = Europe SEAO = South East Asia and Cocernia	n scores by cour 50.44 35.70 30.03 25.50 58.11 45.65			
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Viet Nam femen Zambia Zambia Zambia H = high income Media H = high income LM = uppermidde income LM = lower-midde income LHC = Romer-midde income LHC = Romer-midde income LHC = Romer-midde income SEAO = South East Asia and Cozania RVAMA = Northern Africa and VVAMA = Northern Africa and	n scores by cour 50.44 35.70 30.03 25.50 59.11 45.65 39.29 35.19 32.45 27.52			

Table 1: GII (global innovation index) scores.

areppim: information, pure and simple



Global Innovation Index									
2014 High Income Countries									
	High inco	ille Countres	, 	GDP per capita <sup>2</sup>					
Country	Score	Rank	Income level <sup>1</sup>	(USD constant,					
0	55.04			2005=100)					
Australia	55.01		HI	37,492					
Austria	53.41	20		41,217					
Bahrain	36.26	62		17,502					
Barbados	40.78		HI 	14,350					
Belgium	51.69	23		37,601					
Brunei Darussalam	31.67	88		24,185					
Canada	56.13		HI	37,529					
Chile	40.64	46		9,728					
Croatia	40.75	42		10,556					
Cyprus	45.82		HI I	20,517					
Czech Republic	50.22	26		14,648					
Denmark Estania	57.52		HI I. II	47,220					
Estonia	51.54	24		12,057					
Finland	60.67		HI	39,090					
France	52.18	22		35,668					
Germany	56.02	13		39,205					
Greece	38.95	50		18,229					
Hong Kong (China)	56.82	10		33,534					
Iceland	54.05	19		59,061					
Ireland	56.67	11		47,257					
Israel	55.46		HI	24,340					
Italy	45,65	31		29,212					
Japan Karaa Bapublia ef	52.41 55.27	21		37,573					
Korea, Republic of	55.27 35.19		HI	23,893					
Kuwait	I I	69		31,437					
Latvia	44.81	34		8,866 10 544					
Luxombourg	41 56 96	39	IHI	10,544					
Luxembourg	56.86 50.44	9 25		79,509					
Malta Netherlands	50.44 60.59		HI	16,732					
New Zealand	54.52	18		42,893					
	54.52 55,59	18		29,334					
Norway Oman	33.87	75		65,240					
Poland	40.64	45		13,252 10,786					
Portugal	40.64 45.63	32		18,215					
Qatar	45.63	32 47		59,894					
Russian Federation	39.14	47		6,923					
Saudi Arabia	41.61	38							
	59.24		HI	18,060 36,898					
Singapore Slovakia	59.24 41.89	37		15,371					
Slovakia	41.89 47.23	28		18,639					
Spain	47.23		HI	25,150					
Sweden	62.29		III HI	45,551					
Switzerland	64.78		FI	59,009					
Trinidad and Tobago	31.56		ITI IHI	14,370					
United Arab Emirates	43.25		HI	25,141					
United Kingdom	62,37		HI	40,225					
United States of America	60.09		HI	45,710					
1	34.76	72							
Uruguay		12	П	7,809					
Median	50.44		L	25,150					

<sup>&</sup>lt;sup>1</sup> The WB (World Bank) divides world economies by "income level", according to 2013 gross national income (GNI) per capita, calculated using the World Bank Atlas method. The groups are:

Table 2: GII for HI (high income) countries.

<sup>-</sup> LI: low income, \$1,045 or less;

<sup>-</sup> LM: lower middle income, \$1,046 - \$4,125;

<sup>-</sup> UM: upper middle income, \$4,126 - \$12,745; and

<sup>-</sup> HI: high income, \$12,746 or more.

<sup>&</sup>lt;sup>2</sup> WB latest GDP available data for 2013, with the following exceptions:

<sup>-</sup> Kuwait and Oman: WB 2012 estimates.

<sup>-</sup> Argentina, Jamaica and Myanmar: CIA World Factbook, 2013 estimates.



Country	GI 2		Rank	Income Level	GDP per USD	
Ubania	Score 30,47	Logarithm 1.48		1 UM	(constant, 2005=100) 3.916	Logarithm 3.5
Algeria Angola	24.20 23.82	1.38 1.38	133 135	UM	3,244 2,738	3.1
Argentina Armenia	35.13 36.06	1.55 1.56	70	UM	22,700	4.3
Australia Austria	55.01 53.41	1.74	20	LM HI HI	37,492 41,217	4.1
Azerbaijan Bahrain	29.60 36.26	1.47 1.56	101 62 129	ÜM HI	3,253 17,502	3.1
Bangladesh Barbados	24.35 40.78	1.39 1.61	129 41	ίi H	621 14,350	2. 4.
Selarus Selgium	37.10 51.69	1.57 1.71	59	LIM	4,914 37,601	3.0
Benin Bhutan	24.21 31.83	1.38 1.50	23 132 86	ii IM	583 1,977	2.
Sofivia, P. S. of Bosnia and Herzegovina	27.76 32.43	1.44 1.51	111		1,323 3,404	3.:
Botswana Brazil	30.87 36.29	1.49 1.56	92	UM UM	7,027 5,823	3.1
Brunei Darussalam Bulgaria	31.67 40.74	1.50 1.61	88	HI	24,185 4,808	4.:
Burkina Faso Burundi	28.18 22.43	1.45 1.35	109 138	ш	522 155	2.
Cabo Verde Cambodia	30.09 28.66	1.48 1.46	97 106	LM	2,739 709	3.4
Cameroon Canada	27.52 56.13	1.44 1.75	114	LM	989 37.529	3.1
Chi <b>le</b> China	40.64 46.57	1.61 1.67	46	HI UM	9,728 3,583	3.1
Colombia Costa Rica	35.50 37.30	1.55 1.57	68 57	UM UM	4,394 5.839	3.0
Côte d'Ivoire Croatia	27.02 40.75	1.43 1.61	116 42		1,079 10,556	3.0
Cyprus Czech Republic	45.82 50.22	1.66 1.70	30	HI	20,517 14,648	4.
Denmark Dominican Republic	57.52 32.29	1.76 1.51	26 8 83	HI UM	47,220 4,884	4.0
cuador gypt	27.50	1.44	115	UM LM	3,701	3.1
I Salvador stonia	29.08 51.54	1.46 1.71	103 24	LM Ні	3,063 12,057	3. 4.1
stonia Shiopia Siji	25.36 30.39	1.71 1.40 1.48	126	LI LI LIM	12,057 295 3,825	2.4
inland France	50.67 52.18	1.78 1.72	95 4 22	HI	39,090 35,668	4.1 4.1
rance Sambia Seorgia	29.03 34.53	1.72 1.46 1.54	104 74	υ	35,668 450 2.160	2.0
seorgia Sermany Shana	56.02 30.26	1.75 1.48	13	HI LM	39,205 769	4.1 2.1
Greece Suatemala	30.26 38.95 30.75	1.48 1.59 1.49	90 50 93	H	18,229	4.; 3.;
Suinea Suyana	20.25 32.48	1.31 1.51	139 80	U	2,341 307 1,336	2. 3.:
londuras long Kong (China)	32.48 26.73 56.82	1.43 1.75	118	LM	1,577 33,534	3.: 4.!
lungary deland	44.61 54.05	1.65 1.73		UM	11,434 59,061	4.1
retano ndia ndonesia	33.70 31.81	1.53 1.50	76 87	LM	1,190 1,810	3.0
an, Islamic Republic of reland	26.14 56.67	1.42	120 11	UM	3,132 47,257	3.1 4.1
srael	55.46	1.75 1.74	15	HI	24,340	4.3
ally amaica	45.65 32.41	1.66 1.51		UM	29,212 8,600	3.1
apan lordan	52.41 36.21	1.72 1.56	21 64	HI UM UM	37,573 2,855	4.5
Cazakhstan Cenya	32.75 31.85	1.52 1.50	85	u	5,425 632	3.1 2.1
Corea, Republic of Cuwait	55.27 35.19	1.74 1.55	16 69	HI	23,893 31,437	4. 4.
Kyrgyzstan atvia	27.75 44.81	1.44 1.65	112 34	HI	625 8,866	2.0 3.1
ebanon esotho	33,60 27.01	1.53 1.43		UM LM	7,241 974	3.1 2.1
ithuania .uxembourg	41.00 56.86	1.61 1.75	39	HI HI	10,544 79,509	4.1
Aadagascar Aalawi	25.50 27.61	1.41 1.44	124 113	u	271 264	2.
Aalaysia Aali	45.60 26.18	1.66 1.42	119	UM U	6,998 476	3.i 2.i
Aalta Aauritius	50.44 40.94	1.70 1.61		UM	16,732 6,879	4.; 3.i
Aexico Aoldova, Republic of	36.02 40.74	1.56 1.61	43	UM LM	8,519 1,136	3.1
Mongolia Montenegro	37.52 37.01	1.57 1.57	56 59	LIM	1,796 4,689	3.:
Morocco Mozambique	32.24 28.52	1.51 1.46	107	LM U	2,531 433	3.4
fyanmar famibia	19.64 28.47	1.29 1.45	140 108	UM	4,400 4,565	3.0
lepal letherlands	23.79 60.59	1.38 1.78	136 5	HI	409 42,893	2.i 4.i
lew Zealand licaragua	54.52 25.47	1.74 1.41	18 125	LM	29,334 1,367	4.4 3.1
liger ligeria	24.27 27.79	1.39 1.44	131 110	I M	291 1,056	2.4
lorway Oman	55.59 33.87	1.74 1.53	14 75	HI HI	65,240 13,252	4.1
Pakistan Panama	24,00 38,30	1.38 1.58	134 52	LM UM	790 7,740	2.1
Paraguay Peru	31.59 34.73	1.50 1.54	89	LM	1,929 4,110	3.1
Philippines Poland	29.87 40.64	1.48	73 100 45	HI	1,581 10,786	3.:
Portugal Qatar	45.63 40.31	1.66 1.61	32 47	HI HI	18,215 59,894	4.1
Romania Russian Federation	38.08 39.14	1.58 1.59	55 49	UM	6,067	3.1
Rwanda Saudi Arabia	29.31 41.61	1.47 1.62	102	lu l	401 18.060	2.0 4.1
Senegal Serbia	30.06 35.89	1.48 1.55	38 98 67	LM UM	796 4,304	2.1
Seychelles Singapore	38,56 59,24	1.59 1.77	51	UM	14,875 36,898	4. 4.
Skvakia Skvenia	41.89 47.23	1.62 1.67	7 37 28	Hi Hi	15,371 18,639	4.
South Africa Spain	47.23 38.25 49.27	1.58 1.58	53	LIM	6,090 25,150	4. 3. 4.
spain Sri Lanka Sudan	28.98 12.66	1.46 1.10	27 105 143	LM	25,150 2,004 771	3.: 2.1
Swaziland Sweden	12.66 25.33 62.29	1.10 1.40 1.79	127	LM	2,430 45,551	2.1 3.: 4.1
Sweden Switzerland Bijkistan	62.29 64.78 23.73	1.79 1.81 1.38	1 137	HI HI	45,551 59,009 481	4.1 4.1 2.1
apkistan anzania, United Rep. of TYR of Macedonia	25.60 36.93	1.38 1.41 1.57	123		481 487 3,577	2.0 2.0 3.1
hailand	36.93 39.28 17.65	1.57 1.59 1.25	48	UM	3,577 3,438 424	3.1 3.1 2.1
logo Tinidad and Tobago	31.56	1.50	142 90	LI HI UM	14,370	4.3
unisia urkey Innerto	32.94 38.20	1.52 1.58	54	UM	3,981 8,723	3.1
Jganda Jkraine	31.14 36.26	1.49 1.56	91 63	LM	418 2,138	3.3
Inited Arab Emirates Inited Kingdom	43.25 62.37	1.64 1.79	36 2	HI	25,141 40,225	4.4
Inited States of America Iruguay	60.09 34.76	1.78 1.54	6 72	HI HI	45,710 7,809	3.0
Jzbekistan /enezuela, B. Rep. of	25,20 25,66	1.40 1.41	128 122	UM	899 6,402	2.1 3.1
fet Nam femen	34.89 19.53	1.54 1.29	71 141	LM LM	1,029 742	3.0 2.1
fambia Simbabwe	25.76 24.31	1.41 1.39	121 130	LM U	1,054 475	3.i 2.i
Median Correlation coefficient r	34.76 0.82	0.83			4,400	
Determination coefficient R <sup>o</sup> The WB (World Bank) divide apita, calculated using the W	0.67 s world econor	0.7 nies by "income	level*, accom	ling to 2013 gro	oss national inc	ome (GNI) p
LI: law income, \$1,045 or les	S;	method. The g	roups are:			
LM: lower middle income, \$1 UM: upper middle income, \$4	4,126 - \$12,745	i; and				
Ht high income, \$12,746 or r	more					

Table 3: Correlation of innovation with GDP per capita.



			Efficient Utilization of Innovation Inputs 2014						
Country	Income Level	Region	Gli (Global Inn	ovation Index)	Innovation I	nput Index 1	Innovation O	utput Index 2	Innovatio Efficienc
Vibania.	UM	FUR	Score 30 47	Rank 94	Score 40.51	Rank 71	Score 20.43	Rank 117	Index 1
Vigeria	UM	NAWA	24.20	133	31.65	122	16.74	132	č
Angola Argentina	UM UM	SSF LCN	23.82 35.13	135 70	26.21 39.18	138 83	21.44 31.07	112 61	0
Armenia Australia	LM	NAWA	36.06 55.01	65	39.39	81	32.73	55 22	(
Australia Austria	H H	SEAO EUR	53.41	17 20	64.57 61.33	10 18	45.46 45.49	22	0
Azerbaijan Bahrain	UM HI	NAWA NAWA	29.60 36.26	101 62	37.35 45.45	91 48	21.84 27.08	109 80	0
Bangladesh	u	CSA	24.35	129	29.00	130	19.70	120	(
Barbados Belarus	HI IUM	LCN EUR	40.78 37.10	41 58	48.32 40.51	38 70	33.24 33.68	53 50	(
Belgium	HI	EUR	51.69	23	58.23	22	45.15	23	
Benin Bhutan	LM LM	SSF CSA	24.21 31.83	132 86	30.28 39.76	129 76	18.13 23.89	129 102	0
Bolivia, P.S.	LM	LCN	27.76	111	32.74	115	22.78	106	(
Bosnia and Herzegovina Botswana	UM UM	EUR SSF	32.43 30.87	81 92	39.36 41.20	82 67	25.51 20.54	92 116	(
Brazil	UM	LCN	36.29	61	41.74	63	30.84	64	(
Brunei Darussalam Bulgaria	HI UM	SEAO EUR	31.67 40.74	88 44	44.30 44.34	55 54	19.04 37.13	124 37	(
Burkina Faso	LI	SSF	28.18	109	32.87	112	23.49	104	
Burundi Cabo Verde	LM LM	SSF SSF	22.43 30.09	138 97	30.63 38.89	126 85	14.23 21.28	141 114	(
Cambodia	LI .	SEAO	28.66	106	32.85	113	24.46	99	
Cameroon Canada	LM HI	SSF NAC	27.52 56.13	114 12	30.59 66.27	127 8	24.46 45.99	100 20	
hile	H	LCN	40.64	46	48.44	37	32.84	54	
žhina Zolombia	UM UM	SEAO LCN	46.57 35.50	29 68	45.79 43.45	45 58	47.35 27.55	16 77	
Costa Rica	UM	LCN	37.30	57	41.30	66	33.31	51	
Xôte d'Ivoire Zroatia	LM	SSF EUR	27.02 40.75	116 42	28.01 45.10	135 50	26.04 36.40	88 40	
yprus	H	NAWA	45.82	30	51.73	31	39.92	34	
zech Republic	H	EUR	50.22	26	53.59	27	46.85	17	
Denmark Dominican Republic	HI UM	EUR LCN	57.52 32.29	83	65.52 34.95	9 101	49.52 29.64	12 71	
cuador	UM	LCN	27.50	115	33.71	105	21.28	113	
gypt I Salvador	LM LM	NAWA LCN	30.03 29.08	99 103	34.05 36.42	104 97	26.01 21.73	89 110	
stonia	H	EUR	51.54	24	56.81	23	46.27	19	
thiopia iji	LI UM	SSF SEAO	25.36 30.39	126 95	30.36 45.21	128 49	20.35 15.56	118 136	
inland	H	EUR	60.67	4	67.53	5	53.82	6	
rance Sambia	H	EUR SSF	52.18 29.03	22 104	59.51 32.92	20 111	44.85 25.15	26 93	
Georgia	LM	NAWA	34.53	74	41.10	68	27.95	93 75	
iermany	HI LM	EUR SSE	56.02	13	60.31 33.50	19	51.74	8	
Shana Greece	LM HI	SSF EUR	30.26 38.95	96 50	33.50 45.94	106 44	27.03 31.95	82 58	
iuatemala	LM	LCN	30.75	93	36.69	94	24.82	97	
Guinea Guyana	LM LM	SSF LCN	20.25 32.48	139 80	25.14 37.28	140 92	15.35 27.67	138 76	
londuras	LM	LCN	26.73	118	34.84	102	18.62	126	
long Kong (China) lungary	HI UM	SEAO EUR	56.82 44.61	10 35	68.57 47.04	2 41	45.08 42.18	24 29	
eland	H	EUR	54.05	19	56.77	24	51.33	9	
ndia ndonesia	LM LM	CSA SEAO	33.70 31.81	76 87	36.97 32.42	93 117	30.42 31,20	65 60	
an, Islamic Republic of	UM	CSA	26.14	120	33.24	107	19.04	125	
eland	H	EUR	56.67	11	63.31	12	50.04	11	
rael aly	H H	NAWA EUR	55.46 45.65	15 31	61.80 51.21	17 32	49.11 40.09	13 33	
amaica	UM	LCN	32.41	82	39.17	84	25.65	91	
apan ordan	HI UM	SEAO NAWA	52.41 36.21	21 64	62.21 40.29	15 72	42.61 32.13	27 57	
lazakhstan	UM	CSA	32.75	79	41.10	69	24.40	101	
enya orea, Republic of	H H	SSF SEAO	31.85 55.27	85 16	34.69 62.17	103 16	29.01 48.37	73 15	
Luwait	н	NAWA	35.19	69	39.44	79	30.94	62	
lyrgyzstan atvia	U H	CSA EUR	27.75 44.81	112 34	37.92 49.21	90 35	17.58 40.41	131 32	
atwa ebanon	UM	NAWA	33.60	77	49.21	61	24.98	32 95	
esotho	LM	SSF	27.01	117	38.58	87	15.45	137	
ithuania uxembourg	H H	EUR EUR	41.00 56.86	39 9	48.73 58.78	36 21	33.27 54.94	52 5	
1adagascar	ļu .	SSF	25.50	124	31.41	123	19.58	121	
Aalawi Aalaysia	LI UM	SSF SEAO	27.61 45.60	113 33	32.97 52.46	109 30	22.25 38.74	108 35	
Aali .	u	SSF	26.18	119	28.65	132	23.71	103	
Aalta Aauritius	HI UM	EUR SSF	50.44 40.94	25 40	50.57 46.89	33 42	50.31 34.99	10 43	
Mexico	UM	LCN	36.02	66	42.19	62	29.86	70	
foldown, Republic of	LM LM	EUR SEAO	40.74 37.52	43 56	39.42 44.76	80 51	42.06 30.28	30 67	
Aongolia Aontenegro	UM	EUR	37.52	59	44.76 45.61	46	28.41	74	
forocco	LM	NAWA	32.24	84	37.99	89	26.49	86	
flozambique flyanmar	H	SSF SEAO	28.52 19.64	107 140	36.42 23.03	96 143	20.61 16.25	115 133	
lamibia	UM	SSF	28.47	108	36.67	95	20.28	119	
lepal letherlands	LI H	CSA FUR	23.79 60.59	136	31.83 63.46	121	15.74 57.73	135	
lew Zealand	н	SEAO	54.52	18	62.47	11 13	46.57	18	
licaragua Foor	LM U	LCN SSF	25.47	125	33.22	108	17.72 16.20	130 134	
liger ligeria	LM	SSF	24.27 27.79	131 110	32.35 28.63	118 133	16.20 26.95	83	
lorway	H	EUR	55.59	14	62.37	14	48.82	14	
Oman Pakistan	HI LM	NAWA CSA	33.87 24.00	75 134	42.82 25.44	59 139	24.92 22.57	96 107	
anama	UM	LCN	38.30	52	41.40	64	35.20	42	
araguay	LM UM	LCN LCN	31.59 34.73	89 73	36.01 42.82	99 60	27.18 26.65	79 85	
hilippines	LM	SEAO	29.87	73 100	32.93	110	26.80	84	
oland	Ħ	EUR	40.64	45	47.31	40	33.98	48	
Portugal Qatar	H H	EUR NAWA	45.63 40.31	32 47	52.56 50.38	29 34	38.70 30.24	36 69	
tomania	UM	EUR	38.08	55	41.36	65	34.80	44	
tussian Federation wanda	H	EUR SSF	39.14 29.31	49 102	43.77 40.19	56 74	34.50 18.43	45 128	
laudi Arabia	HI	NAWA	41.61	38	47.85	39	35.37	41	
enegal erbia	LM UM	SSF EUR	30.06 35.89	98 67	32.56 40.06	116 75	27.55 31.73	78 59	
Seychelles	UM	SSF	38.56	51	44.45	53	32.68	56	
ingapore Iovakia	H H	SEAO EUR	59.24 41.89	7 37	73.60 46.75	1 43	44.88 37.02	25 38	
lovenia	HI	EUR	47.23	28	53.07	28	41.38	31	
outh Africa	UM	SSF	38.25	53	45.60	47	30.90	63	
pain ri Lanka	HI LM	EUR CSA	49.27 28.98	27 105	55.94 30.92	26 125	42.60 27.04	28 81	
udan	LM	SSF	12.66	143	23.20	142	2.11	143	
waziland weden	LM HI	SSF EUR	25.33 62.29	127	32.21 67.46	119 6	18.45 57.13	127	
witzerland	HI	EUR	64.78	1	66.44	7	63.11	1	
ajikistan	Ģ.	CSA	23.73	137	32.82	114	14.65	140	
anzania, U. R. FYR of Macedonia	LI UM	SSF EUR	25.60 36.93	123 60	31.98 43.45	120 57	19.21 30.42	122 66	
hailand	UM	SEAO	39.28	48	44.75	52	33.81	49	
ogo rinidad and Tobago	LI Hi	SSF LCN	17.65 31.56	142 90	28.31 38.64	134 86	6.98 24.49	142 98	
rinidad and Tobago unisia	UM .	NAWA	32.94	90 78	38.64 39.75	86 77	24.49 26.14	98 87	
urkey	UM	NAWA	38.20	54	39.66	78	36.74	39	
lganda kraine	LM LM	SSF EUR	31.14 36.26	91 63	36.32 38.15	98 88	25.96 34.37	90 46	
Inited Arab Emirates	H	NAWA	43.25	36	56.23	25	30.27	68	
	변	EUR	62.37	2	68.21	3	56.52	4	
Inited Kingdom	H	NAC LCN	60.09 34.76	6 72	67.92 40.26	4 73	52.27 29.27	772	
Inited States of America	H								
Inited Kingdom Inited States of America Iruguay Izbekistan	LM	CSA	25.20	128	31.26	124	19.14	123	
Inited States of America Iruguay Izbekistan fenezuela, B.R.	LM UM	CSA LCN	25.20 25.66	128 122	31.26 26.32	137	19.14 24.99	123 94	
Inited States of America Iruguay Izbekistan	LM	CSA LCN SEAO NAWA	25.20	128	31.26	124 137 100 141	19.14	123	
Inited States of America Iruguay Izbekistan Ienezuela, B.R. Iet Nam	LM UM LM	CSA LCN SEAO	25.20 25.66 34.89	128 122 71	31.26 26.32 35.75	137 100	19.14 24.99 34.02	123 94 47	

Table 4: Innovation efficiency scores.



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