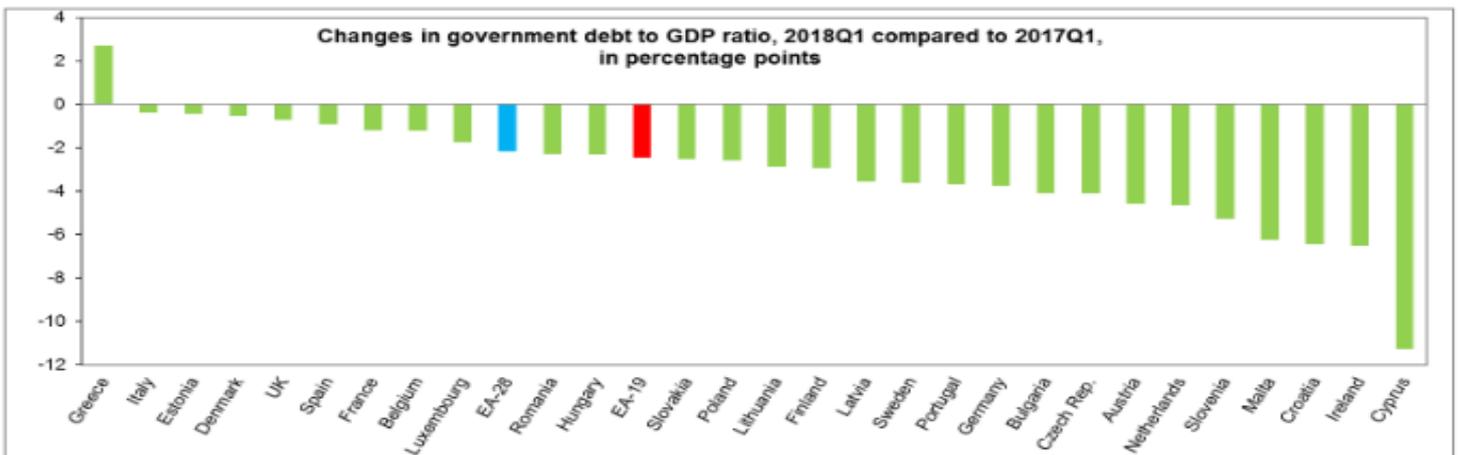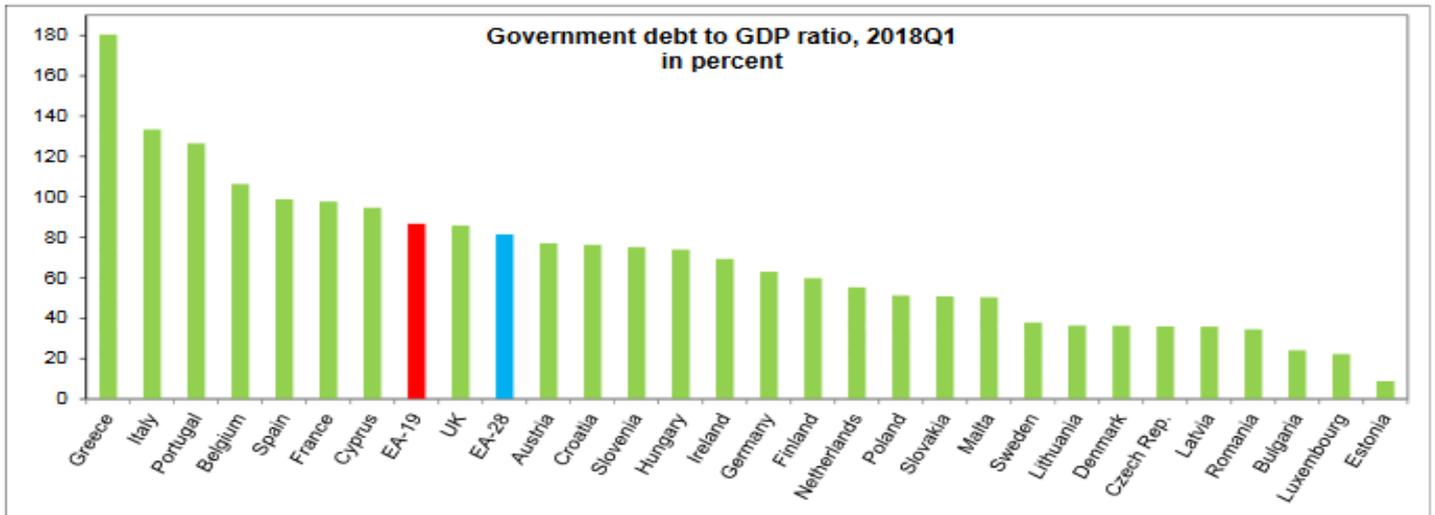European Commission

NEWSLETTER on STI Data and Indicators

DG RTD, A4, Analysis and monitoring of national research policies

1. Eurostat data on government debt

On 20 July, Eurostat published data on government debt as a % of GDP. According to Eurostat the highest rates of government debt to GDP at the end of the first quarter of 2018 were recorded in Greece (180.4), Italy (133.4), Portugal (126.4) and Belgium (106.3), the lowest in Estonia (8.7), Luxembourg (22.2) and Bulgaria (24.1). Compared to the first quarter of 2017 the government debt ratio increased only in Greece (+2.7pp), while it declined most in Cyprus (-11.3 pp), Ireland (-6.5 pp), Croatia (-6.4pp) and Malta (-6.2 pp). In EU28 government debt in 2018 Q1 amounted to 12.6 trillion Euro, or 81.5% of GDP, (of which currency and deposits 3.3% of GDP, debt securities 66.5% and loans 11.6%) compared to 83.6% in 2017 Q1.

Government debt to GDP ratio, 2018Q1 in percent

Changes in government debt to GDP ratio, 2018Q1 compared to 2017Q1, in percentage points

More info: http://ec.europa.eu/eurostat/documents/2995521/9087362/2-20072018-AP-EN.pdf/d9ca7f92-ea01-4a6d-a6d1-f64445be272a

2. Eurostat data on EU population trends

On 10 July 2018, Eurostat published first estimates for the EU population change in 2017. Eurostat estimated the EU population on 1 January 2018 at 512.6 million, up 0.2%, from 511.5 million on 1 January 2017. During the year 2017, 5.3 million deaths and 5.1 million births were recorded in the EU, the natural change of the population was hence negative (-0.2 million). However, a net migration of 1.3 million into the EU led to a population increase of 1.1 million. In 2017 the population decreased in 9 EU Member States, with the biggest declines occurring in Lithuania (-1.4%), Croatia (-1.2%), Bulgaria (-0.7%) and Romania (-0.6%). The highest population increases occurred in Malta (3.3%), followed by Luxembourg (1.9%), Sweden (1.2%), Ireland (1.1%) and Cyprus (1.1%). The lowest crude birth rate was recorded in Italy (7.6 births/1000 residents), the highest in Ireland (12.9). Ireland also had the lowest death rate (6.3 deaths/1000 residents) and hence the highest natural population growth. Bulgaria had the highest death rate in 2017 (15.5), followed by Latvia (14.8). On 1 January 2018, the 4 largest Member States represented 54% of the EU population; the 6 largest Member States represented 70% of the EU population.

Total population

	Population 1.1.2017 (in 1 000)	Population 1.1.2018 (in 1 000)	Change 2018/2017 (per 1 000)*	Share in EU population, 2018
EU	**511 521.7**	**512 596.4**	**2.1**	**100%**
Belgium	11 351.7	11 413.1	5.4	2.2%
Bulgaria	7 101.9	7 050.0	-7.3	1.4%
Czech Republic	10 578.8	10 610.1	2.9	2.1%
Denmark	5748.8	5 781.2	5.6	1.1%
Germany**	82 521.7	82 850.0	4.0	16.2%
Estonia	1315.6	1 319.1	2.7	0.3%
Ireland	4784.4	4 838.3	11.2	0.9%
Greece**	10 768.2	10 738.9	-2.7	2.1%
Spain	46 527.0	46 659.3	2.8	9.1%
France	66 989.1	67 221.9	3.5	13.1%
Croatia	4154.2	4 105.5	-11.8	0.8%
Italy	60 589.4	60 484.0	-1.7	11.8%
Cyprus	854.8	864.2	11.0	0.2%
Latvia	1 950.1	1 934.4	-8.1	0.4%
Lithuania	2 847.9	2 808.9	-13.8	0.5%
Luxembourg	590.7	602.0	19.0	0.1%
Hungary	9 797.6	9 778.4	-2.0	1.9%
Malta**	460.3	475.7	32.9	0.1%
Netherlands	17 081.5	17 118.1	2.1	3.3%
Austria	8 772.9	8 822.3	5.6	1.7%
Poland	37 973.0	37 976.7	0.1	7.4%
Portugal	10 309.6	10 291.0	-1.8	2.0%
Romania	19 644.4	19 523.6	-6.2	3.8%
Slovenia	2 065.9	2 066.9	0.5	0.4%
Slovakia	5 435.3	5 443.1	1.4	1.1%
Finland	5 503.3	5 513.1	1.8	1.1%
Sweden	9 995.2	10 120.2	12.4	2.0%
United Kingdom	65 808.6	66 186.4	5.7	12.9%
Iceland	338.3	348.5	29.4	-
Liechtenstein	37.8	38.1	8.0	-
Norway	5 258.3	5 295.6	7.1	-
Switzerland	8 419.6	8 482.2	7.4	-
Montenegro	622.4	622.4	0.0	-
The former Yug. Rep. of Macedonia	2 073.7	2 075.3	0.8	-
Albania	2 876.6	2 870.3	-2.2	-
Serbia	7 040.3	7 001.4	-5.5	-
Turkey	79 814.9	80 810.5	12.4	-

All data are provisional
- Not applicable
* Crude rate of population change represents the ratio, expressed per 1 000 residents, of the increase of population during 2017 (difference between the population on 1 January 2018 and the population on 1 January 2017) to the average population in 2017.
** Data are estimated
The source dataset can be found here.

More info: http://ec.europa.eu/eurostat/documents/2995521/9063738/3-10072018-BP-EN.pdf/ccdfc838-d909-4fd8-b3f9-db0d65ea457f

3. World Economic Forum Chart on Top 20 Internet Leaders

On 16 July 2018, the *World Economic Forum* published a chart on the world's largest tech (Internet) companies by market valuation. Whilst in 2013, 16 of the top 20 were Chinese or American, now all 20 hail from the US or China (of which US 12 and China 8). Apple is currently the company with the highest valuation (915 bn $), followed by Amazon (828 bn $), Alphabet (Google), Microsoft and Facebook and the top two Chinese companies Alibaba and Tencent. There is no European company in the top 20 of the WEF chart. However, the list does not include the German software company SAP, which has a market valuation of 140 bn $.
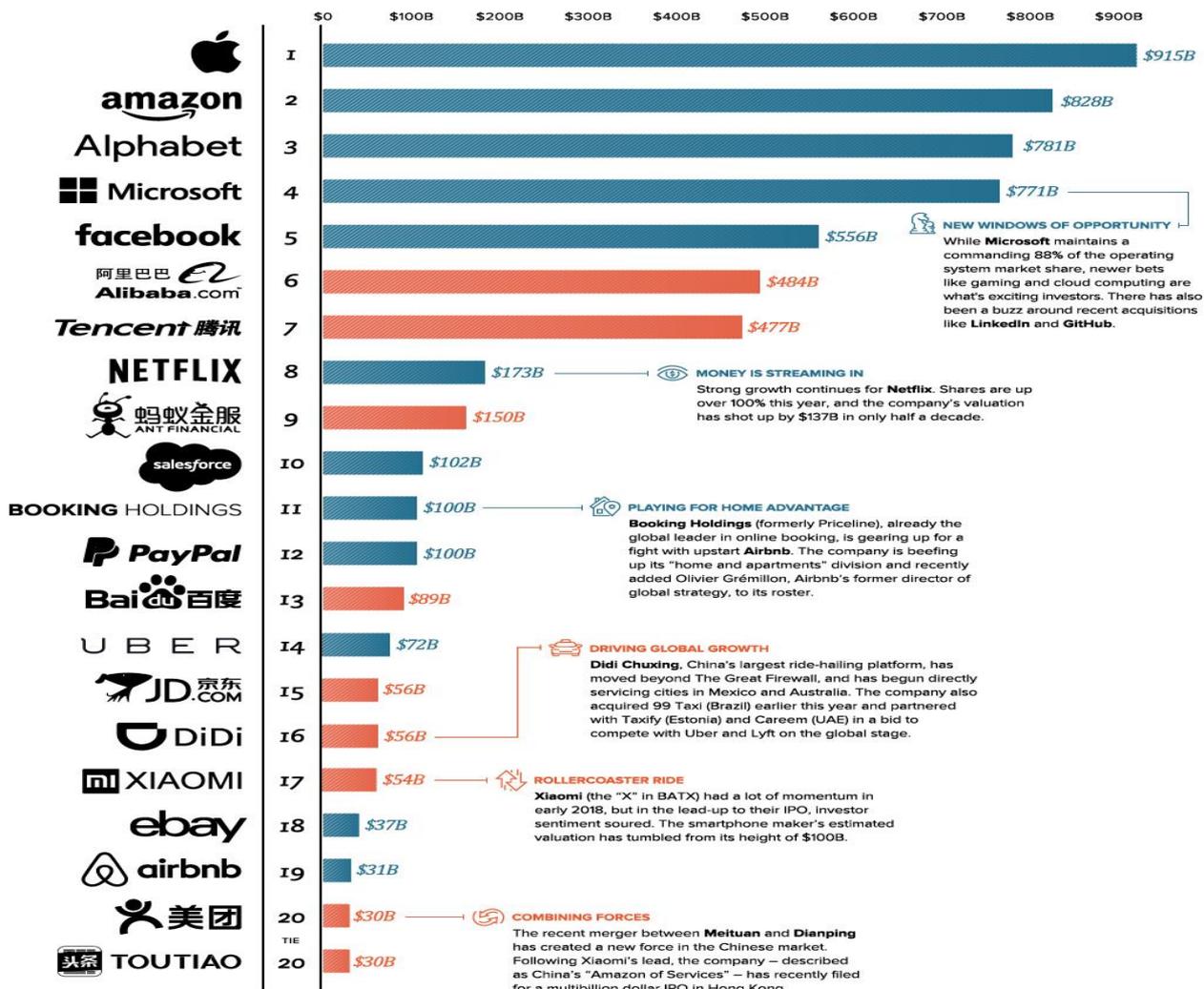
Chart of the Week

THE WORLD'S 20 LARGEST TECH GIANTS
The most significant internet companies only hail from the U.S. or China

TOP 20 INTERNET LEADERS

The technology universe is now binary

In just 5 years, all of the top 20 technology companies are Chinese and American.

13	3	2	1	1
12	8			

2013

TOP 20 INTERNET LEADERS

2018

Top 20 Internet Leaders (Valuation, 2018)

$0	$100B	$200B	$300B	$400B	$500B	$600B	$700B	$800B	$900B

Rank	Company	Valuation
1	Apple	$915B
2	amazon	$828B
3	Alphabet	$781B
4	Microsoft	$771B
5	facebook	$556B
6	Alibaba.com	$484B
7	Tencent 腾讯	$477B
8	NETFLIX	$173B
9	蚂蚁金服 ANT FINANCIAL	$150B
10	salesforce	$102B
11	BOOKING HOLDINGS	$100B
12	PayPal	$100B
13	Bai度 百度	$89B
14	UBER	$72B
15	JD.COM 京东	$56B
16	DiDi	$56B
17	XIAOMI	$54B
18	ebay	$37B
19	airbnb	$31B
20	美团	$30B
20 TIE	TOUTIAO 头条	$30B

NEW WINDOWS OF OPPORTUNITY
While **Microsoft** maintains a commanding 88% of the operating system market share, newer bets like gaming and cloud computing are what's exciting investors. There has also been a buzz around recent acquisitions like **LinkedIn** and **GitHub**.

MONEY IS STREAMING IN
Strong growth continues for **Netflix**. Shares are up over 100% this year, and the company's valuation has shot up by $137B in only half a decade.

PLAYING FOR HOME ADVANTAGE
Booking Holdings (formerly Priceline), already the global leader in online booking, is gearing up for a fight with upstart **Airbnb**. The company is beefing up its "home and apartments" division and recently added Olivier Grémillon, Airbnb's former director of global strategy, to its roster.

DRIVING GLOBAL GROWTH
Didi Chuxing, China's largest ride-hailing platform, has moved beyond The Great Firewall, and has begun directly servicing cities in Mexico and Australia. The company also acquired 99 Taxi (Brazil) earlier this year and partnered with Taxify (Estonia) and Careem (UAE) in a bid to compete with Uber and Lyft on the global stage.

ROLLERCOASTER RIDE
Xiaomi (the "X" in BATX) had a lot of momentum in early 2018, but in the lead-up to their IPO, investor sentiment soured. The smartphone maker's estimated valuation has tumbled from its height of $100B.

COMBINING FORCES
The recent merger between **Meituan** and **Dianping** has created a new force in the Chinese market. Following Xiaomi's lead, the company — described as China's "Amazon of Services" — has recently filed for a multibillion dollar IPO in Hong Kong.

visualcapitalist.com

More info: https://www.weforum.org/agenda/2018/07/visualizing-the-world-s-20-largest-tech-giants
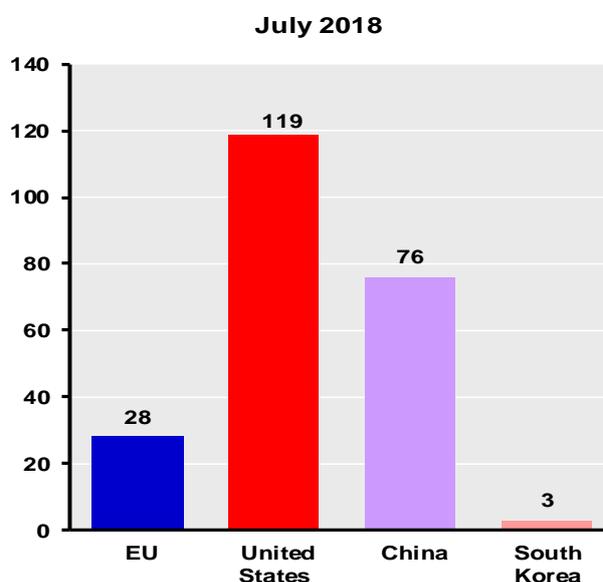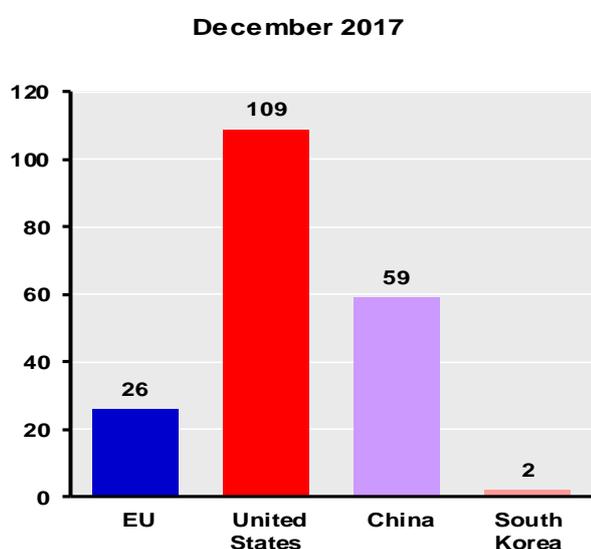
4. CB Insights data on unicorn companies

The data on unicorns in the Commission's (RTD) Science, Research and Innovation Performance Report 2018 refer to December 2017 and were based on *CB Insights*. A look at the latest edition of the CB Insights list (as of 26 July, 2018) reveals some changes. The US still leads with 119 unicorn companies, 10 more than in December 2017 (+9.1%). However, China is catching up, with its number of unicorns increasing by 17 (or 28.8%), and now reaching 76. The number of unicorns in the EU grew from 26 to 28 or by 7.7% and hence less quickly than in the US and China.

The number of unicorns in the UK increased by 1 (with the Fintech companies *Atom Bank* and *Revolu*t joining, and *Shazam* leaving the list) and in Germany by 2 (*NuCom* and *Celonis* added to the list). Estonia (*taxify*) and Portugal (*Outsystems*) are newcomers since

December 2017 with one unicorn each. The number of unicorns declined in Sweden (*Spotify* going public in spring 2018), the Netherlands (*Adyen*, IPO in June 2018) and in the Czech Republic (*AVAST*, IPO in May 2018). The UK still has more than half of the EU unicorns, but with Malta, Estonia and Portugal joining in the recent past there is now a better geographic balance.

The ten unicorns with the highest valuations are all based in the US and China, with the on-demand transport companies *Uber* (US) and *Didi Chuxing* (China) in the lead. The UK computer services and hardware company *Global Switch* is the EU unicorn with the highest value, followed by the German companies *Auto 1* Group and *Otto Bock*.

Private unicorns[1]

December 2017

July 2018

Source: DG Research and Innovation - Unit for the Analysis and Monitoring of National Research and Innovation Policies
Data: Cbinsights, OECD, Eurostat
Notes: [1] A unicorn is a private company with a post-money (i.e. "after funding") valuation at more than US$ 1 bn.

Private unicorns[1]

		Dec-17	Jul-18
	UK	14	15
	Germany	3	5
	Sweden	2	1
	France	2	2
	Netherlands	2	1
	Luxembourg	1	1
	Czech Republic	1	0
	Malta	1	1
	Estonia	0	1
	Portugal	0	1

other countries	Jul-18
India	11
Israel	4
Indonesia	2
Switzerland	2
South Africa	2
Singapore	1
Australia	1
Canada	1
Brazil	1
Russia	0

More info: https://www.cbinsights.com/research-unicorn-companies

5. Global Innovation Index 2018 (Cornell/Insead/WIPO)

On 10 July 2018, Cornell, Insead and WIPO launched the 10th edition of the annual Global Innovation Index (GII). The 2018 report has a special focus on innovation in the energy sector

The Global Innovation Index covers 126 countries and is based on 80 indicators. The indicators on institutions (7 indicators), human capital (12), infrastructure (10), market sophistication (9) and business sophistication (15) are grouped as innovation input indicators, while the indicators on knowledge output (14) and on creative output (13) as innovation output indicators. An efficiency ratio is calculated based on the innovation input index and the innovation output index. For each country a specific fiche provides an overview of the results for all indicators.

According to the 2018 edition of the GII, Switzerland comes out as the best performer, followed by the Netherlands, Sweden and the UK. Other EU Member States in the top 10 are Finland, Denmark, Germany and Ireland.

The lowest ranked EU Member States are Romania (rank 49), Greece (42) and Croatia (41). The lowest ranked of the 126 countries included is Yemen.

With regard to the sub-index on innovation input, Singapore is ranked best, followed by Switzerland, Sweden, the UK and Finland with Romania the lowest ranked EU Member State.

With regard to the innovation output sub-index, Switzerland is the best performer, followed by the Netherlands, Sweden, the UK and Germany.

Regarding the efficiency ratio, Switzerland, Luxembourg, China and the Netherlands perform best.

The 2018 GII furthermore includes an assessment of the quality of innovation based on three indicators: quality of local universities, internationalisation of local inventions and the number of citations that local research documents receive abroad. With regard to this sub-index Japan comes out as the top performer, followed by Switzerland, the US, Germany and the United Kingdom.

The report furthermore identifies regional clusters with regard to patent and publishing performance. According to this analysis, Tokyo-Yokohama is the world's leading cluster in terms of numbers of patents whereas Paris is the leader in Europe. Regarding numbers of scientific publications, Beijing leads worldwide, followed by Tokyo-Yokohama, while London is the leading publication cluster in Europe.

Global Innovation Index 2018 rankings

Country/Economy	Score (0–100)	Rank
Switzerland	68.40	1
Netherlands	63.32	2
Sweden	63.08	3
United Kingdom	60.13	4
Singapore	59.83	5
United States of America	59.81	6
Finland	59.63	7
Denmark	58.39	8
Germany	58.03	9
Ireland	57.19	10
Israel	56.79	11
Korea, Republic of	56.63	12
Japan	54.95	13
Hong Kong (China)	54.62	14
Luxembourg	54.53	15
France	54.36	16
China	53.06	17
Canada	52.98	18
Norway	52.63	19
Australia	51.98	20
Austria	51.32	21
New Zealand	51.29	22
Iceland	51.24	23
Estonia	50.51	24
Belgium	50.50	25
Malta	50.29	26
Czech Republic	48.75	27
Spain	48.68	28
Cyprus	47.83	29
Slovenia	46.87	30
Italy	46.32	31
Portugal	45.71	32
Hungary	44.94	33
Latvia	43.18	34
Malaysia	43.16	35
Slovakia	42.88	36
Bulgaria	42.65	37
United Arab Emirates	42.58	38
Poland	41.67	39
Lithuania	41.19	40
Croatia	40.73	41
Greece	38.93	42
Ukraine	38.52	43
Thailand	38.00	44
Viet Nam	37.94	45
Russian Federation	37.90	46
Chile	37.79	47
Moldova, Republic of	37.63	48
Romania	37.59	49
Turkey	37.42	50
Qatar	36.56	51
Montenegro	36.49	52
Mongolia	35.90	53
Costa Rica	35.72	54
Serbia	35.46	55
Mexico	35.34	56
India	35.18	57
South Africa	35.13	58
Georgia	35.05	59
Kuwait	34.43	60
Saudi Arabia	34.27	61
Uruguay	34.20	62
Colombia	33.78	63

More info: https://www.globalinnovationindex.org/gii-2018-report

6. Miscellaneous results from national data sources

Bulgaria: 2080 projection forecasts strong population decline

On 3 July, the National Statistical Institute of Bulgaria released an updated population projection up to 2080. According to the basic variant (variant I) the population of Bulgaria will decline from 6.94 million in 2020 (2018 population: 7.05 million) to 5.79 million in 2050 and to only 4.87 million in 2080. It will hence decline by about 30% in the coming 60 years. At the same time the population aged 80 years and older will increase from 0.34 million to 0.56 million (from 4.9% to 11.4% of the population). While the population of Sofia is forecast to increase from 1.34 million to 1.42 million, some districts are expected to lose more than half of their population by 2080 (Vratsa, Gabrovo, Kyustendil, Lovech, Pernik), with the districts Vidin and Smolyan even losing two thirds of their population.

More info: http://www.nsi.bg/en/content/6727/population-projections-sex-and-age
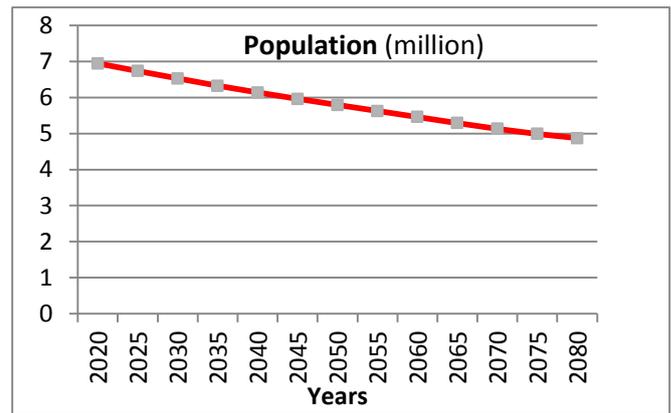
Germany: Online platform closes

At the end of June, *Dawanda*, a German platform for self-made goods founded in 2006, announced its closure as of 30 August 2018. Clients were advised to switch to the US portal *Etsy* (which has a German version of its platform). This is yet another example of the US dominance in Internet platforms. Although Germany is the largest market in the EU and thus offers better conditions than smaller markets, there are several other cases of German based platforms that failed or were overtaken by US competitors, including the social networking platform *StudiVZ*, launched in 2005 and reaching a total user base of 16 million in 2010. However, with Facebook getting stronger, the active user base declined by 80% by the end of 2011, followed by another sharp decline in 2012 and the obsolescence of this once strong network. The German matchmaking site *Lovoo* was sold in September 2017 to US competitor *the Meet Group*. The career oriented German social networking site *XING* was in recent years overtaken even on the German market by Microsoft/US owned Linkedin. The platform economy remains dominated by US (and Chinese) companies.

More info: https://en.dawanda.com/home/welcome

Finland: Tax revenues increase

On 12 July, Statistics Finland published 2017 results on tax revenue and social security contributions. The total accrual of taxes and compulsory social security contributions in Finland grew by 2.0% in 2017 to reach EUR 97.0 billion or 43.3% of GDP. Tax revenues of the central government increased by 3.6% in 2017 to reach EUR 46.9 billion. The tax revenue increase implies more fiscal space for spending on priority areas.

Earlier in the year, on 22 February, Statistics Finland released data on R&D funding in the 2018 budget. Following a stagnation of public R&D expenditure in the years 2010-2012 and a decline thereafter, allocations for R&D increased in the 2018 government budget by EUR 85.7 million or 4.8% to reach EUR 1.883 billion. Public research funding as a % of GDP was estimated to remain at 0.8%, as in the year before. In the 2018 budget universities receive 3.4% more, compared to 2017, while the funding of Business Finland, the successor of Tekes (whose funding had been cut in the previous years), is increasing by 19.8%. The Academy of Finland, which received a similar boost in 2015, however, has been allocated 2.6% less than in 2017.

While in 2009 Finland had the highest R&D intensity of all EU countries (3.75% of GDP), R&D intensity fell by 1 percentage point over the following years, the strongest decline of all EU countries, to reach 2.75% in 2016.
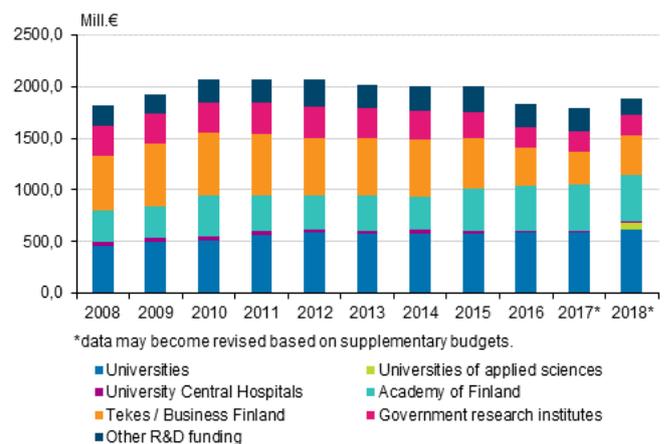
This was mainly a result of lower business spending (-0.9 pp since 2009), later exacerbated by a pro-cyclical decline of government spending. The decrease of business spending was a result of the recession and the decline of Nokia (in 2010 Nokia represented about half of business R&D in Finland). In 2007 Nokia was the company with the highest R&D spending worldwide, however, its R&D spending had decreased by over 50% by 2015.

More info: http://www.stat.fi/til/tkker/2018/tkker_2018_2018-02-22_tie_001_en.html

Calendar of data releases and indicator based publications
Update of: 1/8/2018 (grey= already published)

2018	Eurostat data updates	Commission indicator based reports	Data and indicator based reports of other organisations
January			Bloomberg Innovation Index
February	Tertiary attainment (2017, prov.) High growth enterprises data (provisional, 2016)	Winter forecast (ECFIN) Science Research and Innovation Performance Report (RTD)	OECD MSTI statistics (R&D expenditure)
March	R&D expenditure data update (revision of preliminary 2016 results)	DESI indicator (CNECT)	European Patent Office , annual results OICA world motor vehicle production data OECD R&D Statistics
April	Education headline indicators (LFS)		Reuters Most Innov. Institutions Internet Minute (Excelacom/Allaccess)
May	High-tech trade (2017) Education enrolment, graduates Knowledge-int. activities (2017)	Spring Forecast (ECFIN)	Invest Europe European Private Equity Report IMD World Competitiveness Yearbook
June	Education spending Employment high-tech (2017) HRST education inflows (2016)	European Innovation Scoreboard (GROW/RTD)	Times Higher Ed. Reputations Ranking
July			UNESCO UIS STI stats release WIPO/Cornell/INSEAD Global Innovation Index
August			Academic Ranking of World Universities (Shanghai)
September	Final high growth ent. data (2016) Economic data on high-tech (2017)	Europe 2020 publication (ESTAT)	WEF Global Competitiveness Index OECD Education at a Glance
October	GBARD (2017 preliminary)		World Bank Doing Business
November	R&D intensity (2017 preliminary, 2016 final) Knowledge-int. activities (2017) Employment high-tech (2017)	Autumn Forecast (ECFIN) Education Monitor (EAC) Annual Growth Survey (ECFIN) Joint Employment Report (EMPL) (draft)	Top500.org: Top 500 Supercomputer list OECD STI Outlook (2-yearly)
December	ICT household data (2018) ICT enterprise data (2018) HRST stocks (2017)	Industrial R&D Investment Scoreboard (JRC) (ERA Progress Report)	WIPO World Intellectual Property Indicators

Contact for more information: Richard Deiss (unit A4, Tel 64881), Dermot Lally (55614)