

# The goal of the project

- The aim of this project is to establish the clusters among EU countries based on 10 chosen indicators and comment Polish position in 2016 and 2017.
- Data are extracted from *Passport database*.
- Orange software can be used for data mining.

# Indicators

- **Business Confidence Index** - indicates the percentage of business people that are satisfied with prevailing conditions.
- **Consumer Confidence** - the degree of optimism that consumers feel about the overall state of the economy and their personal financial situation.
- **Current Account Balance** - sum of the balance of trade (goods and services less imports), net current transfers (cash transfers) and net income from abroad.
- **GDP Measured at Purchasing Power Parity** - economic theory that compares different countries' currencies through a market "basket of goods" approach.
- **Government Expenditure** - cash for the implementation of state and local government projects.

# Indicators

- ◉ **Inflation** - the process of increasing the average price level in the economy. The effect of this process is the decline in the purchasing power of domestic currency.
- ◉ **Productivity** - ratio of the amount of produced and sold production at a specified time, to the amount of input resources used or consumed.
- ◉ **Public Debt as % of GDP** - debt owed by central government.
- ◉ **Trade Balance** - the difference between the monetary value of a nation's exports and imports over a certain period.
- ◉ **Unemployment Rate** - the number of unemployed people as a percentage of the labour force, where the latter consists of the unemployed plus those in paid or self-employment.

# Data

Data for 28 countries of EU were standardized using mean and standard deviation. Selected indicators can be divided into two parts : first measures the entrepreneurs' and costumers' satisfaction and second describes macroeconomic situation.

	Geography	Business Confidence Index	er Confidenc	nt Account Ba	ired at Purchasing P	overnment Expendit	Inflation	Productivity	ublic Debt as % of GD	Trade Balance	Unemployment Rate
1	Austria	-0.71318724256324906	-0.1978874...	-0.051502090...	-0.29215970278108...	-0.2750671160960...	1.028361580272...	0.5318632143865128503	0.33892528517366199	-0.156065501552...	-0.60321370018768328
2	Belgium	-0.64606883175735741	-0.0719860...	-0.172980243...	-0.20212475120751...	-0.2602289333766...	2.442358753146...	0.7519971066543661431	0.90878814469789937	0.1784264781971...	-0.17816775515477198
3	Bulgaria	-0.0896355507625537	-0.8422066...	-0.135764025...	-0.55912234552783...	-0.3222712490957...	-1.15690677780...	-1.1436431829722761...	-1.12606462310097633	-0.118026946993...	-0.24528027279154760
4	Croatia	-0.52698778032754956	-0.5200470...	-0.162169818...	-0.60702736523584...	-0.2797510112634...	-1.54254237040...	-0.8509903381518812...	0.31290415003556893	-0.200903414443...	1.05222840151944452
5	Cyprus	-0.59843641118543434	0.17611391...	-0.196587825...	-0.67166897347233...	-0.3306459192418...	-1.92817796301...	-0.3436309558148461...	0.93220716632218326	-0.151688677488...	0.94037420545815220
6	Czech Republic	-0.28882567746793392	0.32793626...	-0.146698815...	-0.35411358356851...	0.27418545112433...	0.771271185204...	-0.6492528771388033...	-0.88146595280290174	0.1896391107614...	-1.05063048443285290
7	Denmark	-0.72834301274522473	0.53900635...	0.1662687548...	-0.43110267439351...	0.02453260884625...	0.257090395068...	0.8109932199173346401	-0.85804693117861786	0.0530883684478...	-0.55847202176316624
8	Estonia	-0.56595976079548671	-0.0942039...	-0.173443503...	-0.66257830348153...	-0.3301243100262...	0.128545197534...	-0.7273909637623895...	-1.59444505558665095	-0.111450495460...	-0.42424698648961545
9	Finland	-0.74133367290120378	0.73526450...	-0.232137553...	-0.47357738762280...	-0.2940725881355...	0.385635592602...	0.5422192976573793066	-0.19711009867105467	-0.134299143313...	0.02316979775555444
10	France	1.59915026520101944	-0.3348978...	-0.513102906...	1.97833038306790598	0.07269109400009...	0.128545197534...	0.5223749325378810315	0.66679158791363413	-1.108354188965...	0.31399070751491448
11	Germany	-0.39058584868976970	0.06502439...	4.2796947341...	3.21392100547871884	0.11533238106563...	0.514180790136...	0.3656241054741271035	-0.06700442298058965	4.0871168241753...	-1.02825964522059454
12	Greece	-0.74999411300518970	-2.3011823...	-0.210855597...	-0.41733003020209...	-0.3049124662644...	-1.15690677780...	-0.3930500892937610...	2.93323245844153790	-0.376767065280...	3.33405400116981010
13	Hungary	-0.52915289035354618	-0.4607993...	-0.060600942...	-0.43616469168825...	5.00466039563394...	0.385635592602...	-0.9045830690786151...	0.06570336622368507	0.0651569915462...	-0.80455125309800968
14	Ireland	-0.13293775559618548	3.92353373...	0.0035729391...	-0.38184889349842...	-0.3088255521948...	-0.12854519753...	1.7266196100347988018	0.05529491216844771	0.6151990323392...	-0.06631355909347958
15	Italy	1.59698515517502315	-0.1571546...	0.6042324530...	1.48737935198410476	-0.0649328457460...	-0.25709039506...	0.2832740655387557260	1.59574611234355568	0.6841192910903...	0.67192413491105019
16	Latvia	-0.68937103227728758	-0.1978874...	-0.174516151...	-0.65114958486795...	-0.3298857623375...	0.000000000000...	-0.8488280263207883...	-0.86585327172004589	-0.115497866079...	0.20213651145362208
17	Lithuania	-0.75215922303118632	-0.1127188...	-0.187877613...	-0.61643441130756...	-0.3286213304677...	1.028361580272...	-0.7978962334567074...	-0.7929940933338522	-0.118774175444...	-0.17816775515477198
18	Luxembourg	-0.59843641118543434	0.17611391...	-0.136503996...	-0.64104024266613...	-0.3256918421861...	0.257090395068...	3.5377020003065169362	-1.30561045555381816	-0.170503974017...	-0.55847202176316624
19	Malta	-0.59843641118543434	0.17611391...	-0.166911233...	-0.68375101359048...	-0.3316739661691...	0.642725987670...	-0.2704983094388454...	-0.32721577436151988	-0.129689598943...	-0.89403460994704353
20	Netherlands	-0.51399712017157062	0.33163924...	0.8389713446...	0.15414508017744208	-0.2343572260350...	0.257090395068...	0.5262776416964390913	-0.23093757435057571	0.7252308752297...	-0.60321370018768328
21	Poland	1.53203185439512790	-0.1534516...	-0.201795608...	0.32905109880875344	-0.0858812709568...	-1.02836158027...	-0.8632953787605288...	-0.43130031491389204	-0.025735120665...	-0.55847202176316624
22	Portugal	-0.61359218136740978	-0.2349173...	-0.157403530...	-0.40828441686677...	-0.3059790552675...	0.642725987670...	-0.5519824061205909...	1.54890806909498790	-0.260028391408...	0.56006993884975775
23	Romania	-0.58544575102945529	-0.5126411...	-0.241065404...	-0.26814940286895...	-0.2492752366887...	-2.05672316054...	-1.0218417397061989...	-0.82161734198528757	-0.240793917942...	-0.62558453939994163
24	Slovakia	-0.49018090988560903	-0.0867979...	-0.200237937...	-0.53419719961080...	-0.3220106543066...	-0.77127118520...	-0.7184708281487566...	-0.49114892573150615	-0.029204896308...	0.22450730665880848
25	Slovenia	-0.47935535975562649	-0.3534127...	-0.143962786...	-0.63558348988963...	-0.3270036285159...	-0.25709039506...	-0.4646389121451234...	0.20101326894176896	-0.072774062954...	-0.15579691594251358
26	Spain	2.24218794292198131	0.03910351...	0.1889575900...	0.95114638213565672	-0.1805196918982...	-0.38563559260...	-0.0076911212671279...	0.73704865278648546	-0.316517740813...	2.46159127189172899
27	Sweden	1.70524065647484835	0.58344215...	0.1714920838...	-0.21356620322373...	0.37026949042764...	1.156906777806...	0.7530830570529081225	-0.76437084468148309	-0.109943421190...	-0.40187614727735682
28	United Kingdom	1.55151784462909625	0.08724230...	-2.587072314...	2.02700136591920010	-0.0699397648270...	0.642725987670...	0.2056561803202106298	0.45862250680888983	-2.650967372521...	-0.84929293152252650